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Factors that are Predictive of Student Achievement Outcomes and an Analysis of These Factors in High-Poverty Schools Versus Low-Poverty Schools

Cherita Ruth Graber
Lindenwood University

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Cherita Ruth Graber

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A dissertation submitted to the Education Faculty of Lindenwood University

in partial fulfillment of the requirements for the degree of

Doctor of Education

School of Education

DECLARATION OF ORIGINALITY

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: Cherita Ruth Graber

Signature: _Cherita Ruth Graber_ Date: _8/19/09_

FACTORS THAT ARE PREDICTIVE OF STUDENT ACHIEVEMENT OUTCOMES
AND AN ANALYSIS OF THESE FACTORS IN HIGH-POVERTY SCHOOLS
VERSUS LOW-POVERTY SCHOOLS

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This Dissertation has been approved as partial fulfillment of the
requirements for the degree of
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_____   _____
Dr. Terry Reid, Dissertation Chair   Aug. 19, 2009
                                                                        Date

_____   _____
Dr. Sherry DeVore, Committee Member   Aug. 19, 2009
                                                                        Date

_____   _____
Dr. Kevin Kopp, Committee Member   Aug 19, 2009
                                                                        Date

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Abstract

This study was conducted to identify factors that are predictive of student achievement outcomes and to analyze these fa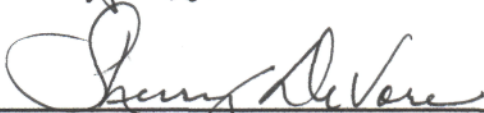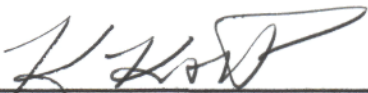ctors in high-poverty schools versus low-poverty schools. Because of accountability standards implemented with the passage of No Child Left Behind, it is critical that educators determine factors that will increase student achievement most significantly. Once the most significant and most predictive variables of student achievement can be identified, stakeholders can implement policies and procedures to address those areas. In addition, instructional strategies can be employed to improve student success.

The dependent variable under study was student achievement, which was dissected into two categories of communication art and math scores. The independent variables included were student attendance, class size, and highly qualified teachers. The objective of the study was to establish if a relationship existed between the independent variables and the dependent variable. In addition, a determination of how predictive these independent variables were of the dependent variable was an important aspect of the study. The sample included the entire population of mainstream 9-12 public high schools in a Midwest state.

The statistical methods employed were descriptive statistics, Pearson r, p-value, coefficient of determination, and multiple regression. The analysis of the various statistical methods revealed a moderate correlation between student achievement and the independent variables of student attendance and highly qualified teachers for high-poverty schools. A significant level of correlation also existed between the below average

attendance category and student achievement in both groups of high-poverty and low-poverty school settings. Additionally, attendance and teacher quality were predictive of both communication arts and math student achievement in the high poverty school setting, with attendance the most predictive. There was no significant relationship between class size and student achievement nor was it predictive of student achievement for either group of schools.

The implications of the research will benefit stakeholders due to the effect significant variables have on student achievement in high-poverty schools. Stakeholders can work together to implement policies, procedures, and instructional strategies that can more effectively address the most predictive variables in order to improve student achievement. Additionally, the results are supportive of investigating and addressing the needs of high-poverty schools.

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KEY TO ABBREVIATIONS

APR	Annual Performance Report
AYP	Annual Yearly Progress
CSR	Class Size Reduction
DESE	Department of Elementary and Secondary Education
eMints	Enhancing Missouri's Instructional Networked Teaching Stratetgies
MAP	Missouri Assessment Program
MSIP	Missouri School Improvement Program
N	Number
NCLB	No Child Left Behind
R	Correlation Coefficient
R^2	Coefficient of Determination
SAGE	Student Achievement Guarantee in Education
SD	Standard Deviation
SMART	Student Mediation and Assistance to Reduce Truancy
SPSS	Statistical Package for the Social Sciences
STAR	Student Teacher Achievement Ratio
TFA	Teach for America

CHAPTER ONE

Introduction of the Study

Background

Since the adoption of the *No Child Left Behind* [italics added] (NCLB) legislation, schools have had to become more accountable. Thus, schools have placed more emphasis on controlling variables that could have an effect on student achievement. The accountability required of schools since the NCLB legislation has caused schools to focus on attendance rates, teacher quality, class size, and student achievement scores. These statistics have had a major effect on the Annual Performance Report (APR) and the district accountability report card (Department of, 2004).

Another issue that has been of great concern is equity in the educational system. High-poverty schools have had significantly lower test scores than schools that serve more affluent students. It has been historically documented that high-poverty schools receive fewer resources than the more affluent schools (Carr, 2007; Machtinger, 2007).

Many factors are considered as critical for students to succeed in today's educational system. Some of these factors consist of parental support; class size; teacher qualifications, which includes education, credentials and experience; equity in funding; aligned curriculum; socioeconomic status; peer achievement; and attendance (American Federation of Teachers, 2008; Cromwell, 2006; Machtinger, 2007; Policy Studies, 2005; Railsback, 2004). Other factors that affect student achievement are technology in the classroom, school safety, and mobility from school to school (Parke, 2006; Railsback). In today's society, students face many challenges that were not present historically in educational systems. These challenges, unfortunately, have handicapped many students in

achieving academic success. Many issues that affect student achievement relate to activities that go on before and after school, as well as factors in the classroom. Today many students are confronted with homelessness, single parent households, parents with low education status, drug abuse, and poverty (Cromwell, 2006). Also, after-school employment has become a more prevalent factor today than it was in previous years. Because many students are engaged in employment after school, frequently their academics suffer (Kleitman, 2005). Many of these students attempt to attend school, even though they work anywhere from 20 to 40 hours a week. Much of the time, students who work do not get home at a sensible hour in order to secure a good night's sleep. So, it is reasonable to assume these students will not be very interested in completing their homework. Consequently, student employment after school has contributed to non-attendance of school (Railsback).

In regard to student attendance and student achievement, Roby (2000) related initially the attendance variable was not considered an important factor in regard to student achievement. However, after conducting research, Roby found there was a significant variance. The study indicated more frequent attendance was consistent with higher test score averages. Roby concluded the correlation between student attendance and student achievement was moderate to strong.

Class size was another factor to be considered when striving to improve student achievement. The American Federation of Teachers (2008) has supported the small class concept from research. This research came from Project STAR, the SAGE Program, and the Rouse study. By reducing the class size, there was a positive effect on student achievement. The impact of smaller class size is more significant in schools that are

identified as high-poverty. The research indicated the reduction of class size is most

successful if classes range between 15 and 19 pupils, there are low-achieving and low-

income students, qualified teachers are the norm, and classroom space is sufficient

(American Federation of Teachers).

Another important finding from the STAR Project was the significance of the

predictive behavior of students who attended the small classes for four years. These

students were more likely to graduate from high school than students in regular size

classes. This finding was even more profound for students who were considered high-

poverty students. Consequently, the STAR Project pointed to increased positive

predictive behavior in the long-term (Finn, Gerber, & Boyd-Zaharias, 2005).

Teacher quality was important to examine since it was one of the requirements of

NCLB standards (DESE, 2004). Fuller and Alexander (2004) researched math teachers in

the state of Texas who taught students of similar backgrounds, some teachers who were

certified and some teachers who were not certified. The findings indicated the students

who were taught by certified teachers scored higher on their math achievement test than

students who were taught by non-certified teachers. A similar study by Laczko-Kerr and

Berliner (2002) reviewed elementary students' math achievement scores and found

students who were taught by non-certified teachers performed significantly lower than

those students taught by certified teachers who were new teachers.

The compilation of the findings, such as the above mentioned, was the foundation

for the research conducted within this study. Once the literature was reviewed and

examined, an analysis of the data gathered from a Midwest state on these numerous

variables were analyzed and summarized to draw conclusions and recommendations on

the significance of these variables in this particular state. In addition, the results of this study also compared high-poverty schools and low-poverty schools. Therefore, an analysis of the correlations and relationships that existed between each of the variables and student achievement within both the high-poverty and low-poverty schools was completed.

Conceptual Underpinnings

Student achievement has become an even more important issue with NCLB legislation looming over the education system. Educators have struggled to determine how student achievement could be improved to meet the NCLB requirements. Numerous studies have been conducted on student achievement, primarily because it was equated with the success of students in the real world (Darling-Hammond, 2000; Roby, 2000) Even though researchers found there were many variables that affected student achievement, research on the specific variables of attendance and student achievement was lacking (Roby).

Research conducted by Roby (2000) was used as the principal lens to examine the relationship between student attendance and student achievement. Roby related that many times the attendance variable was not considered an important factor in regard to student achievement. However, he found a significant variance, 60 percent, between student attendance and student achievement for ninth graders. The results indicated more frequent attendance was consistent with higher test score averages. Roby concluded the correlation between student attendance and student achievement was moderate to strong. He also determined there was significant learning time lost because of poor attendance.

Roby found student attendance has had more of an effect on student achievement than previously believed (Roby).

Ward and Chavis's (1997) study, in particular, was used to view the relationship between school attendance and student achievement in high-poverty schools. Their research found schools that served a larger percentage of poor students had significantly lower test scores. One of the variables that contributed to the lower test scores was the attendance rate. High-poverty schools had twice the number of excessive absences when compared to low-poverty schools (Ward and Chavis).

It was deemed essential to incorporate the component of NCLB legislation to guide the research for this study, since the objective of this legislation was to insure the execution of mandated student achievement improvement. Schools were supplied with the criteria of this legislation so student achievement could be facilitated. Therefore, this study considered motivational theories as the foundations to employ creative policies to improve academic success. The theories were applied to give direction and insight into motivational strategies to facilitate the improvement of student achievement. Motivation played an important role in helping students to make the right decisions among behavioral options. Motivational theories examined were those researched by Maslow (2002)) and Moore (1998). In addition, other theories researched by Davison (2006) were discussed.

Project STAR was the major research used to examine the relationship between the class size variable and student achievement. This was a very well-planned study conducted in Tennessee that examined the correlation between class size and student achievement. It was considered the most significant, reliable, and valid of all the research

reviewed by the many authors that have examined this variable. In addition to the findings that indicated a significant positive correlation between smaller class sizes and student achievement, the results also pointed to predictive behavior of long-term success in upper grades and beyond (Word, E., Johnston, J., Bain, H., Fulton, D. B., Boyd-Zahartas, J., Lintz, M. N., et al., 1990).

The Tennessee STAR Project was a four-year experimental research study led by Elizabeth Word from 1985-1989. The sample consisted of 7,000 students from over 300 classrooms in 79 different schools. There was random distribution of students and teachers into the three class groups of small classes (13-17 students), regular classes (22-25 students), and regular classes that had a teacher aide (22-25 students). The schools studied included ones in various locations, such as rural, urban, inner-city, and suburban. All schools incorporated at least one of each of the class groups. The study demonstrated a strong link between smaller class sizes and test scores taken from the Stanford Achievement Test and the Basic Skills Test in grades K-3. The study followed the students from grades kindergarten through the third grade and clearly revealed significant improvement in all academic areas for students in smaller class sizes. The addition of a teacher aide did not indicate any advantage (Word, E., et al., 1990).

Another landmark study was Wisconsin's Student Achievement Guarantee in Education (SAGE) project which was implemented in 1996-1997 to determine if a reduction in class size would correlate to an increase in student achievement for high-poverty students. The SAGE study basically duplicated the same K-3 class sizes as the STAR project. The results indicated there was a significant increase in student

achievement in math, reading, and language arts of high-poverty students in smaller class size categories (Achilles, 1996).

The research of Blatchford and Mortimore (1994) was examined since their in-depth research entailed 30 years of insight into the relationships between class size and student achievement. They found the correlation between small class size and student achievement was more significant for secondary schools as compared to lower level grades. Blatchford and Mortimore gave a number of explanations of why there was a significant correlation between smaller class sizes and student achievement in the relevant studies that were conducted on these variables. Smaller class size was predictive of the following: it created a more positive learning environment; students were able to receive more individual attention; teachers were given more freedom to implement varied teaching strategies and instructional methods; there was more time to work with parents; there were fewer distractions; and students developed a closer relationship with their teacher and other students, thereby, increasing student engagement.

The study used as a lens to guide the research on teacher quality was that of Darling-Hammond (2000). The research study was conducted from a national perspective utilizing data from Schools and Staffing Surveys and National Assessment of Education Progress for the years 1993-94. This study examined 65,000 teachers, 13,000 principals, and 5,600 school districts to determine the correlation of teacher quality to student achievement. The results revealed students of lower socioeconomic status were less likely to have high quality teachers, thus their student achievement scores were significantly lower.

Statement of the Problem

In recent years, it has become even more critical that educators increase the academic success of students. Due to the requirements mandated through the passage of the NCLB legislation, educators have had to become more accountable for the improvement of student achievement in our public schools. If every student is going to succeed academically, a determination must be made as to which factors will help promote improvement in student achievement most significantly. Attendance seems to be a real issue in the education system due to numerous causes that include both outside factors and school related factors. Other aspects that warrant study, as to their effect on student achievement, include class size and teacher quality.

Purpose of the Study

The purpose of this study was to gain insight into the relationship that exists between variables of class size, highly qualified teachers, and student attendance and their individual effects on student achievement. Because so many variables were identified as factors that influence student achievement, it was necessary to select a limited number of variables to be researched that could have an effect on student achievement. The factors selected are important and affect the Annual Performance Report (APR), a listing of a school districts' scores. This study investigated the relationship that exists between the above factors and student achievement in 9-12 public mainstream high schools that included both high-poverty schools and low-poverty schools. The data were compiled and analyzed to determine what kind of a relationship exists between these particular variables and student achievement. If the relationship was established, and if there is a significant relationship between these factors and student

achievement, perhaps the trend of low achievement scores in both groups can be reversed.

The stakeholders who will benefit from this study include students, teachers, administrators, boards of education, the community, and other researchers. All of these parties will profit from this study because it will identify the significance level of each of the variables studied as related to student achievement. Once the significance has been identified, stakeholders can implement policies and procedures, as well as instructional strategies that can more effectively address the most important variables to improve student achievement.

The whole idea behind NCLB was to improve achievement of all students. It was perceived by the government that some learners in the population were not receiving the education they deserved. This legislation was adopted so that no student would be overlooked. With the initiative for schools to do a better job in educating all learners, accountability standards were established. Therefore, the accountability required of schools since the NCLB legislation has caused schools to focus on many important factors such as student attendance rates, student achievement scores, teacher quality, and class size. These results have been used to determine the accreditation level of public schools.

The goal of the educational system is to promote academic success. The purpose of this goal is to produce students who will be successful citizens and contribute to society positively. Thus, it necessitates that students be educated in a system that endorses student achievement. Consequently, the rationale for this study was to identify the significance of the variables within this study that would improve student

achievement in order to meet NCLB requirements and promote the academic success of students. The study was also conducted to determine if these variables were predictive of student achievement. By improving student achievement of all students, these individuals will be able to contribute to society in a positive manner.

Research Questions

The following research questions were examined to determine the relationship between the independent variables and student achievement.

1. What relationship is present among the three student attendance categories: below average, average, and above average and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

2. What relationship is present between overall attendance and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

3. What relationship exists between class size and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

4. What relationship exists between highly qualified teachers and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

Dependent Variable

The dependent variable in this study was high school student achievement in 9-12 public mainstream high schools including both high-poverty public schools and low-poverty public schools.

Independent Variables

Student attendance. One independent variable in this study was the attendance rate of 9-12 public mainstream high school students in high-poverty schools and low-poverty schools in the three attendance categories of (a) above average attendance, (b) average attendance, (c) and below average attendance as defined by Missouri School Improvement Program (MSIP) standards.

Class size. Another independent variable was student to teacher ratios (class size) in 9-12 public mainstream high schools of both high-poverty and low-poverty high schools.

Highly qualified teachers. The effect of highly qualified teachers in both categories of high schools was also included as an independent variable.

Limitations

Midwest state sample of 9-12 public mainstream high schools. This study was conducted in a Midwest state. The sample was limited to the population of all 9-12 public mainstream high schools from this Midwest state. In order to keep the population data more consistent, the study excluded private schools and special schools, such as academies, technical schools, schools for the blind and deaf, special needs' schools, and college-prep schools. The results of the study may differ from state to state due to varying demographics. The high schools were categorized into two groups of high-poverty

schools and low-poverty schools based on the average free and reduced lunch rate. The average free and reduced lunch rate was determined by averaging the 9-12 public mainstream high school data. The state average was not used since it included schools that did not meet the definition of the population and sample under study.

Population sizes varied. The 9-12 public mainstream high schools under study included high schools with various population sizes. Therefore, the extraneous variable of school size could have possibly affected some or all of the variables of the study. The study covered the most recent data posted on the Missouri Department of Elementary and Secondary Education (DESE) website (DESE, 2008).

In-school factors. These in-school factors included situations that occurred at school that could affect a student's attendance, as well as those situations and circumstances outside of school. However, only out-of-school activities and events were considered. The student to teacher ratios excluded special education, remedial reading, Title I, and vocational teachers. Since the population was so large, it was limited to the main population of 9-12 public mainstream students. No subgroups were included in the study. The average used for highly qualified teachers was determined by the mean of the 9-12 public mainstream high school data rather than the state's average. The state's average included high schools that did not meet the definition of the population and sample of this study.

Definition of Key Terms

Annual proficiency target. This data identifies the proficiency rates in communication arts and mathematics for each school and for each sizable subgroup, as measured by performance on the most recent assessment. An ethnic or low income group

of students was considered *sizable* [italics added] if at least 30 members were assessed.

Groups of special education students or those learning English as a second language were

considered *sizable* [italics added] if at least 50 members were assessed. All sizable groups

were required to reach the proficiency benchmark for the school to make AYP. In 2008,

the state expected at least 51 percent of students to be proficient in communication arts

and 45 percent to be proficient in mathematics. A school could be considered passing

with slightly lower scores through the *confidence interval* [italics added] or *safe harbor*

[italics added] provisions. (DESE, 2008)

 Annual yearly progress. To determine annual yearly progress, the annual

proficiency target indicators were established by each state. These targets had to be met

each year at a specified level of proficiency in order for schools to be accredited (DESE,

2008).

 Attendance. Attendance rates were gathered from the DESE website. A student

was not to be counted as in attendance unless the student was actually present and under

the direct supervision of a certificated staff member. The average daily attendance rate

for the regular school term was divided by the January membership, or the total hours of

student attendance divided by the sum of the total hours of student attendance and total

hours of absence for the regular school term. In this study, attendance was dissected into

three levels: (a) above average attendance, (b) average attendance, and (c) below average

attendance. MSIP standards for attendance were used as the criteria in the determination

of attendance categories. The above average attendance (high 1 and high 2 as defined by

MSIP standards) was 94.4 to 100 percent for 2008. The average attendance rate for this

Midwest state as classified by MSIP standards was 93.6 to 94.3 percent for 2008. The

below average category as characterized by the MSIP standards was any percent below

93.5 percent (DESE, 2008).

Class size. The student-to-teacher ratio was used to represent class size. The

student-to-teacher ratio is the ratio of students to regular classroom teachers, excluding

special education, remedial reading, Title I, and vocational teachers. This ratio was used

to explain the variable of class size (DESE, 2008).

Free and reduced lunch. The free and reduced lunch program was established to

provide either free or reduced lunches to students whose parent's income was at or below

the federal poverty threshold. The average free and reduced lunch rate for the Midwest

state was calculated on the 9-12 public mainstream high school population to determine

high-poverty and low-poverty schools (DESE, 2008).

High and low-poverty schools. The average percentage of students who received

free and reduced lunch in the public mainstream 9-12 high schools in this Midwest state

was the criteria used to determine which high schools qualified as high-poverty schools

and low-poverty schools. The average free and reduced rate of the population examined

was 35.64 percent for 2008. High-poverty schools were defined as the schools that had a

free and reduced lunch rate above the average for the population under study. Low-

poverty schools were defined as the schools that had a free and reduced lunch rate below

the average for the population under study.

Highly qualified teachers. This is the term NCLB uses to define a teacher who

proves that the teacher is knowledgeable in the subject area the teacher is teaching, the

teacher possesses at least a bachelor's degree, and the teacher is state certified. For

purposes of this study, the average used for highly qualified teachers was the average as

determined by calculating the mean of the 9-12 public mainstream high school data rather than the state's average. The state's average included high schools that did not meet the definition of the population and sample of this study (DESE, 2004).

Missouri Assessment Program (MAP). The MAP test was facilitated as an assessment program. It incorporated several types of test questions that were used to evaluate student achievement in specific grade spans: multiple-choice, short answer, constructed-response questions, and performance-event type questions. The NCLB legislation required school districts to assess students in reading-language arts and mathematics in grades three through eight and also in two high school grades. The assessments provided data on student achievement of both individual students and groups of students. The results also included a national percentile rank so that students could be compared to other students across the nation and tied levels of proficiency to the state standards. Levels of achievement were established with specific criteria for each level. These levels included below basic, basic, progressing, nearing proficiency, proficient, or advanced levels (DESE, 2008).

Missouri school improvement program. (MSIP) The Missouri School Improvement Program has the responsibility of reviewing and accrediting the 524 school districts in Missouri within a five-year review cycle. The process of accrediting school districts is mandated by state law, and the specific responsibilities of this section are outlined both by *State Board Rule* [italics added] and in *Senate Bill 380* [italics added]. MSIP standards must be met in order for the school district to be accredited (DESE, 2008).

No Child Left Behind. This legislation was passed in 2001 to take affect in 2002. It required states and school districts to implement accountability systems. In grades three through eight, schools were required to test students every year. Communication arts and mathematics were the areas assessed. Students were also tested in at least two grade levels tenth through twelfth grade. If the proficiency standards were not met, schools were in danger of losing federal funding and in danger of other serious consequences, such as, replacing all the staff in the school. Also, if a school was labeled as a failing school, parents had the choice to move their children to a different school. In addition, highly qualified teacher qualifications had to be met. (DESE, 2004)

Non-school directed variables. This study defined attendance as a variable in this category, since many outside factors affect student attendance that are beyond the control of the school.

Public mainstream high schools. In order for all the data to remain consistent, private schools, college-prep schools, academics, technical schools, special schools (such as schools for the deaf or blind), and special needs' schools were excluded from the population being researched for the purposes of this study.

School-directed variables. These variables were those that could be controlled by administration in the hiring of employees. Administration could control these school-directed variables by offering incentives to the teachers and setting standards when hiring.

Student achievement. Student achievement was measured by the use of the Annual Proficiency Target as determined from the Adequate Yearly Progress (AYP)

report. Student achievement included communication arts and mathematics data from the Midwest state's standardized assessment, the MAP test (DESE, 2008).

Summary

Many factors contribute to the academic achievement of students. As studies were examined that addressed student achievement, it was apparent there was not just one single factor that affects student achievement. Therefore, this study concentrated on three specific areas that contribute to or deter from student achievement in the educational system today. These factors included attendance and the school-directed variables of student-to-teacher ratios (class size) and highly qualified teachers. It was clear that schools needed to be more creative and innovative than ever in encouraging students to strive for good attendance. Consequently, this study was conducted to determine the kind of relationship that exists between high school student attendance and student achievement in high-poverty schools as compared to low-poverty schools for the population under study. Also of interest was determining if a relationship exists between other school-directed variables including class size and teacher quality in both high-poverty schools and low-poverty schools

The next chapter discussed studies and findings that were conducted on the independent variables of student attendance, class size, and highly qualified teachers and their relationship to student achievement as discussed by various researchers. This examination included studies that were landmark studies, as well as, more recent research. Each will serve as a foundational basis and point of reference for this particular study.

CHAPTER TWO

Review of Related Literature

Introduction

The goal for every educational institution should be to provide an education that will enable all students to achieve academic success and become contributing citizens to society. With the enactment of the NCLB legislation, more accountability has been required of educational institutions. The goal of this legislation was to enable every student to receive the education he/she deserves and become academically successful. There have been many variables that figure into the formula of helping students be successful academically. The purpose of this study was to examine the relationship between some of these variables and student achievement. One variable that has been taken for granted many times is student attendance (Roby, 2000). In addition, teacher quality and class size are variables to be considered in regard to their effect on student achievement. Another aspect considered as essential to this study was the relationship between the independent variables and dependent variable in two groups of students: students who attend high-poverty schools and students who attend low-poverty schools.

The study also investigated and identified strategies, policies, and programs that have been successful in improving both attendance and achievement, including motivational theory.

NCLB

In recent years, educators have had to become more accountable to the state, as well as to the federal government, in facilitating student achievement improvement. Because of the NCLB legislation that was adopted, schools are required to meet certain

standards in order to be accredited. The legislation set specific criteria that must to be met. Proficiency levels that students were expected to meet were established and were increased each year. The eventual goal was for every student to reach 100 percent proficiency. Of course, educators have known this was not an attainable goal, due to the fact that there are special needs students and limited English speaking students who will struggle to reach that level of proficiency included in the assessments administered (DESE, 2004).

A study performed by Dillon (2006) resulted in disappointing outcomes as to the positive effects of NCLB's contribution in decreasing the achievement gap. There was also evidence that the legislation has driven people away from low-performing schools because of the stigma attached to low-performing schools. This mindset has reinforced the continued lack of inducements to attract high-quality teachers to low-performing schools.

Miller (2007) proposed a plan on the direction America should go next with NCLB. According to Miller, there are components that must take place in order for education to improve. Legislation must be fair and flexible. Most of America does not believe the administration of one test on one day each year reflects an accurate measurement of student achievement. Miller believed that additional assessments that are reliable and valid must be utilized in order to evaluate student progress and performance more fairly and accurately. Miller believed it was essential to include graduation rates as one of the measurements.

Miller (2007) also concluded that all stakeholders must come together to develop rigorous standards that will address the expectations of employers and colleges. He

believed the ability to apply the knowledge and skills students have learned and the

utilization of critical thinking skills must be measured and assessed. All students should

have access to quality teachers and instruction, including poor and minority students. In

order for this to happen, principals and teachers should be compensated by performance

pay based on fair and proven models. Schools will continue to be held accountable with a

much improved accountability system. Legislation will incorporate comprehensive steps

to close the achievement gap and turn around low performing schools. This will call for a

significant increase in funding. Therefore, all of these components must be provided with

continued investment and funding (Miller).

Spellings (2008) introduced *Building on Results: A Blueprint for Strengthening

the No Child Left Behind Act*. This report was designed to provide the provisions needed

by schools and educators to meet the 2014 goal of every student being able to read and

perform math at or above grade level. Implementation of this blueprint called for

differentiated accountability. Differentiated accountability allows states to differentiate

between schools in need of improvement and schools that need major reform. Four key

areas of the proposal were continued accountability and identification of schools in need

of improvement, categorizing schools to identify those that need significant intervention,

providing a strategic plan and action steps for intervention, and identifying interventions

for the low performing schools (Spellings). In order for the states to obtain the necessary

resources for schools in need of intense intervention and restructure, they must build their

capacity, take the most intensive actions in the lowest performing schools, address

teacher effectiveness, and utilize data to determine categories of intervention and the

methods of intervention to be implemented (Spellings).

The MAP assessment that was developed by the Missouri Education Department assesses students in the areas of communication arts and mathematics. Because of the need for students to perform well on this assessment, the focus of educators has been to concentrate on the specific areas of assessment. This assessment has been used as the indicator for student achievement to meet NCLB standards (DESE, 2008).

Student Achievement

A study conducted by Konstantopoulos (2006) on the relationship between school effects and student achievement used three national surveys from the 1970's, 1980's and 1990's eras. These surveys supplied student achievement, student background, and student attributes data. Between-school differences of student achievement were observed and the significance of school attributes in the prediction of student performance over time was examined. Konstantopoulos identified school location, socioeconomic status, and other school attributes as having a significant effect on student performance. Students who attended low-poverty schools had higher average performance rates whereas high-poverty schools had lower average performance rates. The schools with greater student attendance rates, along with other variables, attained higher student achievement rates than other schools. The between-school differences in student performance were significant, indicating the importance of the schools. Excluding the net effect of student backgrounds, Konstantopoulos concluded school factors and teacher effects are important predictors of student achievement. According to the National Center for Education Statistics (2004), students from higher-income households had higher student performance scores than low-income students in all academic subject areas.

Biegel (2000) completed a study to observe the relationship attendance, academic achievement, and equal educational opportunity. The team working with Biegel found there was a correlation between student achievement and attendance. What happened before and after school was critical in improving student achievement. Biegel's (2000) examination of research from the Educational Testing Agency identified the home environment as one of the main factors affecting student achievement. The report showed that students who were a minority or of a lower socioeconomic status had to face obstacles that affected student achievement that regular students did not have to face (Biegel).

Wood (2003) found family income was a dependable indicator in the prediction levels of student performance. Students who came from the lower socioeconomic status were more apt to have lower performance than students from middle and higher-income levels. In addition, these students were more at risk of not graduating. These students were also more likely to be retained, suspended, or expelled. Curtis and Toutkoushian (2005) confirmed the findings of Wood. Their research showed a significant correlation between socioeconomic factors of high school students and average student performance.

Martucci's (2002) study conducted with the San Diego Unified School District discovered that high-poverty schools received fewer resources to educate these high-poverty students. This finding revealed students from high-poverty schools were behind academically as compared to students from affluent schools. In addition, it also found that absenteeism was an important negative indicator of student achievement in reading and math. Teacher experience, education level, and credentials had some effect on student achievement, but those traits were not significant. It also appeared that student

achievement could be positively influenced by student achievement of other students in their own grade, rather than in individual classes. According to Martucci, the Meadowbrook School in San Diego County was successful in improving student achievement by providing a learning environment that was active, yet calm and positive, and yielded an attendance rate of 97.3 percent. All these positive factors were fostered by developing a keen sense of community (Martucci).

Attendance

Railsback (2004) discovered attendance was considered a critical component to increasing student achievement. It was considered so important the NCLB legislation included attendance as a component in determining the AYP for elementary and middle schools. The AYP for high schools used dropout rates rather than attendance (DESE, 2004). However, poor attendance has been linked to dropping out (Chung, 2004). A study conducted by Aos (2004) determined the Becca Law had affected attendance and enrollment in a significant manner. Additional research conducted by Clement, Gwynne, & Younkin (2004) listed reasons students gave for not attending school regularly: students thought the classes were boring and time-wasters, students' relationships with the teachers were negative, students' relationships with other students were negative, students were frequently suspended, students felt unsafe at school, students were failing classes, classes were not engaging, students were unable to work and attend school (Clement & Younkin; Wagstaff, Combs & Jarvis, 2000).

Roby (2000) conducted a landmark study on the variables of student achievement and student attendance. Roby found there was a significant variance, 60 percent, between student attendance and student achievement for ninth graders. The study indicated more

frequent attendance was consistent with higher test score averages. Consequently, he concluded the correlation between student attendance and student achievement was moderate to strong. A Minneapolis study found that students who had an attendance rate of 95 percent had a much greater chance of passing the state language test as compared to students with only an 85 percent attendance rate (Johnston, 2000). In Buffalo and Rochester, New York, research found that students who had an attendance rate of 93 percent scored between 85 and 100 on state English tests. Students who had an attendance rate of 85 percent scored below the 54th percentile (Johnston). In San Francisco, there appeared to be a pattern of low attending students. The characteristics of these students were they came from a home environment that had no stability or structure, they came from homes of lower socioeconomic status, and parental supervision was almost nonexistent (Johnston). Chung (2004) observed from his personal teaching experience that at-risk students who missed a lot of school either did not perform well in school, dropped out, or required extensive tutoring in order to get caught up on work. Overall, Chung concluded that evidence suggested attendance had an effect on student performance.

According to Delisio (2002), in Naugatuck, Connecticut, the principal wanted to increase student attendance because he believed attendance and student performance were related. Through partnering with the town government, a law was passed that gave police officers authority to issue a $25 fine to the parents of students who were consistently absent. Tickets were also given if the students were seen on the street during school time. This was a last-step action if parents did not respond to communication from the attendance officer. Most of the time this was an effective consequence (Delisio).

The Public Policy Institute of California researchers found similar results. In almost all models studied, the factor that appeared most significant centered on the time students spent at school rather than the resources available to these students (California Department of Education, 2007). Betts, Zau, and Rice (2003) studied a series of models to determine factors that affect student achievement. They found in every model the attendance factor was a significant factor in predicting a student's improvement in math and reading performance. Consequently, the high percentage of absenteeism was a strong negative indicator of the student's achievement in those areas (Betts, Zau, & Rice).

In the Morris and Rutt (2005) study on the effect of high absence rates on student attainment, authorized and unauthorized absences of students in the seventh grade through the tenth grade in 454 schools covering a three-year period were considered. For five percent of the students, unauthorized absences amounted to two weeks. For one-third of the students, authorized absences amounted to one week. This study found a significant correlation between both authorized and unauthorized absences and performance. Higher levels of unauthorized absences indicated a higher significance in lower student performance. In addition, evidence from the study indicated there were critical thresholds of absenteeism, 31 or more half-days, that were linked to significantly lower performance, regardless of whether the absences were authorized or unauthorized (Morris & Rutt)

Highly Qualified Teachers

Data taken from The National Assessment of Educational Progress (NAEP) and Schools and Staffing Surveys (SASS) were utilized to explore the relationship of teacher qualifications and student achievement across 50 states. Both qualitative and quantitative

data were examined and analyzed. The quantitative data revealed that teacher

preparedness and teacher certification were the most significant variables correlating to

student achievement in both reading and math. This held true with both high-poverty and

low-poverty school data (Darling-Hammond, 2000). From this same data, Rivkin,

Hanushek, and Kain (2005) discovered the largest differences in reading and math

achievement scores were the result of the differentiation of teacher quality.

Another variable, defined as one all highly qualified teachers must possess

according to NCLB, was proof of knowledge of subject matter (DESE, 2004).

Surprisingly, research has revealed that while there is some relevance to this factor, the

findings were not as significant as might be assumed. Studies based on the results from

The National Teacher Examinations (NTE) discovered no significant relationship

between knowledge of subject matter and teacher performance in regard to student

achievement (Andrews, Blackmon, & Mackey, 2005).

Other research by The Institute for Professional Development (2004) revealed

highly qualified teachers [italics added] as defined by NCLB does not go far enough in

setting high standards for a highly qualified teacher. The Institute concluded even though

content knowledge should be a necessary component, it alone is not the only identifier of

a highly qualified teacher. Teachers who achieve certification by alternative means lack

the preparation necessary to be effective in the classroom, such as teaching strategies,

classroom management, etc. Therefore, these teachers are far from meriting the definition

of a highly qualified teacher (Institute for, 2004). According to the U. S. Department of

Education (2002) a highly qualified teacher is one with "superior verbal ability and

content knowledge, who has the ability to use instructional strategies, that draw on scientifically based research, and who are adept at so-called best practices" (p. 387).

Another NCLB requirement of a highly qualified teacher is certification in subject area (DESE, 2004). Certification requirements vary from state to state. Recent studies have found a significant correlation between teachers' qualifications and student learning. Darling-Hammond, Holtzman, Gatlin, and Heilig (2005) used the Houston Independent School District teacher and student data from 1995 to 2002 in grades three and higher in their analysis. Their findings revealed teachers who were fully certified showed consistently greater student achievement improvement than the non-certified teachers. Alternative certification of *Teach for America* (TFA) teachers performed similar to the non-certified teachers. However, the TFA teachers who went on to get their certification performed comparable to other certified teachers. The researchers expected effective teachers to possess subject content knowledge, ability to teach all students, ability to maintain good classroom management, ability to work with stakeholders, and other pedagogical skills. In order to be certified in Texas, teachers must have completed an appropriate teacher education program, as well as demonstrated the above skills. It was evident that students of teachers who did not meet these certification requirements for full certification, which included the TFA teachers, performed at grade level equivalents one-half to three months lower than students taught by fully certified teachers. Non-certified teachers or teachers not fully certified revealed grade level equivalents .2 to 1.5 months behind the fully certified teachers. Students who were taught by numerous non-certified teachers each year could drop one to two years in grade level equivalents from kindergarten to the sixth grade. It was evident the Houston students who were taught by

fully certified teachers as opposed to non-certified teachers had greater performance gains in both math and reading (Darling-Hammond, et al.).

Student achievement of high school students in math and science, taken from data provided by the National Longitudinal Studies of 1988, showed teachers who were fully certified had a significant impact on the test scores of these students (Goldhaber & Brewer, 2000), in comparison to teachers who were not certified in their subject area; however, no difference was found in student achievement growth between students who were taught by teachers who were fully certified and teachers who possessed emergency certification (Goldhaber & Brewer).

Fuller and Alexander (2004) researched certificated and non-certificated math teachers in the state of Texas who taught students of similar backgrounds. The findings indicated the students who were taught by certified teachers scored higher on their math achievement test than students who were taught by non-certified teachers. In a similar study, Laczko-Kerr and Berliner (2002) examined elementary students' math achievement scores and found students who were taught by non-certified teachers performed significantly lower than students taught by certified teachers who were new teachers. Darling-Hammond (1999) identified a significant positive correlation between teacher certification and student achievement and a significant negative correlation between a large proportion of new and uncertified teachers in a school and student achievement.

Jerald and Ingersoll (2002) noted that students from high-poverty schools were 77 percent more likely to have teachers who were not teaching in their subject area than in low-poverty schools. High-poverty students were twice as likely to have teachers with

less than three years experience (National Center for, 2004). Clotfelter, Ladd, and Vigdor (2007) concurred with the findings of Jerald and Ingersoll. They found a lack of highly qualified teachers in high-poverty schools contributed to under-performance. High-poverty schools also had more teachers who were not teaching in the content area for which they were licensed (Clotfelter, Ladd, & Vigdor). Smink and Reimer (2005) observed that students taught by highly effective teachers increased their student achievement level by as much as 53 percent. Districts that were predominately high-poverty were more likely to have non-certified teachers (Darling-Hammond, 1999). One study that determined the *point of no return* [italics added] for improving student achievement occurred when the proportion of ineffective and unqualified teachers was approximately 20 percent of the total faculty (Center for Public Education, 2005).

From a national perspective, Darling-Hammond (2000) utilized data from Schools and Staffing Surveys and National Assessment of Education Progress for the years 1993-1994. This study examined 65,000 teachers, 13,000 principals, and 5,600 school districts to determine the correlation of teacher quality to student achievement. The study revealed that students of lower socioeconomic status were less likely to have high quality teachers, thus their student achievement scores were significantly lower. It also concluded there was a very significant correlation between high quality teachers and higher student achievement outcomes. The strongest significant relationship of teacher quality and student achievement, regardless of student background, was between teachers who had full certification and were teaching in their subject degree area. This factor was the most consistent and significant predictor of student achievement in reading and math (Darling-Hammond). According to the Darling-Hammond (2000) study, the correlation between

the percent of highly qualified teachers and student achievement for math students in grade four in 1992 was .71. The correlation for math in 1996 for fourth graders was .61. In grade eight, the math correlation in 1990 was .75. In grade eight, the math correlation in 1996 was .67. In reading, the correlation for grade four in 1992 was .80. The correlation in reading in 1994 for grade four was .75. Thus, significant correlations between teacher quality and student achievement were observed. The findings were even more astounding for teachers who taught out of their subject area. In the same grade levels and during the same years as above, the correlations ran from -.32 to -.56. This indicated there were significant negative correlations between teachers who taught out of their subject area and student achievement (Darling-Hammond). Many demographic characteristics of students were significantly correlated to student achievement at each state level. However, these factors were less predictive of student achievement than the variable of high quality teachers. Teacher quality was more significant than other factors, such as class size, available resources, and teacher salaries. A high quality teacher possessed full certification and was teaching in his/her subject area. (Darling-Hammond).

Tennessee was the first state to implement a data-tracking system that measured the relationship of the performance of teachers to student achievement improvement. The Tennessee Value-Added Assessment System (TVAAS) was implemented in 1990 in grades two through eight. An analysis of the data obtained by this tracking system showed a significant gain in student achievement as correlated with teacher quality (Nye, B., Konstantopoulos, S., & Hedes, L., 2004). In addition, it was determined students who were of lower socioeconomic status benefited more from a highly qualified teacher than more advantaged students (Nye, et al.).

In a four-year follow-up study, Konstantopoulos (2007) sought to determine if teacher effectiveness had a continuing effect on student achievement. His findings indicated there was a cumulative and lasting benefit up to three years in the elementary school. The results of teacher effectiveness on math achievement were significant in grade one. The results for grades two and three were also positive and significant. For reading achievement, the results were also positive and significant in grades one through three. Konstantopoulos's research indicated teacher effectiveness is predictive in subsequent years and is more significant for reading than math, even though both findings were significant. The other part of this study was to determine if teacher effectiveness persists over time. The findings indicated a positive association of teacher effects over time in both math and reading. When student achievement for math was considered, teacher effects were not as significant in grades one through three. The end result pointed to the teacher effects as being more significant and important in reading student achievement than in math student achievement (Konstantopoulos).

Walsh (2001) reviewed approximately 150 studies over a 50 year period in order to identify the relationship between teacher preparation and the achievement of students. The report found many inconsistencies in the manner in which previous research studies were conducted. Bias was evident as data were selected that were not reflective of the proposed intent of the research. Certain studies did not use valid and reliable statistical analysis. Walsh concentrated only on research that examined the correlation between teacher effects and education background in relationship to student achievement. Consequently, student achievement was the only measurement utilized to determine the effectiveness of a teacher (Walsh).

Among the studies, Walsh's (2001) review of research identified that teacher effects had a positive effect on student achievement. One analysis that was contradictory to the findings was on teacher certification, in particular, and student achievement which indicated certified teachers were not more effective in improving student achievement than non-certified teachers. The teacher effect that had the most significant effect on raising student achievement was the teacher's verbal or general cognitive ability (Walsh, 2001).

Class Size

Biddle and Berliner (2002) believed even though there have been numerous studies on the effect of smaller class sizes on student achievement, earlier findings involved serious flaws in their research process. Other studies conducted were biased by conservative economists who were convinced public education was ineffective. According to Biddle and Berliner, Eric Hanushek was very biased in his conclusions. When other researchers reviewed his work, it was found his research was based on very small samples. Hanushek used other biased studies to validate his conclusions. Consequently, educational researchers have given no credence to his findings (Biddle & Berliner). There have been other surveys conducted which produced conflicting findings. Ferguson and Ladd surveyed students in the fourth grade in Alabama and found class size had significant effects on student achievement (Biddle & Berliner), whereas Elliott surveyed eighth grade students and found increases in student achievement were not correlated significantly with class size (Biddle & Berliner). There have been many studies since that time that have been broadened and more controlled to account for more

reliable findings, such as the STAR Project, the SAGE program, and others (Biddle &

Berliner).

Krueger (2003) reanalyzed Hanushek's data to determine if the conclusions

reached by Hanushek were in error. Hanushek assigned equal weight to every estimate

when analyzing his data. Unfortunately, this allowed more weight to be given to certain

studies than others. This method placed an unequal amount of proportional weight on a

small number of studies that used small samples and estimated models that were

inappropriately specified. This error occurred because Hanushek took more estimates

from studies that analyzed sub-samples than from studies that analyzed complete samples

(Krueger). Using the same data, however, Krueger used individual studies to conduct his

analysis of the data rather than using individual estimates like Hanushek. Kruegers'

findings indicated there was, in fact, a significant relationship between class size and

student achievement.

Krueger (2003) was interested in the feasibility of smaller classes. Therefore, he

conducted a cost-benefit analysis, which had never been done, to determine if the

investment in smaller class sizes yielded a positive return. Krueger used data from the

Tennessee Project STAR study. Specifically, he looked at the costs and benefits

associated with reducing class size from 22 students to 15 students in grades K-3. The

costs, benefits, and rates of return were determined by using discount rates of two percent

to six percent and annual productivity growth rates of zero to two percent in the

calculations. The findings from this component of Krueger's study indicated reducing

class size in grades K-3 from 22 students to 15 students was a sound economic option.

Every dollar invested in reducing class size yielded approximately two dollars in increased earnings for those students during their lifetime of work (Krueger).

Class size research, reviewed by The American Federation of Teachers (2008), revealed findings supportive of the small class concept. The review of research included Project STAR, the SAGE Program, and the Rouse study. They concurred that by reducing the class size, there was a positive effect on student achievement. They believed the impact of smaller class size was more significant in schools that were identified as high-poverty. The research indicated the reduction of class size was most successful if classes ranged between 15 and 19 pupils, there were low-achieving and low-income students, qualified teachers were the norm, and classroom space was sufficient (American Federation of Teachers).

Another landmark study was Wisconsin's SAGE project, which was executed to determine if a reduction in class size would correlate to an increase in student achievement for high-poverty students. SAGE basically duplicated the same K-3 class sizes. The results indicated there was a significant increase in student achievement in math, reading, and language arts of high-poverty students in smaller class sizes categories (Achilles, 1996).

In 1996, a major initiative was implemented in the state of the California education system that attempted to duplicate the SAGE program. A synopsis of the findings of the Class Size Reduction (CSR) study after a four year period was summarized by the CSR Research Consortium Capstone Report (Bohrnstedt & Stecher, 2002). The program was not well planned and was implemented much too quickly. Implementation was completed by the fourth year through grades K-3. Schools in

districts with higher percentages of low-income and minority students lagged behind in the implementation of the program. This was due to a lack of space in their facilities to accommodate the number of classrooms needed. The correlation between classroom size reduction and student achievement was minimal. However, there was limited evidence in this study of the relationship between class size and student achievement. Although the correlation was very small, findings did indicate that as students moved from the third grade to the fourth grade after participating in the reduced class size program, the scores were higher than for students who did not participate in the program (Bohrnstedt & Stecher). Other factors were also investigated in this study. There was a shortage of qualified teachers to meet the needs associated with adding classrooms. Therefore, many teachers were hired who were not certified. Additionally, there was not an equitable distribution of qualified teachers since teachers who were not certified were distributed to the high-poverty schools (Bohrnstedt & Stecher).

Comparatively, the Tennessee STAR project included 6,000 students from grades K-3 in 80 schools and space was available for additional classrooms (Bohrnstedt & Stecher, 2002). The California study implemented the CSR program in the first year with close to one million students in 86,000 classrooms (Bohrnstedt & Stecher). This was a serious flaw in California's implementation because there was not enough space for the additional classrooms needed. Tennessee did not have a shortage of teachers when they implemented the STAR project. California had a tremendous shortage of credentialed teachers to fill the additional classrooms needed to implement the program (Bohrnstedt & Stecher).

A critical study by Blatchford and Mortimore (1994) found the correlation between small class size and student achievement was more significant for secondary schools as compared to lower level grades. A number of explanations were given as to why there was a significant correlation between smaller class sizes and student achievement in the relevant studies conducted on these variables. Smaller class size was predictive of the following: it created a more positive learning environment, students were able to receive more individual attention, teachers were given more freedom to implement varied teaching strategies and instructional methods, there was more time to work with the parents, there were fewer distractions, and students developed a closer relationship with their teacher and other students which increased student engagement (Blatchford & Mortimore). One important factor that needs to be considered is the need for additional qualified teachers when class size reduction is implemented. This could become a problem for schools if the supply of qualified teachers is limited (Mclaughlin & Drori, 2000).

A more recent study by Betts, Zau, and Rice (2003) was conducted in California to identify factors that contributed to student achievement gains. Their findings indicated overall class size and peer influences had a more significant effect in middle and high schools as opposed to elementary schools. The researchers determined class size impacted reading achievement in the elementary schools (Betts, et al.).

The Tennessee Project STAR study has been one of the more important and reliable landmark studies conducted on student achievement and class size. Frederick Mosteller, a professor of mathematical statistics at Harvard University stated "the STAR Project was one of the most significant educational experiments ever conducted"

(Mosteller, 1995, p. 113). It was a four year study that was conducted much like an experimental research study would be conducted. The sample consisted of 7,000 students from over 300 classrooms in 79 different schools. There was random distribution of students and teachers into the three class groups of small classes (13-17 students), regular classes (22-25 students), and regular classes which had a teacher aide (22-25 students). The schools studied included schools in various locations, such as rural, urban, inner-city, and suburban. All schools incorporated at least one of each of the class groups. The study was led by Elizabeth Word from 1985-1989. It demonstrated a strong link between smaller class sizes and test scores taken from the Stanford Achievement test and the Basic Skills Test in grades K-3. The study followed the students from grades kindergarten through the third grade. The results of this study clearly revealed significant improvement in all academic areas for students who were in smaller classes. The addition of a teacher aide did not indicate any advantage. (Word, E., et al.).

Another important finding fro-m the STAR Project was the significance of the predictive behavior of students who attended the small classes for four years. They were more likely to graduate from high school than students in regular classes. This finding was even more profound for students who were considered high-poverty students. Consequently, this study pointed to increased positive predictive behavior in the long-term (Finn, et al.).

Clotfelter, Ladd, and Vigdor (2007) studied the relationship between teacher quality by examining teacher credentials and student achievement. The data used in this study included 75 percent of students from North Carolina in grades three through five from 1994 to 2003. One of the findings showed by adding five students to the class, math

achievement scores were reduced from .015 to .025 standard deviations. It also reduced

reading achievement scores from .010 to .020 standard deviations.

Much of the research that has been conducted over the years concerning the

relationship between reduced class size and student achievement has indicated a positive

correlation as opposed to larger class size and student achievement. An article from the

American Educational Research Association revealed some of the reasons reduction in

class size seemed to be effective. There was a change in both student and teacher

behavior when the class size was reduced, since teachers had more time to give

individual attention to the students. When the class was smaller, students had

opportunity to become more involved in the class activities, and there was less disruption

due to inappropriate student behavior in smaller classes (Resnick, 2003).

The American Educational Research Association article by Resnick (2003)

suggested that in order for smaller class sizes to be effective, early intervention, starting

in kindergarten, was very important. The class size should be kept at a number between

13 and 17 students. If there were only limited resources to be dedicated to the reduction

in class size, at-risk students should be the focus of the class size reduction initiative.

Smaller class size for participating students should be consistent every day in all classes.

In order for the smaller class size initiative to be effective, it should remain in place at

least two years. However, for long-term, lasting effectiveness, the program should remain

in place three to four years (Resnick).

High-Poverty Schools and Low-Poverty Schools

According to Pogrow, three points of view were offered as explanations for

contributions to high-poverty schools. Equity of resources needed to be administered in

order for high-poverty schools to be successful. Another view stated there were high-poverty schools that were successful regardless of resources allocated. Consequently, poverty should not be rendered as an excuse for poor performance. The third viewpoint implied significant school improvement can not occur unless social policy and economic opportunities were addressed in the educational system (as cited in Machtinger, 2007).

Machtinger (2007) found there was general agreement that high-poverty schools were below average in student performance, graduation rates, and other school objectives. There was not, however, a consensus on the matter of the school's contribution as compared to the external factors that affected these outcomes. A lack of resource allocation was noted in the areas of principal leadership, parental involvement, and school safety in high-poverty schools as compared to low-poverty schools (Machtinger). Controversy existed in regard to the importance of resources. Thus, some believed more resources were needed to promote student improvement, while others believed increased resources were not the answer, since there are high-poverty schools that have been successful in increasing student achievement without additional resources (Machtinger).

In order to encourage improvement in test scores, Chattanooga, Tennessee, offered monetary stipends to teachers who were able to raise test scores in the high-poverty schools (Carey, 2004). Meyerson (2000) revealed education courses and teacher training were critical in increasing the teachers' effectiveness in high-poverty schools. The courses included multi-cultural studies of poverty. These types of resources were useful in helping educators and non-educators understand the causes of low academic success. In many instances low achievement was attributed to a lack of effort or ability

when, in fact, the real contributors to poor performance was the cause and effects of poverty (Meyerson).

A study conducted by a team from the Northwest Evaluation Association found that there was an achievement gap between students in affluent schools and high-poverty schools for all grade levels and subject areas. In the growth area, schools with high-poverty levels made less growth than low-poverty schools. In addition, the students from high-poverty schools lost more ground over the summer than students from low-poverty schools (McCall, M., Hauser, C., Cronin, J., Kingsbury, G., & Hauser, R. (2006).

In Coleman's (1966) landmark study, high-poverty schools were generally found to consist of students who were economically segregated by their attendance boundaries. Therefore, the population of these schools consisted of mostly poor students and minorities. Schools where the poverty rate was higher lost the more affluent students to private schools and non-neighborhood schools. According to Coleman, the economic mix of a school's population had a significant effect on the students' academic success, even when not considering the family backgrounds. Because of parental decisions to move their children away from the high-poverty schools, it appeared the parents' decision was based on race when, in fact, their decision was based on other factors, such as academics, safety, and religion (Coleman). Research conducted by Greene and Winters (2005) determined that white and more affluent families moved their children to a private school setting so they could receive a better education and learn in a safer environment. With the migration of the more affluent students away from the high-poverty schools, the result was a higher concentration of poor and minority students in these public schools (Greene). According to Orfield and Lee (2005), there was compelling evidence that high-

poverty schools that were desegregated had higher achievement rates. Unfortunately, many high-poverty schools were not desegregated. The National Center for Education Statistics (2004) reported that African American and Latino children were more likely to attend high-poverty schools where 75 percent or more of the students qualified for the free lunch program.

Prior to NCLB, Ward and Chavis (1997) reviewed a significant report published by the Office of Program Policy Analysis and Government Accountability, which proposed high-poverty schools had significantly lower test scores as compared to schools that had fewer lower socioeconomic family populations. This report suggested that academic performance could be improved in high-poverty schools by setting high expectations for students. Parental involvement in the child's education helped to improve student achievement; however, many times it was impossible for parents to be involved due to limited time, limited resources, cultural barriers, and limited educational knowledge (Ward & Chavis). Considering these challenges, involvement by low-income parents in their child's education was minimal. Students who attended high-poverty schools had excessive absences, about two times more than low-poverty schools. These schools had higher incidences of disciplinary issues. Safety in high-poverty schools was also an issue. With so many challenges in the high-poverty schools, it was difficult for these schools to provide a learning environment that was conducive to learning (Ward & Chavis).

This same report found there were several important factors that limited high-poverty schools in achieving high expectations. Some stakeholders believed the student's background prevented them from attaining goals. Consequently, the stakeholders were

unable to see the value of setting high expectations. The same group of stakeholders, consisting of parents and the community, were not required to be accountable for student achievement (Ward & Chavis, 1997).

More recent research indicated that students of lower income levels who attended schools that had lower levels of poverty had better academic results than students of lower income levels who attended high-poverty schools (Rumberger & Palardy, 2005). In this study, the composition of the student's high school had just as much effect on student achievement as the student's personal socioeconomic status (Rumberger & Palardy).

Florida has been the center of much controversy over the Florida Comprehensive Assessment Test (FCAT) (Bethesda, 2003). This controversy has escalated because of the inequity of its administration. The test was used to determine whether students would graduate regardless of the student's performance on other assessments during high school. Because of the inequity of the test itself in measuring student performance, it promoted dropping out of school and emotional problems and prevented academic improvement (Bethesda). The findings regarding Florida schools indicated possible negative outcomes in attempting to fulfill the requirements of NCLB. However, the H. W. Wilson Company (2003) revealed in their report, *Failing the Equity Test,* that the administration of the FCAT test had punished innocent students who received an inequitable education. These students came to school without the knowledge and skills needed to succeed, which caused below average performance on test scores. The students from high-poverty schools and environments were economically deprived, and that issue became an education issue. By reviewing the poverty rates in 600 elementary Florida schools, it was determined there was a wide variance among schools. The poverty rates

ran from 1.3 percent to over 99 percent. When comparing the relationship between poverty rates and test scores on the FCAT test, poverty rate was identified as the main predictor of student scores on the FCAT (H. W. Wilson). In 2002, the reading test for grade five revealed 77 percent of the variance among the schools was due to the poverty rate. In grade three, it was 74 percent, and in grade four, the results indicated 71 percent (H. W. Wilson). The findings clearly indicated high-poverty rates were predictive of below average FCAT reading achievement scores, and low-poverty rates were predictive of above average reading achievement scores. The findings further revealed high-poverty rate schools had more students score in the lower two levels of achievement, whereas, in low-poverty rate schools, more students scored in the higher two levels of achievement (H. W. Wilson Company). Dorman's (2001) research agreed with these findings. Dorman reported a statistically significant correlation between high poverty students, as defined by those who participated in free and reduced lunch programs, and student achievement in both reading and math FCAT scores for grades four and eight (Dorman).

Additionally, Kim and Sunderman (2005) concluded results similar to other previous studies regarding socioeconomic status of students and student performance. The findings revealed significant correlations between student performance and socioeconomic status in Virginia and California. There was a significantly high correlation between high-poverty school students and student achievement scores. These schools failed to meet AYP for a six-year period based on the mean proficiency level. These findings were compared to students who attended low-poverty schools where there was a positive correlation between those schools and student achievement based on the mean proficiency measure over the same time period in the state of Virginia. However,

when the level of improvement was used as the measurement for the six-year period, both

high-poverty and low-poverty schools were consistently similar in their improvement

level. Even when improving proficiency levels and meeting the standards, if one

subgroup did not meet AYP, the school was considered a failing school. A number of

high-poverty schools failed to meet AYP because of the subgroup policy (Kim &

Sunderman). California implemented a compensatory accountability system. By allowing

one subgroup to compensate for another, it allowed one subject area to compensate for

another subject area. However, NCLB uses a system that can prevent a school from

attaining AYP by low performance in one subgroup.

Because the present NCLB system is not equitable in measuring true

performance, Kim and Sunderman (2005) have made recommendations for a more valid

system of accountability. Rather than using the mean proficiency as the accountability

measurement, they suggested using a measure of improvement covering several

consecutive years. The mean proficiency, as a single measure, is not valid because it does

not take into account the academic skill's gap and socioeconomic status of students

before they enter school (Kim & Sunderman).

The Center for Public Education (2005) reported there was additional research

that revealed there were high-performing, high-poverty schools making a difference in

students' performance. These high-performing, high-poverty schools revealed some

specific characteristics. The faculties of these schools set high standards and provided

classroom environments that were positive and nurturing (Carter, 2000; Kannapel &

Clements, 2005). Teachers provided individualized instruction to students once their

areas of weakness were determined by continual assessments (Barth, Haycock, Jackson,

Mora, Ruiz, et al., 1999; Carter; Corallo & McDonald, 2001; Kannapel & Clements). The curriculum taught to students was aligned with the state standards (Barth, et al; Carter; Corallo & McDonald; Kannapel & Clements). There was collaboration between teachers and staff in decision making (Kannapel & Clements). Collaboration between teachers and specialists was present in an attempt to improve the performance of all students (Council of Chief State School Officers, 2002). Classrooms were taught by highly qualified teachers (Ascher & Fruchter, 2001; Carter). Finally, there was parent participation in helping their children succeed (Barth, et al; Carter).

Research by Black (2007) found low-poverty schools, more affluent schools, outperform high poverty schools not only in the United States, but in other countries as well. In Australia, students from the more affluent schools excelled in literacy an average of three school years ahead of the poorer schools. Australian schools exhibited a more significant gap between student achievement and socioeconomic background than most countries (Black). Other countries, such as Japan, Korea, Sweden, Canada, Finland, and Iceland, tended to have smaller educational gaps between the more affluent schools and high poverty schools. Finland had the smallest gap between the quality of education in both low-poverty and high-poverty schools, and their overall performance gap was within a five percent range (Black). Also, Australian students of lower socioeconomic status who attended more affluent schools performed better than their counterparts who attended less affluent schools (Black).

A study conducted by Konstantopoulos (2006) examined the relationship between school effects as measured between schools and student achievement. The study also examined the relationship between school effects as measured within schools and student

achievement. By conducting the study in this manner, Konstantopoulos was able to identify specific school effects that were more or less significant. The results indicated overall the between-school differences were more significant in math and science than in reading. This could indicate that school resources, such as teacher quality, influence math and science more. In addition, Konstantopoulos concluded socioeconomic status and other student body characteristics had a profound effect on student achievement. Students who attended schools of higher socioeconomic status had a higher student achievement rate than students who attended schools with a lower socioeconomic student body. Finally, school effects and teacher quality were more significant factors in the prediction of student achievement than the effects of the student's background (Konstantopoulos).

According to Neal (2007), a review of Gerald Bracey's commentary revealed there was never a school that transferred students in a low-poverty school to a high-poverty school and then measured the student achievement levels. However, it has been possible to determine the results in such a scenario by examining how high-poverty students are performing in low-poverty, affluent, schools. Using Bracey's definition of affluent schools, these included schools with no more than 10 percent high-poverty students. Out of 99 schools in the state of Pennsylvania, Bracey found the low-poverty students were performing significantly higher than the high-poverty students even in the more affluent schools. In addition, the high-poverty students of these affluent schools performed 8.77 points below the state average. From these results for the state of Pennsylvania, it appears low-poverty schools have not performed any better in teaching high-poverty students than the high-poverty schools (Neal).

Strategies to Improve Student Attendance

Nemec and Watson (2007) researched interventions that could be implemented to improve student attendance. They found students were more likely to come to school if the curriculum was interesting to them. Students attended more regularly when teachers cared about them and offered reward incentives for attendance (Nemec & Watson). Most of these students came from low-income homes and felt unwanted because they had already been suspended from other schools. The average daily attendance rate at the school studied was 78 percent. At this school 102 of the 303 students exceeded the number of absences allowed to pass (Nemec & Watson). The reasons students gave for their absences included illness, 34 percent; court dates, 12 percent; and laziness or uninterested, 40 percent. Students gave the following reasons for wanting to attend school: they liked the class and liked the teacher. Students studied believed negative consequences administered for absenteeism were not effective. Rather, 75 percent of the students believed positive reinforcement was more effective in improving attendance (Nemec & Watson).

Student attendance has become a major focus of educators. Since many studies have identified student attendance as an important factor in improving student achievement, schools have facilitated the implementation of programs and strategies to help increase student attendance. In Temecula Valley, California, a reward system, *Count Me In*! [italics added] has been implemented to increase student attendance. Some students have won cars, iPods, computers, digital cameras, bikes, and trips. Certain schools offered monthly prizes to encourage students on a day-to-day basis, thereby

increasing the attendance rate to 96 percent. Since the implementation of the incentives-based program, overall attendance increased 55 percent in these schools (Bafile, 2007).

In Denver, Judith Martinez of the National Center for School Engagement (NCSE) has identified some key characteristics and themes that have made attendance programs successful (Bafile, 2007). Some of these included parental involvement; support systems with incentives; collaboration with outside agencies, including law enforcement; and goals for academic performance. Martinez has recommended the implementation of policies that encourage student attendance rather than sanctions that push students away from school (Bafile).

Olson (2006) found more focused curriculum and addressing individual learning styles of students helped to improve student attendance. Another study showed student achievement could be increased by 53 percent when the teacher was an effective teacher (Smink & Reimer, 2005). Research conducted by Nemec and Watson (2007) found activities outside of the classroom and outside of the normal school day helped motivate students to attend school. Activities such as cookouts, concerts, field trips, gym activities, jean days, and free hamburgers were incentives implemented to increase attendance.

Research from Word, E., et al. (1990) revealed strategies that were implemented in numerous cities to combat student absenteeism. In Hartford, Connecticut, students who had perfect attendance were able to participate in a drawing for a new car donated by a local car dealership. In Columbus, Ohio, a team was developed from the court system to address absenteeism by mediating with teachers and parents. Many strategies that were implemented were punitive in nature. Some punitive strategies that were implemented by various cities included fines, termination of public assistance funds, and suspension of

driver's licenses. Most of these strategies missed the mark by identifying the family as the target of attendance problems. Surveys that were administered to students with high absenteeism indicated other factors as the cause of their absences. These students identified boredom, courses that were immaterial, suspensions, and negative relationships with teachers as the main causes of the absences. Other factors identified as reasons for student absenteeism were lack of success academically, few friends who attended school, and a feeling of unacceptance (Word, et al.). The research enumerated components that were important to incorporate in an attendance improvement program: policies that addressed the increase of consequences as absences rise; offerings of non-academic classes, career and technical classes, work study programs, and counseling programs; opportunities that provided success for students who were lagging behind, such as tutoring or online programs; continued encouragement of parental involvement; and opportunities provided for students to make friends who do come to school regularly (Word, et al.).

Hopkins (2006) reported that in Chester, Pennsylvania, the policy for non-attendance of students included fining the parents. However, this policy proved ineffective in increasing student attendance. Rather, Chester implemented a community service program for students who refused to attend school. This program was aimed at getting students to attend school, rather than penalizing their families when they did not attend. Most of the time the families did not have the money to pay the fines. If students failed to show up for community service, they were taken to a facility for juvenile offenders. There was a reduction in non-attendance since the implementation of this program (Hopkins).

In Los Angeles, parents faced criminal prosecution if they did not attend a school meeting regarding their child's attendance (Hopkins, 2006). This program caused the parents to become more responsible for their children. It improved attendance in nearly 80 percent of the cases. With students in school, the student's opportunity to succeed was improved and police arrests, teenage pregnancy, and gang involvement were decreased (Hopkins).

In New York, Hopkins (2006) found if students missed more than five days without an appropriate excuse, social services could cut the family's welfare benefits. This was applicable for students in grades one through six. This program encouraged parents to make sure their children in those particular grade levels attended school (Hopkins). In Chicago, a similar program was established to improve student attendance, and a truancy hotline was created to report students in non-attendance. Parents of the non-attendees could be penalized by the withholding of their welfare checks until they were compliant (Hopkins).

Columbus, Ohio, implemented a program called Student Mediation and Assistance to Reduce Truancy (SMART). This program required the parents to meet with school officials and Juvenile Court Protective officials in order to determine the reason their child was not attending school (Hopkins, 2006). The parents were warned they could be charged with neglect and fined or the children could be taken from the home. The program was successful in reducing truancy (Hopkins).

Wicomico County in the state of Maryland revised a law in 2004 to enable authorities to file civil complaints against students who were not attending school (de Vise, 2005). If a student ignored the court order, he/she was held for contempt of court.

Students who were determined to be truant could be ordered to attend counseling or

testing sessions, observe curfew orders, be confined to the home, or participate in drug

testing. In addition, the whole family could be required to attend counseling and social

services programs. Criminal charges were first brought against the parents if the children

were under the age of 12. If children were over 12, and the parents proved they had made

every effort to get their children to school, charges were filed against the student. Even

though this program was used as a last resort after other methods to keep students in

school had failed, it was successful in improving student attendance. In 2003-2004, high

school attendance improved to 91.6 percent, and middle school attendance improved to

92.1 percent (de Vise).

School, family, and community partnering is another avenue that was effective in

reducing absenteeism, according to research conducted by Sheldon and Epstein (2004).

This study revealed communicating with parents regarding student attendance was a key

component in improving attendance. In addition, rewarding and recognizing good

attendance was an effective strategy to encourage student attendance. Providing mentors

for students and implementing after-school programs were also effective attendance

motivators. Schools that offered a greater amount of activities, such as the above

mentioned, were more effective in decreasing the absenteeism percentage each year

(Sheldon & Epstein).

Strategies to Improve Student Achievement.

One of the most well-known educational researchers, Robert Marzano, conducted

research to aid in the improvement of student achievement. Scherer (2001) interviewed

Marzano on the critical issue of education standards. During the interview, Mazano stated

that standards were the most crucial component to significantly improve student achievement. He believed the standards that have been established have had positive effects on students and teachers. However, Marzano reported the standards were presently too numerous and too exhaustive. The standards addressed too much content and included too many activities. Consequently, the content needed to be cut by two-thirds in order to make the facilitation of standard implementation more achievable. Marzano also believed the state testing systems did not provide proper feedback on student progress. Marzano reported both internal and external forms of assessment, covering the standards assessed more regularly during the school year, was a more appropriate and accurate method of measuring whether the students were progressing toward the standards. In reference to the move toward national standards, Marzano proposed standards should target specific knowledge and skill goals. However, targets may not be appropriate for all subject areas. There were several classroom practices Marzano identified as important in improving student achievement. These included learning cooperatively; setting goals and receiving feedback; creating and testing hypotheses; giving praise for effort and achievement; note taking; accounting for diversity in the classroom; doing homework and practicing; and utilizing reminders, inquiries, and advance organizers (Scherer).

In 2003, Norm and Kathy Green reviewed the research of Marzano, Pickering, and Pollock's (2001) book, *Classroom Instruction That Works,* and summarized the concepts of these researchers on strategies to improve student achievement (Green & Green, 2003). One strategy encouraged students to identify similarities and differences in the concepts being taught by comparing, grouping, and creating metaphors. Another

strategy involved note taking and summarizing. Students needed to be able to summarize and analyze the material studied by putting the material in their own words. Another way of summarizing was to put the material in visual form to help students remember and recall the information. Teachers who provided examples of how effort brings positive results helped students to see the need to put forth effort. Along this same line, providing recognition for the accomplishments of students encouraged them to continue working toward achievement goals. When homework was assigned, students need to understand the purpose behind the assignment, which was given so practice could take place, thereby improving their achievement (Green). The use of nonlinguistic representations proved to be a very effective strategy in the classroom by increasing brain activity. The use of cooperative learning in the classroom also resulted in positive outcomes. It allows students to learn from each other, as well as contribute in a group environment. Giving students goals and objectives provided direction. Along with setting goals, there must be feedback so students know how they are progressing. Research showed that using a general rule or hypothesis to make a prediction is effective in increasing student achievement. It allows students to examine the problem and become more engaged in order to come up with a prediction. Finally, by using the strategy of cues, questions, and advance organizers, students were given the opportunity to use the knowledge they already had in order to increase their learning (Green).

In order to accomplish the mandate established by NCLB, to improve student achievement, this study also considered motivational theories as a way to employ creative policies to improve academic success. The theories were applied to provide direction and insight into motivational strategies in order to facilitate the improvement of student

achievement. Motivation played an important role in helping students make the right decisions among behavioral options. According to Moore (1998), one theory stated that effort and attendance led to attainment of improved performance. By students placing value on student achievement and meeting expectations, pride was an intrinsic reward students obtained (Moore).

Maslow's (2002) theory of motivation promoted a hierarchy of needs. The lowest of these needs on the hierarchy included physiological needs, which were the basic needs of life. The next level was that of safety needs, which included the need to feel safe and secure and to have resources, employment, and family. The love and belonging level or social level addressed those needs that involved family and friends. The fourth level was self-esteem, which included the needs of confidence, achievement, and respect. The highest level on Maslow's hierarchy of needs was self-actualization. This level involved the motivation of reaching one's greatest potential in life. The lower levels must be met before the higher levels of motivation can be met (Maslow). By using Maslow's theory, educators are able to determine at what level the students are on the hierarchy and thus facilitate the development of skills necessary for students to reach the higher levels.

Davison (2006) discussed the theories of behaviorism, cognitive learning, and humanistic learning theories. Behaviorism theory was a learning theory that identified responses to stimuli. Both positive and negative responses were used to address learning behavior depending on the situation. By modifying the student's behavior, learning increased. According to behaviorism theory, learning was influenced more by the educational environment than the student. In the cognitive learning theory, students were responsible for their own learning. Students were actively involved in their learning, and

new knowledge was added to previously learned knowledge. The humanistic theory of

learning involved observing others, their behavior, and the consequences of that behavior.

Consequently, students learned through observation (Davison).

Another area that improved student achievement was technology. According to

the Northeast and the Islands Regional Technology Consortium (2002), technology has

become increasingly important in the education of students. Technology has provided

educators the tools necessary to access resources that will improve their teaching and

increase student achievement. In order for technology to be the most effective, it must be

integrated into the curriculum. By the facilitation of this process, students were exposed

to many resources which increased student engagement and learning. In addition,

teachers were able to use technology to meet the needs of all students, and teachers were

given an opportunity to utilize differentiated learning more effectively. Teachers could

expose students to multi-media presentations, simulations, online content software, text-

to-speech resources, and other technological sources. Technology has also given teachers

a variety of options for the delivery of content material to students, utilizing both visual

and auditory modes (Northeast & the, 2002).

The National Center for Education Statistics (NCES) reported 99 percent of the

schools in the U. S. had access to the internet in 2005, as compared to only 35 percent in

1994. Public schools have also expanded internet access to the instructional classrooms

from 3 percent in 1994 to 93 percent in 2003. The ratio of students connected-to-

computer ratio from 1998 to 2003 increased from 12:1 to 4.4:1 (Parsad & Jones, 2005).

Sivin-Kachala and Bialo (2000) examined 311 studies on the relationship between

technology and student achievement. They found students who were educated in

technology-rich environments experienced more positive outcomes and enjoyed

significant increases in achievement in all content areas. The student achievement levels

increased from pre-school through high school. In addition, the students had positive

attitudes about learning, and their self-esteem improved (Sivin-Kachala & Bialo).

A study conducted by Boster, Meyer, Roberto, & Inge (2002) examined the

integration of technology into the classroom by the use of video clips. Their study

included 1400 students from elementary and middle schools. Findings showed significant

improvement in student learning for students who were in classrooms that utilized the

video clips as compared to students from traditional classrooms (Boster, et al.).

The state of Missouri implemented a statewide technology integration program,

Enhancing Missouri's Instructional Networked Teaching Strategies (eMints) in 2001.

Students who participated in the eMints program had higher student achievement scores

on the MAP assessment than students who did not participate in the program. The study

concluded the success of the eMints program was based on teachers being able to

integrate technology and use inquiry-based teaching. This allowed the students to

participate in critical-thinking activities and problem-solving activities, thereby

increasing those skills (eMINTS, 2002)

Martucci (2002), in cooperation with the San Diego Unified School District,

analyzed and linked factors that affected student achievement. The school realized

improvement by integrating technology in the classroom. Technology enabled students to

improve in areas of reading, writing, math, and science. By utilizing technology, students

had more opportunities to individually practice skills, thus improving their academic

achievement. Because technology engaged the students in the learning process, students

spent more time on basic skills than when traditional methods were used. Technology usage was also linked to students' development of higher self-esteem (Martucci, 2002).

Another important characteristic in promoting student achievement was teacher effectiveness. Studies have shown how important effective teachers were in improving student achievement. In a policy brief, Marzano (2003) reviewed research conducted by Sanders and Horn in 1995 which showed a 39 percent variance between students who were taught by the most effective teachers and students who were taught by the least effective teachers. Over a one-year period, students taught by effective teachers improved achievement by 53 percent, whereas students taught by the least effective teachers only gained 14 percent.

Cawelti and Protheroe (2001) conducted a study in school districts that had a high percentage of at-risk students. An examination of the data revealed school districts were able to align the curriculum with the assessments, analyze student responses to similar assessments, and intervene with corrective instruction to meet the needs of individual students. By facilitating this process, all school districts in this study significantly improved their student achievement scores on state assessments (Cawelti & Protheroe).

In order for performance data to help educators improve student achievement, responding to the data results appropriately and effectively has been found to be very important. Schools must align their curriculum to the state standards and the state assessment content areas. Data also identified areas where modifications of teaching strategies needed to be facilitated. Finally, support and special instruction must be given to those students who are identified as not mastering certain objectives or who performed below grade level (Cawelti & Protheroe, 2001).

Decker (2003) presented an example of how utilizing data helped improve student achievement. Lead Mine Elementary School began using data to improve student achievement long before NCLB was implemented. Their curriculum design included four components. The first component consisted of aligning the curriculum with the state standards for every subject area in every grade level. Next curriculum mapping was used to determine when these skills would be taught in grades K-5. Curriculum benchmarks were established to determine if students were learning the skills that were being taught. This component included the expected minimum standards. Quarterly assessments were given at each grade level. By examining the results, the school was able to identify areas of weakness and intervene before students participated in the state assessment at the end of the year. Pre-assessment was a key component, as it offered additional assessments, rather than just one assessment at the end of the year. Differentiation of instruction was facilitated as needed to meet the needs of individual students. The school also implemented Success-Maker, a data tracking software package, so on-going embedded assessment could take place in the areas of math, reading, writing, and language arts. Success-Maker provided detailed student performance data in real-time that could be used to improve student outcomes (Decker).

According to Dubois, Holloway, Valentine, and Harris (2002), programs that offered mentoring to students helped students to be more successful in the school setting. The mentoring relationship was most effective if the mentor had a helping background, such as teaching. The effectiveness of the mentoring process depended on several factors that included a growing, long-term relationship; continuous training for mentors; activities that were structured; and parental support. Alder and McKelvey's (2007) study

reported motivational and instructional strategies students felt were important included a variety of activities, immediate feedback, time to complete work, and teacher monitoring of student progress. Other strategies that motivated students included hands-on activities, games, and field trips. These strategies helped make the learning experience more relevant to the students' lives. Additionally, Alder and McKelvey identified instructional strategies that improved student motivation, closed the achievement gap, and helped students be successful. They reviewed motivational and instructional strategies at the middle and high school levels in four categories: society, schools and communities, family, and the classroom. The school category revealed research that enumerated five important traits of effective principals: a principal who was energetic and involved, provided professional development that supported new instructional strategy implementation, analyzed data on assessments to improve student performance, and provided intervention procedures for low achieving students. In addition, teacher effectiveness, parent involvement, professional learning communities, and initiatives to promote literacy were all critical factors to improve student performance (Alder & McKelvey).

Poverty was shown to be a major contributor to the achievement gap. Students who came from poverty normally had one-parent homes, their parents were poorly educated, and they came from high poverty neighborhoods. When these students entered kindergarten, the difference between the school readiness of low socioeconomic status students as compared to the school readiness of middle class students was as much as 1:4 (Evans, 2005).

Summary

With so much emphasis on accountability and student achievement through the NCLB legislation, educators have conducted research through the years on variables that affected student achievement to determine which variables impacted student achievement most significantly. Once these variables were identified, programs could be implemented to help control the variables, and thus, improve student achievement. For the purposes of this study, student attendance and its relationship to student achievement in 9-12 public mainstream high schools of both high-poverty and low-poverty schools were considered. The variables examined were student attendance, class size, and highly qualified teachers and their relationship to student achievement.

Much of the research pointed to a trend of a positive relationship between these variables and student achievement; however, there were studies that had conflicting findings. Research also indicated there was a correlation between student achievement rates and whether the student attended a high-poverty or low-poverty school. Many of the studies indicated lower student achievement scores in high-poverty schools as opposed to low-poverty schools due to any one of the variables studied. The numerous studies considered external factors that might affect student achievement in high-poverty schools, as well as school-induced factors that could be controlled within the school.

Chapter three discussed the methodology and the type of relationship that exists between the variables of student attendance, class size, and highly qualified teachers and the dependent variable of student achievement. The methodology also revealed the significance of the relationships that exist between the above variables and student achievement.

CHAPTER THREE

Methods

Introduction

The purpose of this study was to determine which factors were predictive of student achievement. The factors that affect student achievement are numerous. For this study, three variables were examined to determine the correlation and the predictive behavior on student achievement. Two of the variables were classified as school-directed: class size and highly qualified teachers. One variable examined in this study was student attendance classified as a non-school directed variable. Even though in-school factors may affect student attendance, for the purpose of this study, only external influences were considered. Also examined was the effect of these factors on student achievement in the low-poverty school setting as compared to the high-poverty school setting in the 9-12 public mainstream high school population.

The three independent variables, student attendance, class size, and highly qualified teachers, were selected because each has a profound effect on the AYP and NCLB accountability requirements. How predictive these variables were of student achievement was a factor considered in the selection process. In addition, these dynamics were important considerations that affect the AYP (DESE, 2008). The data examined in this study was limited to the data gathered from DESE for all 9-12 public mainstream high schools in a Midwest state. The study investigated the relationship that exists between student attendance and student achievement of both high-poverty schools and low-poverty schools in the population studied. Attendance was divided into three categories: (a) above average, (b) average, and (c) below average based on MSIP

standards for attendance. The above average attendance category was comprised of attendance rates between 94.4 percent and 100 percent. The average attendance category included attendance rates from 93.6 percent to 94.3 percent. The below average category for attendance consisted of rates that were 92.9 percent and below (DESE, 2008).

Class size was examined from the student-to-teacher ratio for each high school in the population studied, which included both high-poverty and low-poverty high schools. Highly qualified teachers were distinguished by the NCLB definition of teacher quality, including the possession of a bachelor's degree, certification in the subject area the teacher is teaching, and proof of knowledge of the subject area the teacher is instructing (DESE, 2004). The highly qualified teacher percent from the School Accountability Report Card was used to determine teacher quality (DESE, 2008).

The dependent variable of student achievement for each high school in the population under study was determined by the proficiency percentages recorded on the AYP report for 2008 on the DESE website. The measurement for student achievement was derived from MAP test scores in the areas of communication arts and mathematics for 2008. In 2008, the state expected at least 51 percent of students to be proficient in communication arts and 45 percent to be proficient in mathematics. A school was considered passing with slightly lower scores through the *confidence interval* [italics added] or *safe harbor* [italics added] provisions (DESE, 2008).

Sampling Procedure

The sample included all mainstream public high schools, grades 9-12, in a Midwest state. Consequently, a random selection method was not necessary since the study covered the entire mainstream population. Because the sample was taken from a

Midwest state, generalization of the sample may not be appropriate for other states. The differences in the demographics from one state to another may vary significantly. Consequently, generalization is not recommended.

The free and reduced lunch rate average for this Midwest state was employed to identify high-poverty schools and low-poverty high schools. The average for the population being studied in 2008 was 35.64 percent. Therefore, any population high schools with free and reduced lunch rates of 35.64 percent or above were identified as high-poverty schools. Any population high schools with free and reduced lunch rates below 35.64 percent were considered low-poverty schools. The data was gathered from the DESE (2008) website.

Once the compilation of the literature was reviewed and examined, an analysis of the data on the variables applicable to this study was conducted. The correlation study examined the attendance rate in relationship to student achievement comparing the results of the correlations between high-poverty schools and low-poverty schools. Attendance was dissected into three levels: (a) above average attendance, (b) average attendance, and (c) below average attendance. MSIP standards for attendance were used as the criteria in the determination of attendance categories. The above average attendance [high1] and [high 2], as defined by MSIP standards, was 94.4 to 100 percent for 2008. The average attendance rate for this Midwest state as defined by MSIP standards was 93.6 to 94.3 percent for 2008. The below average category as defined by the MSIP standards was any percent below 93.5 percent (DESE, 2008).

The annual proficiency target in communication arts and mathematics as set by the state and the NCLB legislation was used to measure student achievement. The

researcher compiled the average of the communication arts percent and mathematics percent to measure student achievement for the schools in the population. The correlation study also examined the class size variable (student to teacher ratio) and its relationship to student achievement in both high-poverty and low-poverty schools. In addition, the correlation study looked at the highly qualified teacher percent and its relationship to student achievement in both high-poverty and low-poverty schools of the population under study.

The results obtained were then examined and summarized to draw conclusions and suggest recommendations as to the significance of the correlation to student achievement. Thus, an assemblage of the correlations and relationships that existed between each of the variables and student achievement was scrutinized, compared, and refined between the high-poverty and low-poverty schools.

Research Design and Procedures

One of the first steps in identifying the necessary action steps of the study was to determine the purpose of the research by identifying questions that would bring a synopsis to the research being conducted. In order for this to be accomplished, research questions were devised that were clear and concise. These questions gave direction to the research process in order to reach conclusions, implications, and recommendations. The research questions were as follows:

1. What relationship is present among the three student attendance categories: below average, average, and above average and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

2. What relationship is present between overall attendance and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

3. What relationship exists between class size and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

4. What relationship exists between highly qualified teachers and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

Next the independent variables and the dependent variable were described. One independent variable in this study was the attendance rate of 9-12 public mainstream high school students in high-poverty schools and low-poverty schools in the three attendance categories of (a) above average attendance, (b) average attendance, (c) and below average attendance as defined by Missouri School Improvement Program (MSIP) standards. Another independent variable was class size in the 9-12 public mainstream high school students from both high-poverty and low-poverty high schools. Highly qualified teachers in the both categories of 9-12 public mainstream high schools were also included as an independent variable. The dependent variable in this study was high school student achievement in the areas of communication arts and math for 9-12 public mainstream high school students inclusive of both high-poverty public schools and low-poverty public schools.

Data Collection

The attendance rate for the sample of high-poverty high schools was collected from the DESE website. According to 2008 MSIP standards taken from DESE (2008), the average attendance rate for high schools in the Midwest state was 93.6 to 94.3 percent. The above average attendance [high1] and [high 2], as defined by MSIP standards, was 94.4 to 100 percent for 2008. The below average category as defined by the MSIP standards was any percent below 93.5 percent (DESE, 2008).

Achievement data was collected from the DESE website under the data and statistics section. The score that was used to identify achievement was the Annual Proficiency Target, which was extracted from the 2008 AYP report. This score was divided into proficiency percentages based on 2008 MAP test scores in the communication arts component and the mathematics component. Levels of proficiency that were mandated by the NCLB legislation were set as the standard (DESE, 2008). A separate analysis of each of the components of communication arts and mathematics was performed.

Methodology

A correlation analyses was employed, as well as multiple regression analyses on the collected data. This study utilized quantitative data consisting of attendance percentages; student-to-teacher ratios, representing class size; percentage of highly qualified teachers; and annual student achievement target percentages, all of which were obtained from DESE (2008). In addition, high poverty schools were defined as those 9-12 public mainstream high schools that had a free and reduced lunch rate above the average free and reduced lunch rate of the population under study, which was 35.64 percent. Low

poverty schools were defined as those high schools that had a free and reduced lunch rate

below the average free and reduced lunch rate of 35.64 percent for the population under

study, also obtained from DESE (2008).

The class size of each high school was analyzed in relationship to the average of

the student-to-teacher ratio of the population under study. The highly qualified teacher

percentage for each high school was also analyzed in relationship to the average of the

highly qualified teacher percentage of the population obtained from DESE (2008).

Statistical Treatment of Data

The procedures used to analyze the data included several statistical

measurements: descriptive statistics, the Pearson *r*, *p*-value, coefficient of determination,

and multiple regression. The statistical program SPSS was employed to analyze the data.

Each of the statistical procedures was performed on the variables of student achievement

scores and attendance percentages, class size, and highly qualified teacher percentages in

the research population of both high-poverty and low-poverty schools. The

communication arts and math annual individual component proficiency scores were

utilized as the dependent variables.

The methodological design of the Pearson *r* correlation was employed to identify

the existence, direction, and degree of the relationship between the independent variables

and dependent variables of communication arts and math. This method was implemented

to determine if the differences among scores for one variable could be accounted for or

explained by another variable (Runyon, Haber, Pittenger, & Coleman, 1996). The process

also provided the direction of the relationship. If the X and Y variable both increased, a

positive correlation was indicated. If the variables were inversely related, a negative

correlation was indicated. The closer the correlation was to -1 or +1, the greater the

degree of relationship between the variables. If the correlation was 0, there was no

relationship between the two variables. This method was not representative of a cause-

and-effect relationship (Runyon, et al.). The coefficient of determination was the

percentage of variance in one variable that could be explained by the other variable. This

was represented by r^2 (Runyon, et al.). Most of the previous research that had been

conducted regarding student achievement was of the correlation design. The *p*-value was

measured to determine the reliability of the correlation measurement. This value

indicated if the degree of the statistical significance was true. The results of the

relationship variables in the sample were considered less reliable the higher the *p*-value.

This value represented the probability of error in accepting the results as true and valid

(Brownlee, 1960). In addition, the statistical method of multiple regression was

performed to determine which independent variables in the population were most

predictive of student achievement in both high-poverty schools and low-poverty schools

(Field, 2009).

Summary

  High-poverty and low-poverty 9-12 public mainstream high schools located in a

Midwest state were selected as the research setting for this study. These schools were

identified by free and reduced lunch rates obtained from data provided by DESE (DESE,

2008). The average free and reduced lunch rate for the population researched was 35.64

percent. Therefore, any high schools with a free and reduced lunch rate of 35.64 percent

or above were identified as high-poverty schools. Any high schools with a free and

reduced lunch rate of 35.64 percent or below were identified as low-poverty schools.

Attendance rates were gathered from the DESE for each of the schools in the population. Schools were then classified into three groups based on attendance rate: below average, average, and above average, as set by MSIP standards. Student achievement was identified for each of the schools by examining the individual component scores of communication arts and math from the AYP report (DESE).

Several statistical analyses of the independent variables student attendance percentage, class size, and highly qualified teachers were performed on the communication art scores and math scores gathered from the School Accountability Report Card and the APR (DESE, 2008). By conducting the analyses of these variables, the foundation was set for determining relationships among the variables. In the following chapters, the analyses of correlation between the three independent variables and the dependent variable were explained. The significance of the independent variables as predictors of the dependent variable, through multiple regression analyses, was discussed. Results were explained and general conclusions were assimilated. From the results, suggestions for further research were specified.

CHAPTER FOUR

Introduction

Background

More accountability has been required of schools since the passage of the NCLB legislation, which has mandated improvement in student achievement by setting targets that must be met. Consequently, in order to determine factors that might be predictive of student achievement, this study examined three independent variables of attendance, class size, and highest teacher quality. The objective was to determine the correlation and significance level of each variable in relationship to student achievement in the areas of math and communication arts. The population studied included 9-12 public mainstream high schools in a Midwest state. Also considered was the effect of these factors on student achievement in the low-poverty school setting as compared to the high-poverty school setting. If a significant relationship between the independent variables and student achievement was established, educators might begin to implement programs to target those specific areas of weakness in order to improve student achievement in both low-poverty and high-poverty school settings

The following research questions were examined to determine the relationship between the independent variables and student achievement.

1. What relationship is present among the three student attendance categories of: below average, average, and above average and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

2. What relationship is present between overall attendance and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

3. What relationship exists between class size and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

4. What relationship exists between highly qualified teachers and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

In this chapter, the results of the study, an analysis of the results, and deductive conclusions were presented. A synopsis of the various statistical methods utilized was given, along with a summary of the results from employing these various statistical methods. Tables were also presented as graphical representations of the data and results to reveal more detailed statistical analyses. Figures from these results were included in the appendix.

The Pearson r was employed to determine the relationship between the three independent variables and the dependent variables of math test scores and communication art scores for both low and high-poverty schools. Also, this same analysis was run on the three categories of the attendance variable and the math and communication art scores. Both low-poverty and high-poverty schools were included in the analyses. The correlation measurement should be between -1 and 1. The closer the correlation value is to 1, the greater the relationship. A correlation of 0 indicates no correlation. Along with the Pearson r, the p-value was also calculated to determine the

significance level of the results. In order to represent significance, the *p*-value needed to be at the .05 level or below (Runyon, Haber, Pittenger, & Coleman, 1996).

Backward multiple regression was also employed to determine how predictive the independent variables were of estimating the communication arts and math scores. The adjusted r^2 value was used to establish the goodness of fit, since it adjusts for degrees of freedom lost (Field, 2009). The standardized coefficient betas were performed to assess the importance of the independent variables in predicting the communication arts and math scores. In addition, *t*-test measures were also examined (Field). Multiple regression was not utilized on the low-poverty school data because it was nonlinear, and therefore, did not meet one of the requirements necessary to perform the analysis. Additionally, the analysis was not necessary, since all of the overall correlations for low-poverty schools were insignificant values. Therefore, multiple regression was only performed on high-poverty school data.

Results of Descriptive Statistics

A summary of the descriptive statistics is depicted in Table 1 contrasting low-poverty and high-poverty schools. Means of low and high poverty school independent variables revealed results which were similar. However, comparisons of the dependent variable means were dissimilar. High-poverty schools had much lower means. In addition, minimums for both independent variables and dependent variables were substantially less for high-poverty schools.

Table 1

*Descriptive Statistics for Communication Arts and Math Including
Comparisons Between Low-Poverty and High-Poverty Schools*

	Mean	*SD*	Minimum	Maximum	Range	*N*
Attendance						
Low-poverty	93.41	1.56	81.70	96.40	14.70	141
High-poverty	92.11	4.74	71.50	97.10	25.60	131
Class size						
Low-poverty	15.70	2.33	10.00	22.00	12.00	141
High-poverty	14.98	2.70	6.00	22.00	16.00	131
Highly qualified teacher %						
Low-poverty	97.78	2.41	89.70	100.00	10.30	141
High-poverty	95.56	4.31	76.80	100.00	23.20	131
Communication Arts						
Low-poverty	42.99	9.53	18.30	68.60	50.30	141
High-poverty	35.08	10.79	5.90	68.30	62.40	131
Math						
Low-poverty	52.59	10.07	26.20	81.40	55.20	141
High-poverty	40.92	12.66	5.10	67.60	62.50	131

Results of Pearson r Correlation

The following results reveal the output of the Pearson *r* correlation for the

individual attendance categories in both the low-poverty schools and high-poverty

schools. These results show the correlations between the dependent variables of math

scores along with communication arts scores and the three categories of attendance.

These include above average attendance, average attendance, and below average

attendance as defined in the MSIP standards.

Also, the results of the Pearson *r* correlation are given indicating the correlations

between math and communication art scores with the independent variables of overall

attendance, class size, and highest teacher quality. These results also show the

relationships for the above variables in both low-poverty schools and high-poverty

schools.

Analysis of Pearson r Correlation

Attendance category results. The Pearson *r* was performed on the three categories

of attendance, which included above average attendance, average attendance, and below

average attendance. These categories were determined by the standards as set by MSIP.

The above average attendance category included attendance rates between 94.4 percent

and 100 percent. The average attendance category was defined as rates of attendance

between 93.6 percent and 94.3 percent. The below average attendance category included

any attendance rates below 93.5 percent (DESE, 2008).

In low-poverty schools, the correlation between communication arts and math test

scores on the above average and average attendance categories revealed insignificant

levels of correlation. However, the below average attendance category and

communication arts correlation was -.221, indicating a weak inverse relationship. The *p*-

value showed the correlation was significant at the confidence level of .05. When the

Pearson *r* was performed on the math test scores, the results indicated an insignificant

level of relationship for the above average and average attendance categories. However, there was a moderate level of inverse negative correlation for the below average attendance category of -.379 with a p-value revealing a confidence level of .01. Consequently, only the below average attendance level showed a significant correlation with communication arts and math test scores in the low-poverty school setting.

The high-poverty schools revealed no significant correlation between communication arts and the attendance category of above average attendance. The average attendance category also indicated an insignificant level of correlation. The below average attendance category revealed a significant moderate relationship of .423, with a p-value at the .01 level. In the above average attendance category, the math data showed a moderate inverse relationship of -.379 with a significant level of $<.05$. An insignificant relationship was revealed for the average attendance category. The results for the below average attendance category indicated a moderate to high correlation of .511 which was significant at the .01 level. The detailed analyses of these findings are also depicted in Tables 2 and 3.

Table 2

Pearson r Correlations for Separate Attendance Categories and Communication Arts

	Pearson *r*	Sig. (1-tailed)	*N*
Low-poverty schools			
Above average	.010	.480	28
Average	-.042	.393	43
Below average	-.221*	.033	70
High-poverty schools			
Above average	-.140	.226	31
Average	.260	.110	24
Below average	.423**	.000	76

**Correlation is significant at the .01 level (1-tailed).
* Correlation is significant at the .05 level (1-tailed).

Table 3

Pearson r Correlations for Separate Attendance
Categories and Math

	Pearson *r*	Sig. (1-tailed)	*N*
Low-poverty schools			
Above average	-.004	.491	28
Average	-.073	.320	43
Below average	-.379**	.001	70
High-poverty schools			
Above average	-.379*	.018	31
Average	-.195	.181	24
Below average	.511**	.000	76

**Correlation is significant at the .01 level (1-tailed).
* Correlation is significant at the .05 level (1-tailed).

Low-poverty school results. The Pearson *r* correlation analysis of the dependent

variable of communication arts test scores and the independent variable of overall

attendance indicated an insignificant correlation. Also insignificant was the correlation

between communication arts test scores and class size. The final correlation run between

communication arts test scores and highly qualified teachers again revealed no

significance.

The analysis of correlations between the math test scores and overall attendance

indicated no relationship of significance. The correlation between math test scores and

class size also showed a non-significant correlation. Highly qualified teachers revealed

the same insignificant relationship as the other two independent variables in the low-poverty schools.

High-poverty school results. The Pearson *r* correlation between overall attendance and communication arts test scores was .335 with a significant *p*-value of <.01, thus indicating a moderate, significant correlation. The relationship between communication arts test scores and class size revealed no significant relationship. The analysis of highly qualified teachers and communication arts revealed a low to moderate correlation of .275 at a significance level of <.01.

The math test scores and overall attendance correlation analysis showed a moderate significant relationship of .435 with a confidence level of <.01. The Pearson *r* showed no relationship of significance between math test scores and class size. A moderate level of relationship was indicated between highly qualified teachers and math test scores with a correlation value of .359 at the confidence level of .01.

In summary, the low-poverty school results revealed none of the independent variables depicted a significant relationship between communication arts test scores or the math test scores, except the below average attendance variable when broken down into the three categories. A weak inverse correlation for communication arts and a moderate inverse relationship in the math area were noted in the below average attendance category.

The correlation results for the high-poverty schools showed moderate significance in the Pearson *r* correlations between the communication arts and math test scores and the independent variables of attendance and highly qualified teachers with significant levels < .01. There was no significant relationship between class size and communication arts or

the math test scores in the high-poverty schools. In reference to the three attendance

categories, the above average attendance category and math achievement revealed a

moderate inverse relationship. The below average attendance category revealed the

highest correlation and the greatest level of significance for this variable when correlated

with communication arts and math test scores. Detailed depictions of these results can be

viewed in Tables 4 and 5.

Table 4

Pearson r Correlations for Independent
Variables and Communication Arts

	Pearson *r*	Sig. (1-tailed)	*N*
Low-poverty schools			
Attendance	-.050	.277	141
Class size	-.011	.448	141
Highest teacher quality%	-.065	.220	141
High-poverty schools			
Attendance	.335**	.000	131
Class size	.059	.252	131
Highest teacher quality %	.275**	.001	131

**Correlation is significant at the .01 level (1-tailed).

Table 5

Pearson r Correlations for
Independent Variables and Math

	Pearson *r*	Sig. (1-tailed)	*N*
Low-poverty schools			
Attendance	-.044	.302	141
Class size	-.004	.483	141
Highest teacher quality%	-.055	.260	141
High-poverty schools			
Attendance	.435**	.000	131
Class size	-.030	.366	131
Highest teacher quality %	.359**	.000	131

**Correlation is significant at the .01 level (1-tailed).

Results of Multiple Regression Analysis

The results for the multiple regression analyses are presented for high-poverty schools of this study. Multiple regression was not run on low-poverty schools, since the data was not linear, which is one of the requirements necessary to run a multiple regression analysis. In addition, the correlation values for low-poverty schools were insignificant for all overall independent variables. This analysis reveals the independent variables that are most predictive of both math scores and communication art scores for high-poverty schools. Backward multiple regression was employed to analyze the data.

R -squared was used to measure the amount of variability in the result which is accounted for by the predictors. The adjusted r^2 adjusts to indicate the goodness of fit for the population being analyzed. Better predictability is shown the closer r^2 and the adjusted r^2 values are. A better prediction is also indicated the less the standard error of the estimate (Field, 2009). The t-test and significance measures are also important to examine in determining the contributions of the predictors. The larger the t-value and the smaller the significant measure, the greater the contribution the predictor is to the model (Field). In addition, the standardized coefficient betas from Model 2 were used to determine how predictive the independent variables were of the math scores and the communication scores (Field). The results taken from Model 2 revealed attendance and teacher quality were the best predictors in predicting communication art scores. Highly qualified teachers were a larger contributor than attendance. In reference to math scores, again attendance and highly qualified teachers were the best predictors as shown in Model 2, with attendance being the higher predictor. The analysis section will reveal more in-depth outcome statistical data.

Analysis of Multiple Regression Analysis

    High-poverty schools. The backward multiple regression model was applied to the high-poverty school data to determine how predictive the independent variables were of the dependent variables. As depicted in Tables 6 and 7, the analysis of communication arts showed the r^2 and adjusted r^2 were close which indicates good predictability. The communication arts' scores revealed an adjusted r^2 value which accounted for 13.7 percent of the variance for the highly qualified teachers and attendance variables. Class size was excluded from Model 2. The beta values of the standardized coefficients from

Model 2 for highly qualified teachers and attendance indicated predictive values of .200 and .282 respectively for communication arts' scores. Thus, attendance was the most predictive independent variable in estimating communication arts scores and the highly qualified teacher variable was the second most predictive variable. The *t*-test measures were high and the significance levels below the .05 level indicating the variables were important contributors to the model.

R-squared and the adjusted r^2 were close, which indicated good predictability. The adjusted r^2 values showed attendance and highly qualified teachers accounted for 24.1 percent of the variance in math. Using Model 2, the beta values from the standardized coefficients indicated highly qualified teachers had a predictive value of .262 for math scores, and attendance had a predictive value of .366 percent for math scores. This revealed attendance was more predictive than highly qualified teachers for math student achievement. Class size was excluded from the model. The *t*-test measure showed a high measure at a significant level indicating these variables were important contributors to the model. These results are also shown in Tables 6 and 7.

Table 6

Summary of Backward Regression for Variables
Predicting Communication Arts in High Poverty Schools

Coefficients

Model 2	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	Beta	*t*	Sig.*
(Constant)	-72.056	23.103		-3.119	0.002
Attendance	0.643	0.192	0.282	3.341	0.001
Teacher Quality	0.502	0.211	0.200	2.372	0.019

Model Summary				
Model	*R*	*R²*	Adjusted *R²*	*SE*
2	0.387	0.150	0.137	10.025

*Significance level at .05 level

Table 7

Summary of Backward Regression for Variables
Predicting Math in High Poverty Schools

Coefficients

Model 2	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	Beta	*t*	Sig.*
(Constant)	-122.540	25.416		-4.821	0.000
Attendance	0.977	0.212	0.366	4.615	0.000
Teacher Quality	0.769	0.233	0.262	3.305	0.001

Model Summary

Model	*R*	R^2	Adjusted R^2	*SE*
2	0.503	0.253	0.241	11.029

*Significance level at .05 level

Deductive Conclusions

The results of this study revealed a moderate correlation between student achievement and the independent variables of student attendance and highly qualified teachers for high-poverty schools. A high level of correlation also existed between the below average attendance category and student achievement in both groups of high-poverty and low-poverty school settings. Additionally, attendance and teacher quality were predictive of both communication arts and math student achievement in high-poverty schools, with attendance showing the most predictability.

All parties will profit from the results of this study because it has identified the significance level of each of the variables studied as related to student achievement. These findings may be helpful to educators, the community, and other stakeholders by allowing the stakeholders to work together to implement policies and procedures, as well as instructional strategies that can more effectively address the most predictive variables in order to improve student achievement. This may be especially helpful in addressing the needs in high-poverty school settings.

Summary

The findings of this study were discussed in the final chapter. The implications and inferences from the results of this study were explored. Recommendations for further study on additional variables were suggested. Additional recommendations based on a body of research conducted by numerous researchers may be considered as options to facilitate the implementation of procedures and strategies to improve attendance, teacher quality, and student achievement.

CHAPTER FIVE

Discussion

Introduction

This study was conducted to examine and determine if the variables of student attendance, class size, and highly qualified teachers were predictive of student achievement in the areas of communication arts and math. Because The No Child Left Behind legislation has mandated more accountability from educators and schools, it is critical that an assemblage of avenues to improve student achievement be established. This study examined each of the independent variables of student attendance, class size, and highly qualified teachers in relationship to the dependent variable of student achievement. All 9-12 public mainstream high schools in this Midwest state were included in the population examined. In addition, the effects these factors had on student achievement in the low-poverty school setting were compared to those in the high-poverty school setting. The findings from this study may allow educators to address dynamics that will facilitate the improvement of student achievement by implementing programs to target areas of weakness.

The following research questions were examined in order to explore the relationship between the independent variables and student achievement.

1. What relationship is present among the three student attendance categories: below average, average, and above average and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

2. What relationship is present between overall attendance and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

3. What relationship exists between class size and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

4. What relationship exists between highly qualified teachers and student achievement in 9-12 public mainstream high schools that include both high-poverty schools and low-poverty schools?

Implication for Effective Schools

The results of this study did not reveal a significant correlation for the low-poverty sector, except in the below average attendance category. However, the high-poverty group results indicated a moderate correlation between student achievement and the independent variables of student attendance and highly qualified teachers. A high level of correlation also existed between the below average attendance category and student achievement. Additionally, attendance and teacher quality were predictive of both communication arts and math student performance. These findings may be helpful to educators, the community, and other stakeholders, in that, all parties will profit from the results of this study because it has identified the significance level of each of the variables studied as related to student achievement. Stakeholders can work together to implement policies and procedures, as well as instructional strategies that can more effectively address the most predictive variables in order to improve student achievement. This may be especially helpful in addressing the needs in high poverty school settings.

In layman's terms, student achievement in schools considered low-poverty schools were not significantly affected by the attendance rate, except in the below average attendance category. Student achievement in schools classified as high-poverty schools were affected by student attendance and highly qualified teachers. Student attendance and teacher quality both were related to student performance in communication arts and math student achievement.

Because of these findings, parents, teachers, and the community can help improve student achievement by facilitating the action steps necessary in order to address student attendance and teacher quality to improve student achievement.

Recommendations

It would be wise for school districts to examine weaknesses that appear to exist in their individual school district and implement plans and strategies to address those issues. From the results of this study, it would seem prudent to review the high-poverty school setting in reference to the relationship that exists between student achievement and the variables of student attendance and highly qualified teachers in those specific schools. School districts might find it helpful to conduct a study in their individual school district to target weak areas that need to be addressed to improve student achievement.

Further study is recommended on avenues to improve student achievement in both low-poverty schools and high-poverty schools. Studies on factors other than the ones selected for this study that could have a positive effect on student achievement are recommended. In addition, more encompassing studies, including the variables selected for this study, that would include numerous geographic samples across the nation with a variety of population sizes and diverse demographic factors are recommended. Such

studies could be compared to the results of similar studies that have previously been

conducted.

Additional recommendations that are based on a body of research conducted by

numerous researchers may be considered to facilitate the implementation of procedures

and strategies to improve attendance, teacher quality, and student achievement. Nemec

and Watson (2007) found that students are more likely to attend school if the curriculum

is interesting to them. Students also attended more frequently when the students believed

their teachers cared about them and reward incentives were offered for good attendance.

A reward system, *Count Me In!* was implemented in Temecula Valley, California, to

encourage attendance. Prizes were given, sometimes on a monthly basis. This incentive-

based program increased attendance by 55 percent (Bafile, 2007). Judith Martinez

identifies parental involvement; support systems with incentives; collaboration with

outside agencies, including law enforcement agencies; and setting academic performance

goals as strategies to improve attendance. Attendance in numerous cities increased as a

result of the implementation of reward systems for good attendance (Word, E., et al.).

The study enumerates components that are effective in improving attendance, such as

increasing consequences as absences rise; offering non-academic classes; providing

career and technical classes and facilitating work study programs, tutoring, online

programs, and counseling programs. Columbus, Ohio, implemented a program called

SMART (Student Mediation and Assistance to Reduce Truancy.) It requires the parents

who children skip school to meet with school officials and Juvenile Court Protective

officials. This meeting is held to determine the reason their child is not attending school.

The parents are warned they could be charged with neglect and fined, or the children

could be removed from the home. So far, the program has proven to be successful (Hopkins, 2006). Also, cutting family welfare benefits for the household encourages parents to participate in efforts to facilitate regular school attendance of the younger children (Hopkins).

In addition to improving attendance as a method to increase student achievement, other procedures and strategies may be considered. Marzano believes standards are the most crucial component to significantly improving student achievement. However, he believes present standards are too exhaustive and include too many activities. By downsizing the standards, implementation becomes more achievable. He also believes both internal and external forms of standards-based assessment should be administered more frequently and regularly (Scherer, 2001).

Technology is another area being put into practice in many schools to improve student achievement. By incorporating technology into the curriculum, it becomes a more effective tool in the learning process. Technology exposes students to many resources they may not normally have access to in the standard classroom. Additionally, it allows teachers to utilize differentiated learning more efficiently. Technology provides a variety of options teachers can use to deliver the content material to students using both visual and auditory levels (Northeast & the, 2002).

Decker (2003) provided a good example of how utilizing data to help improve student achievement can be observed through his research at Lead Mine Elementary School in Raleigh, North Carolina. Lead Mine began using data to improve student achievement long before NCLB was implemented. Differentiation of instruction was facilitated as needed to meet the needs of individual students. The school also

implemented Success-Maker so on-going embedded assessment could take place in the areas of math, reading, writing, and language arts. This provided detailed student performance data in real-time that could be used to improve student outcomes (Decker).

Teacher effectiveness is also crucial in improving student achievement. Student motivation increases when students are actively engaged in the learning process. Sanders and Horn (1994, reviewed in Marzano, 2003) conducted a study that revealed a variance of 39 percent between students who were taught by the most effective teachers as opposed to students who were taught by the least effective teachers. During a one year period, students taught by the most effective teachers improved by 53 percent. Students taught by the least effective teachers only gained 14 percent. This represents a significant gap. In the Alder and McKelvey (2007) study, students listed motivation and instructional strategies they believed were important including a variety of activities, immediate feedback, time to complete work, and teacher monitoring of student progress. Other motivational strategies included hands-on activities, games, and field trips. These strategies made the learning experience more relevant to the students' lives.

Summary

In conclusion, the results of this study point to the need to implement procedures and strategies that will address factors of significance that affect student achievement, particularly in the high-poverty school setting. Improving both student attendance and teacher quality are aspects that need to be seriously contemplated. Also, research-based strategies, such as reward-incentive programs and technology-enriched programs should be examined by individual school districts to identify those that may be effectively facilitated and implemented in order to address achievement needs and weaknesses.

Since there are many significant factors that contribute to student success, additional variables need to be examined. As educational leaders, it is necessary to continue to search for methods to improve the student achievement of all students. With NCLB mandates, academic mentors must strive to help students achieve set standards. The ultimate responsibility of educators is to promote the success of every student.

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Appendix A

Figure 1

Attendance Means

Figure 2

Figure 3

Teacher Quality Means
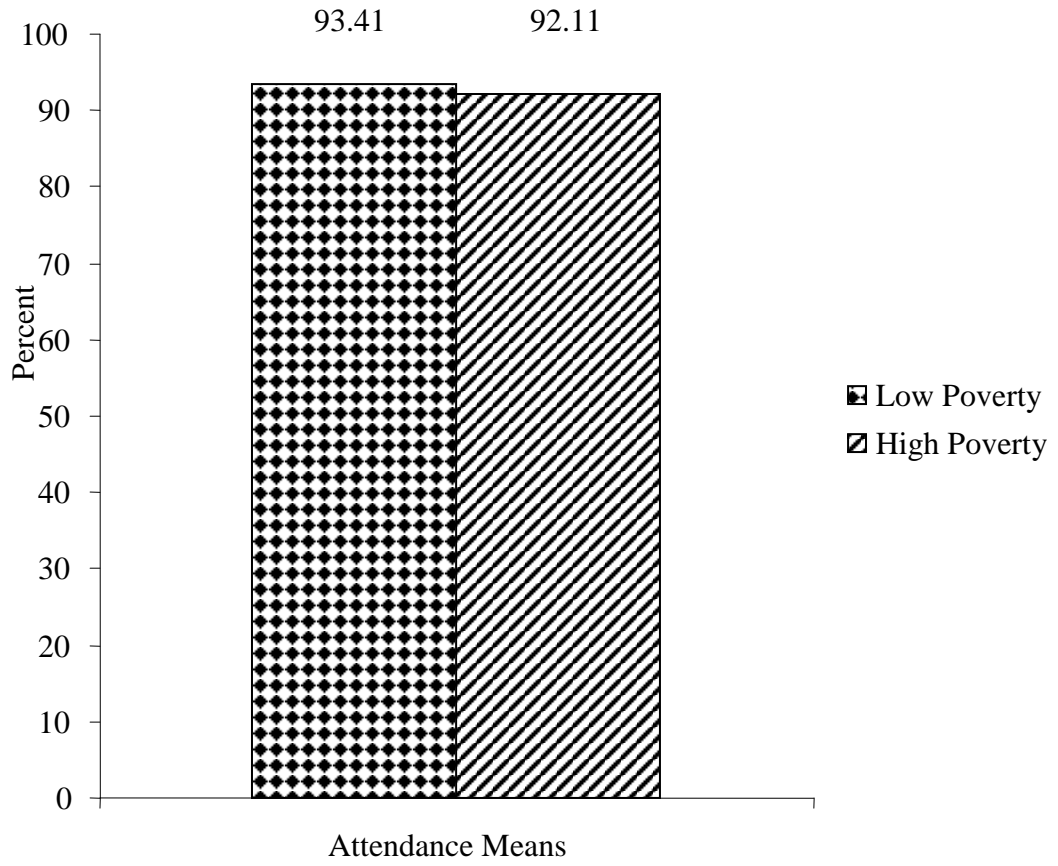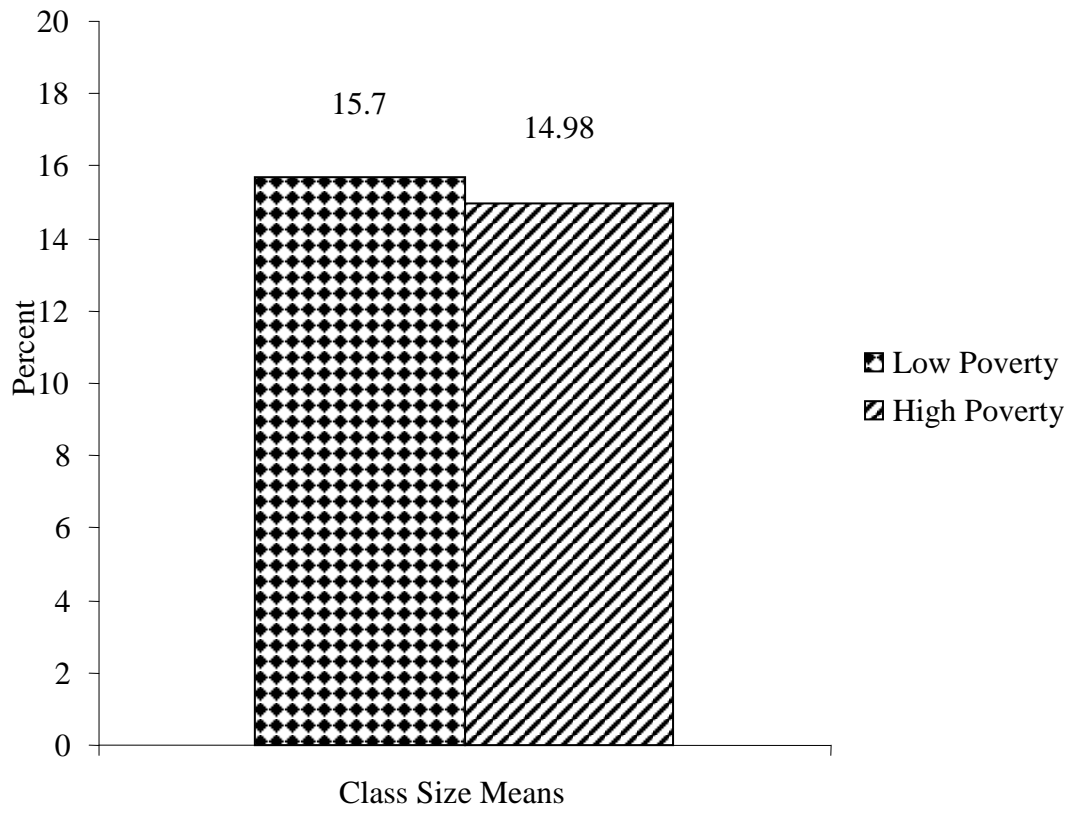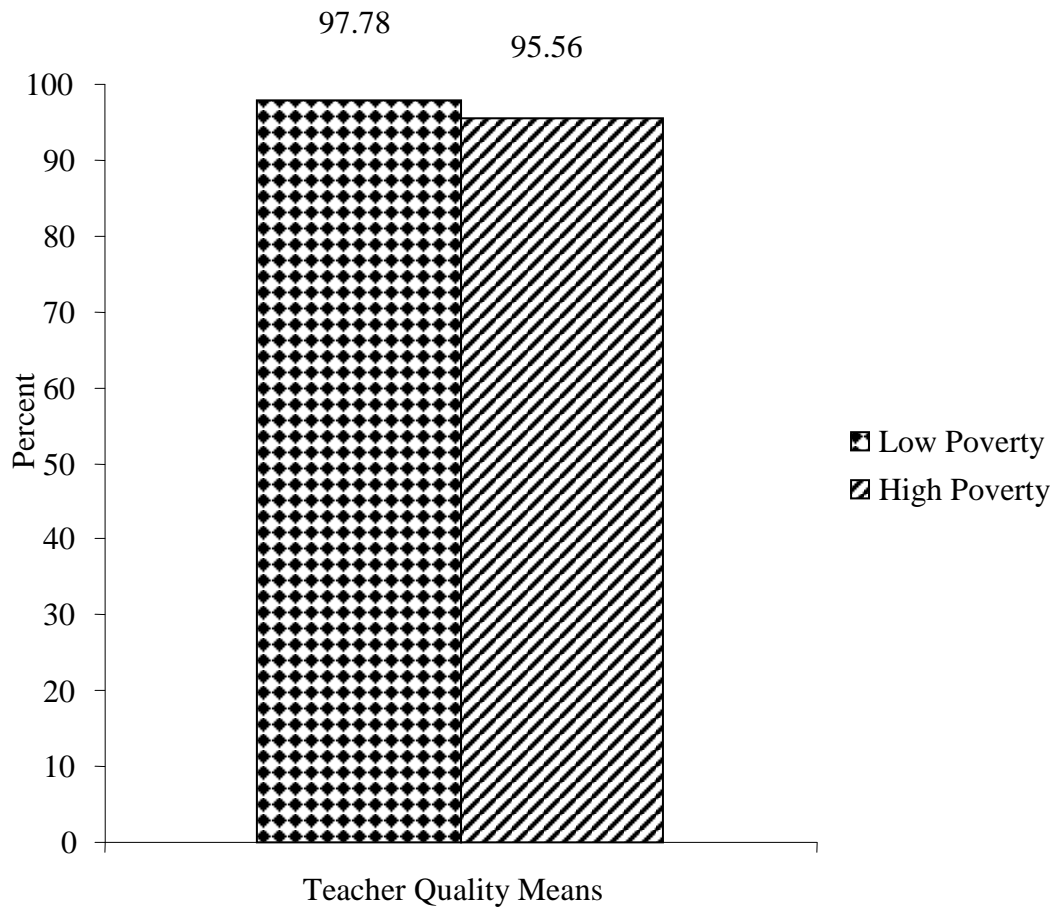
Figure 4

Figure 5

Figure 6

Attendance Minimums

Figure 7

Figure 8
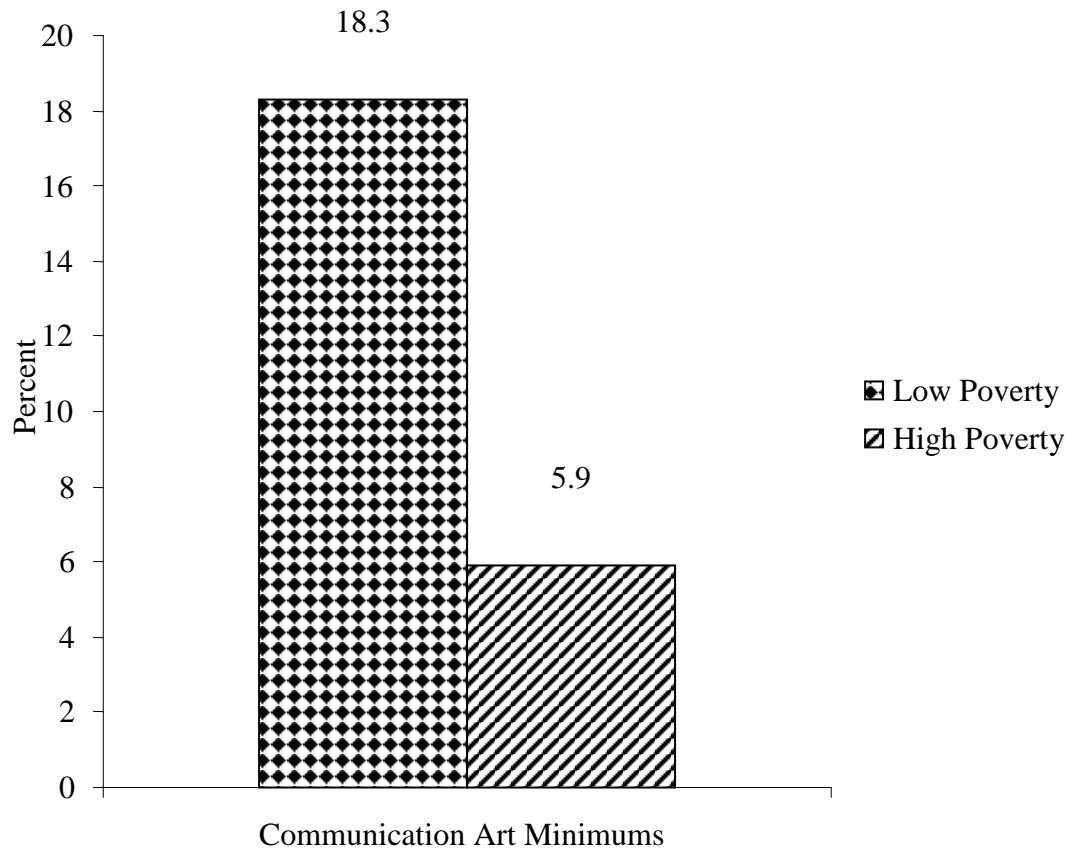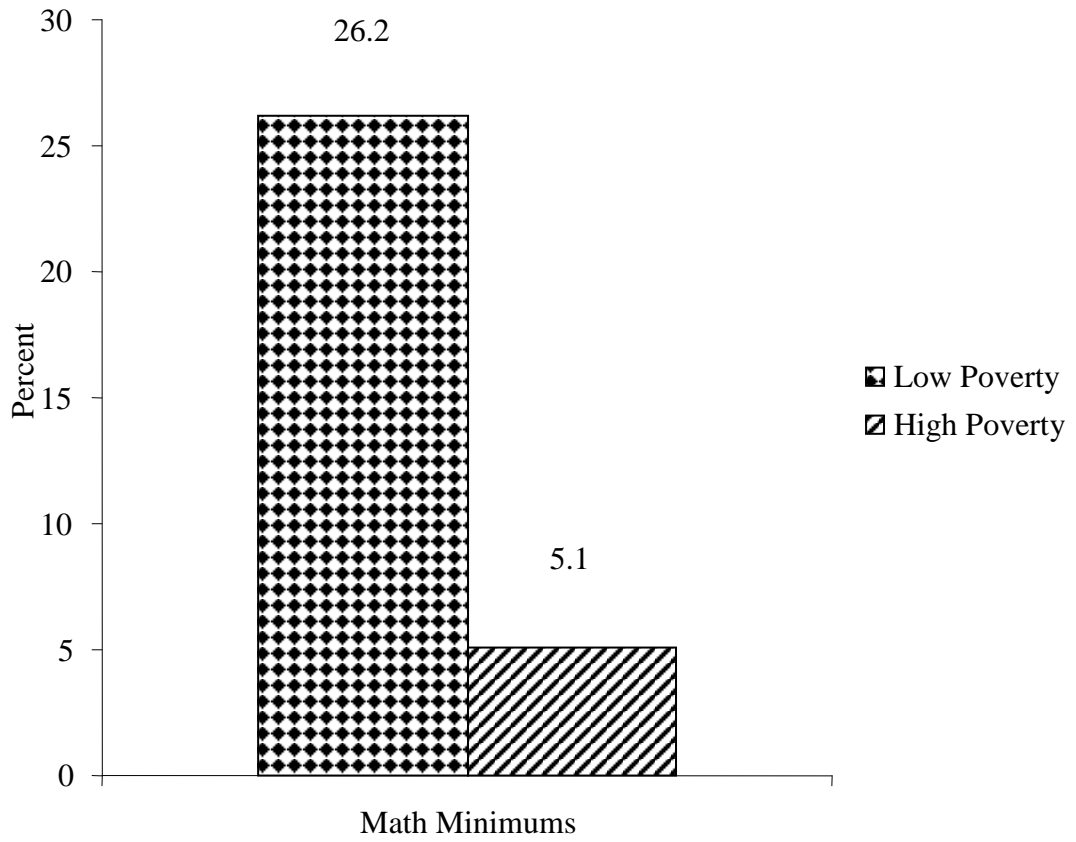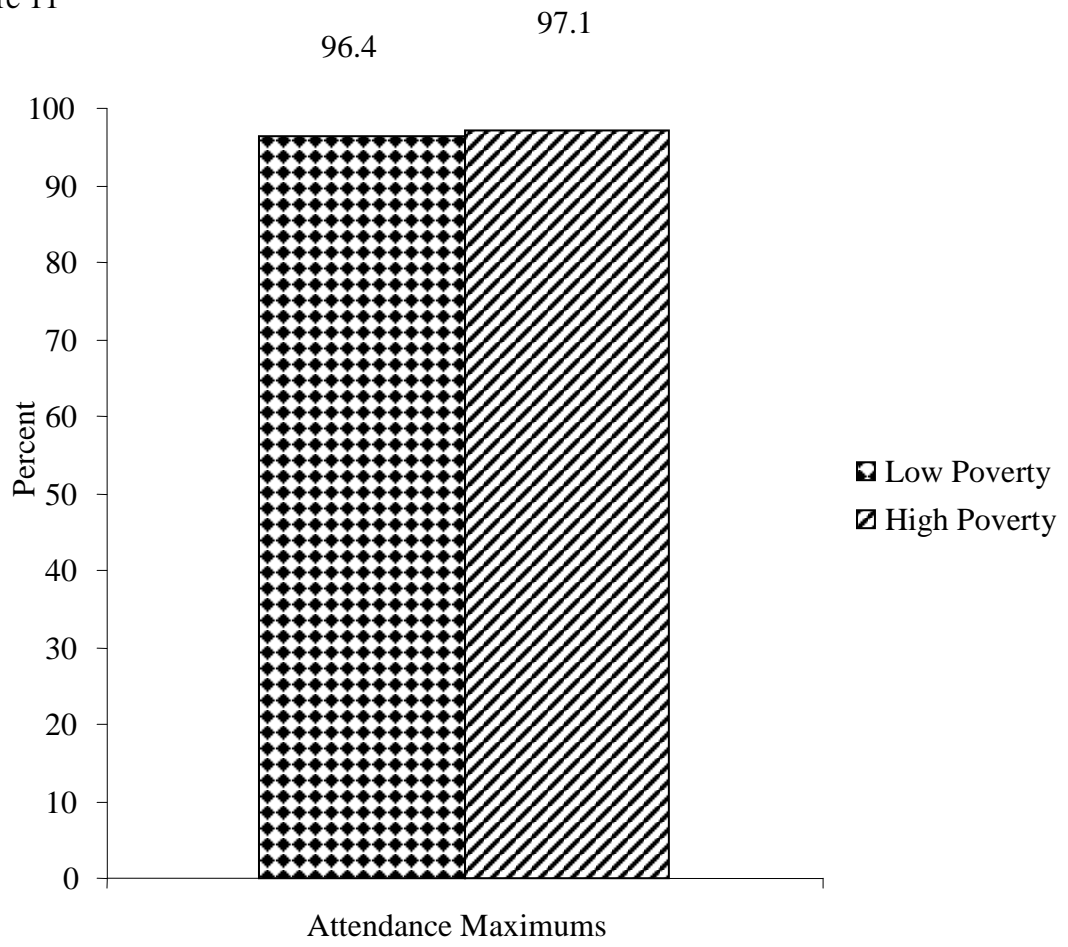

Teacher Quality Minimums
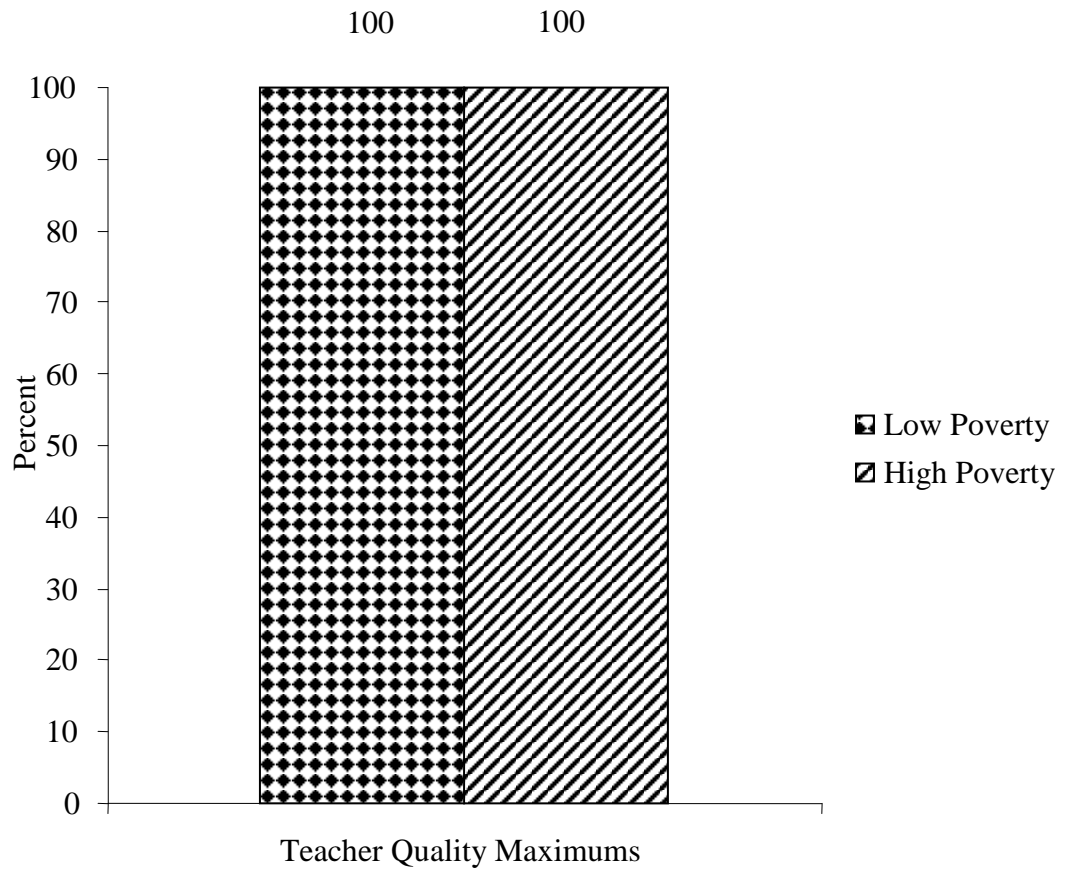
Figure 9

Communication Art Minimums
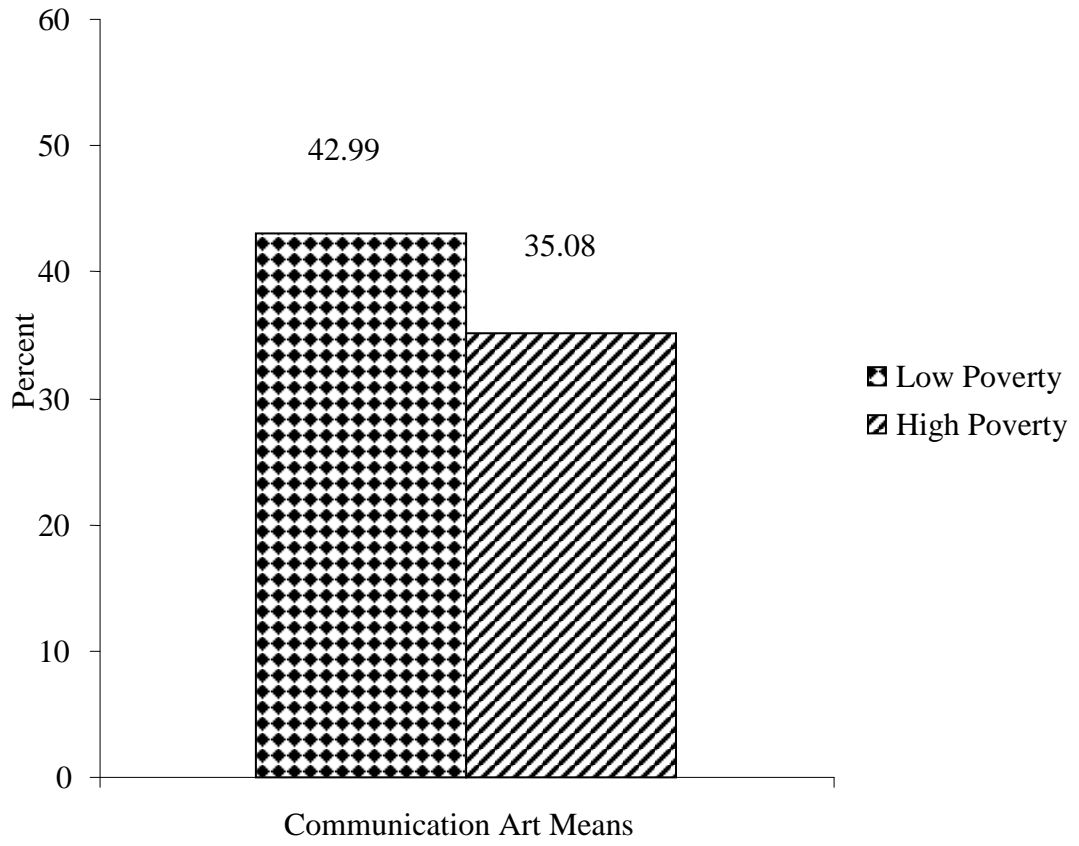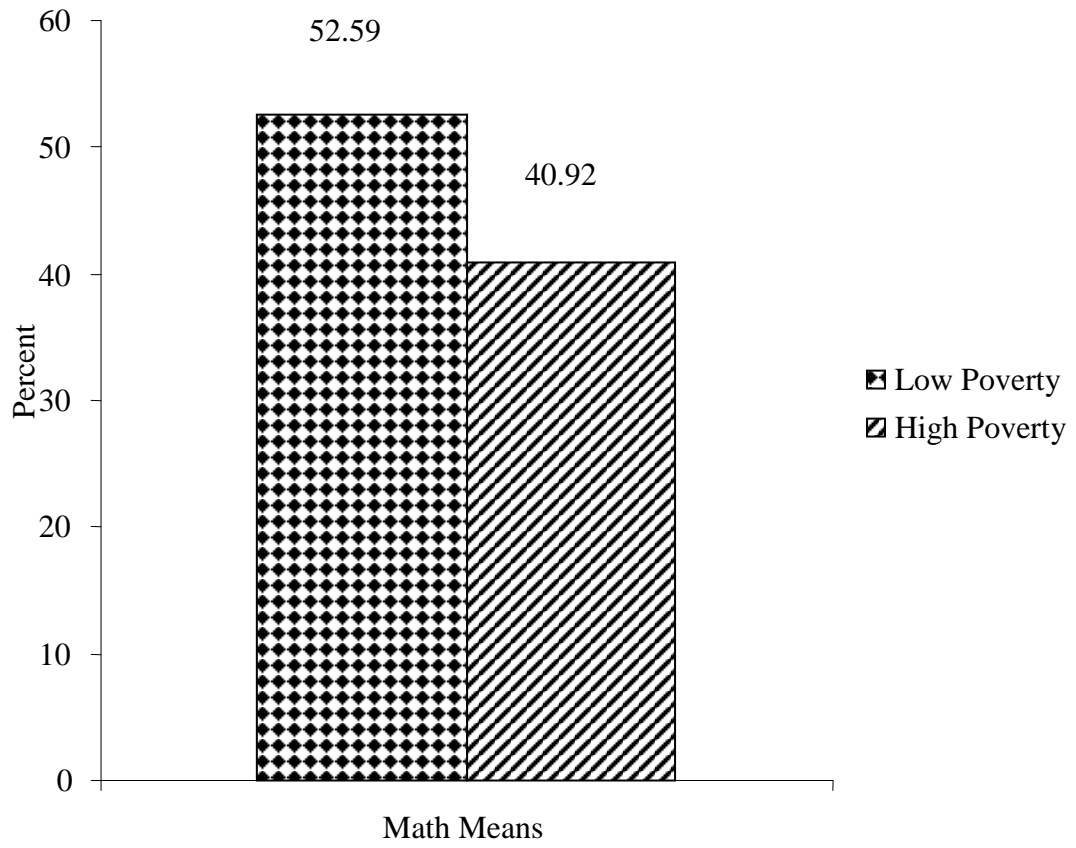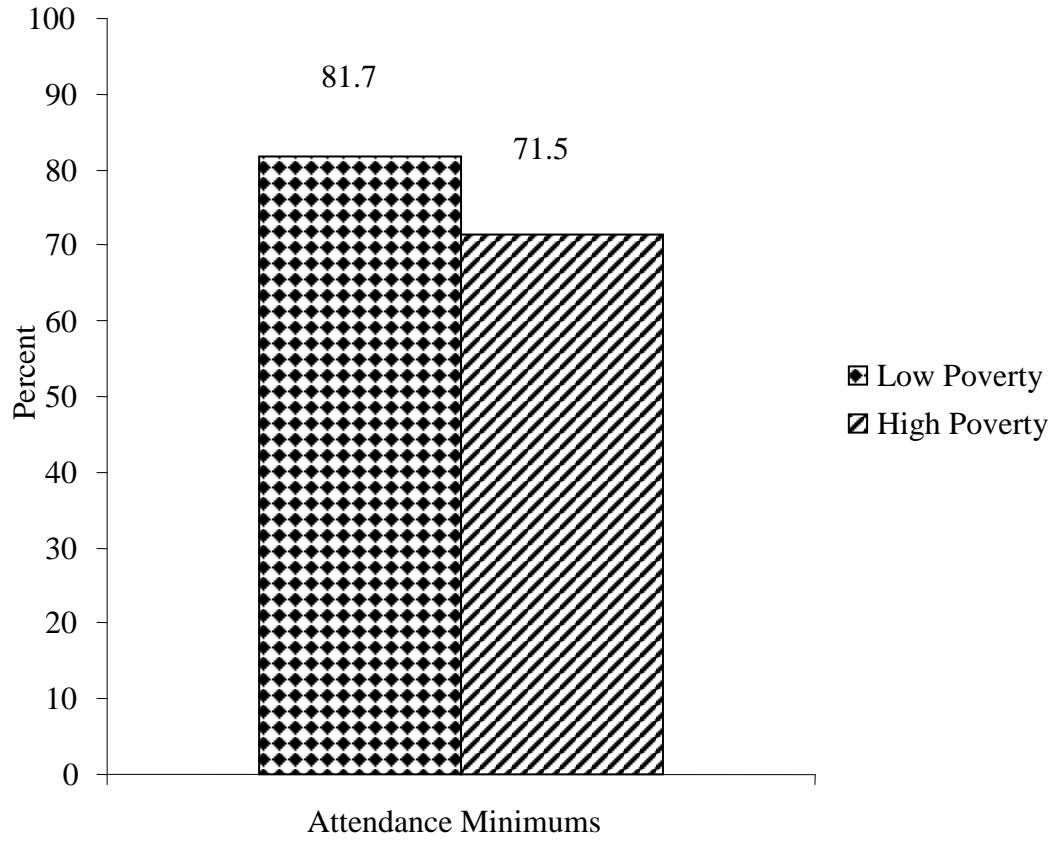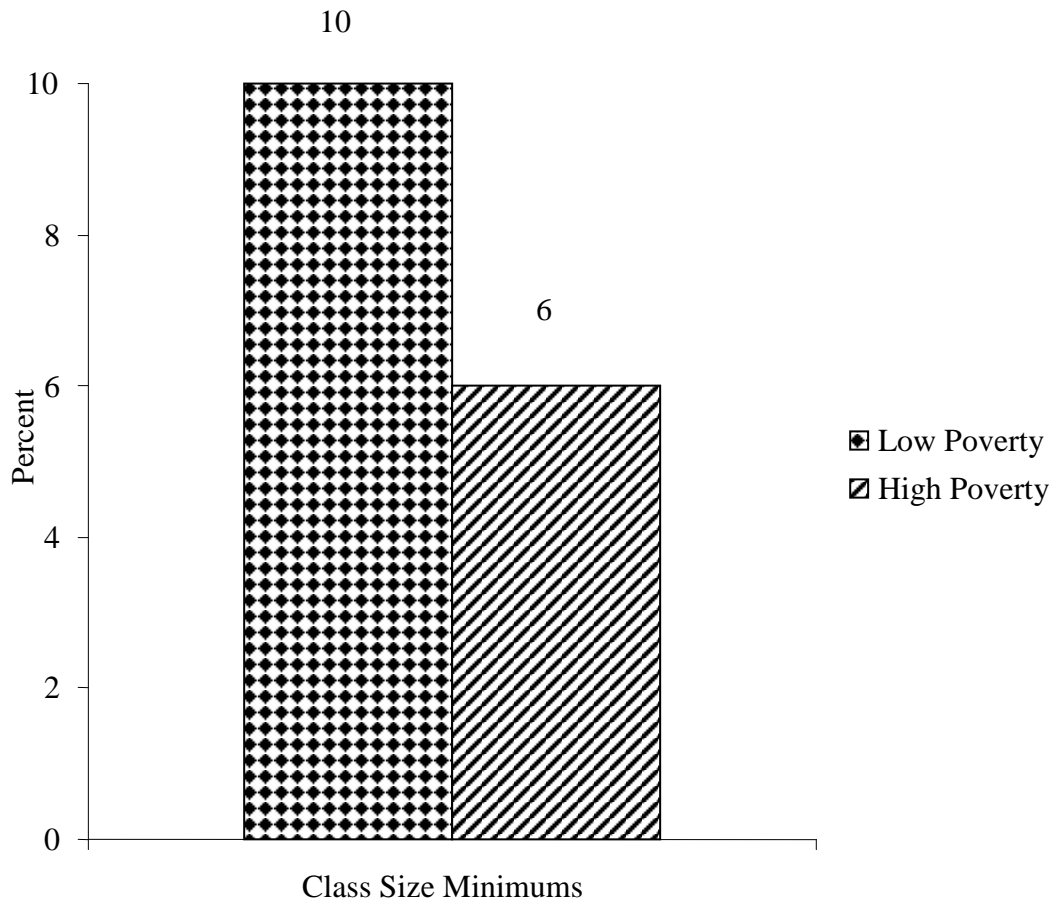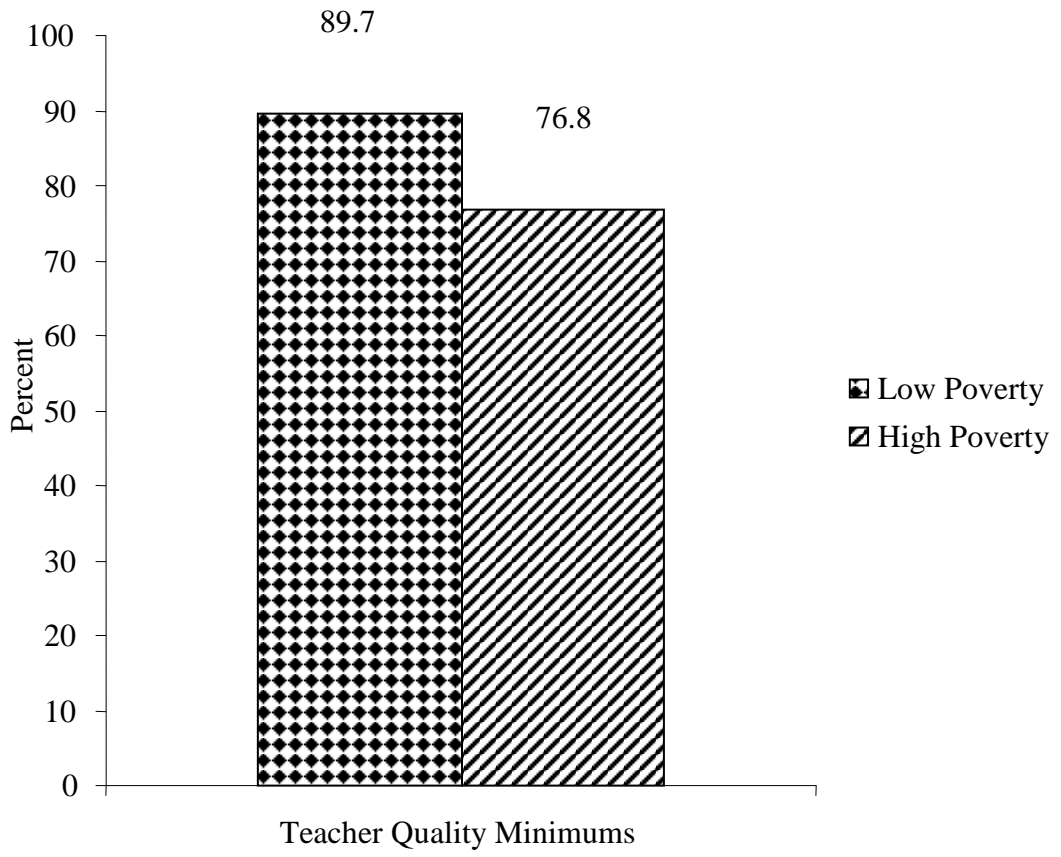
Figure 10

Figure 11

Figure 12

Figure 13

Teacher Quality Maximums

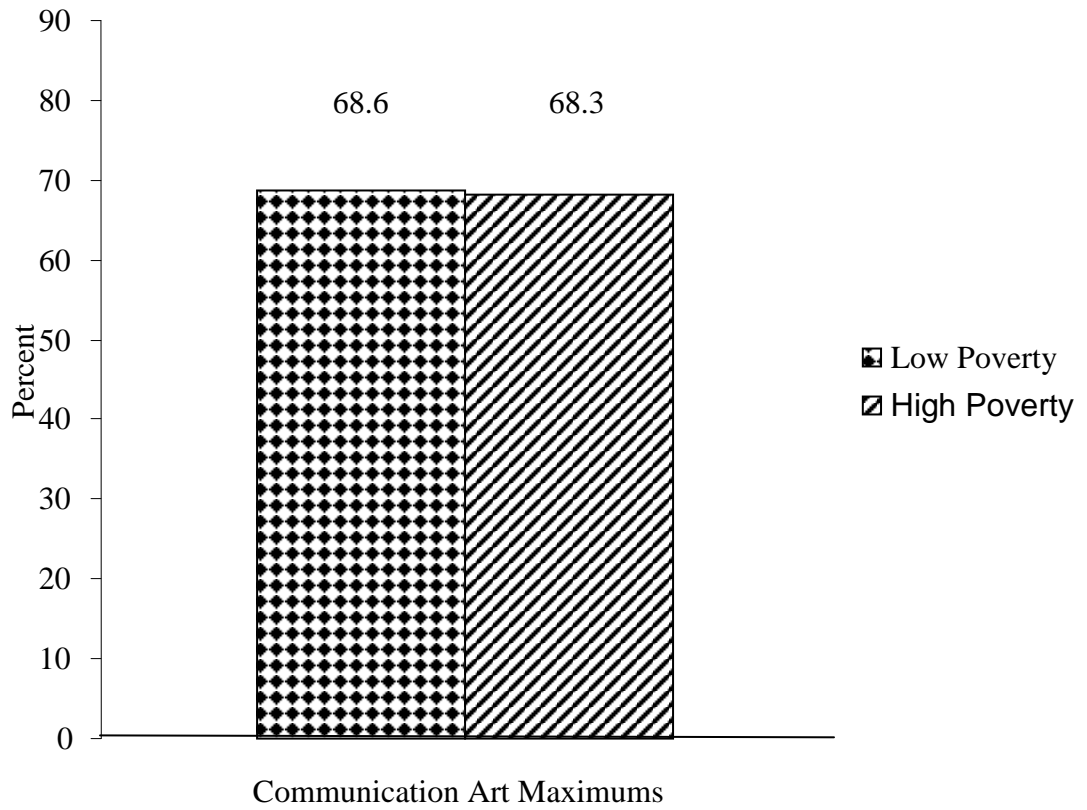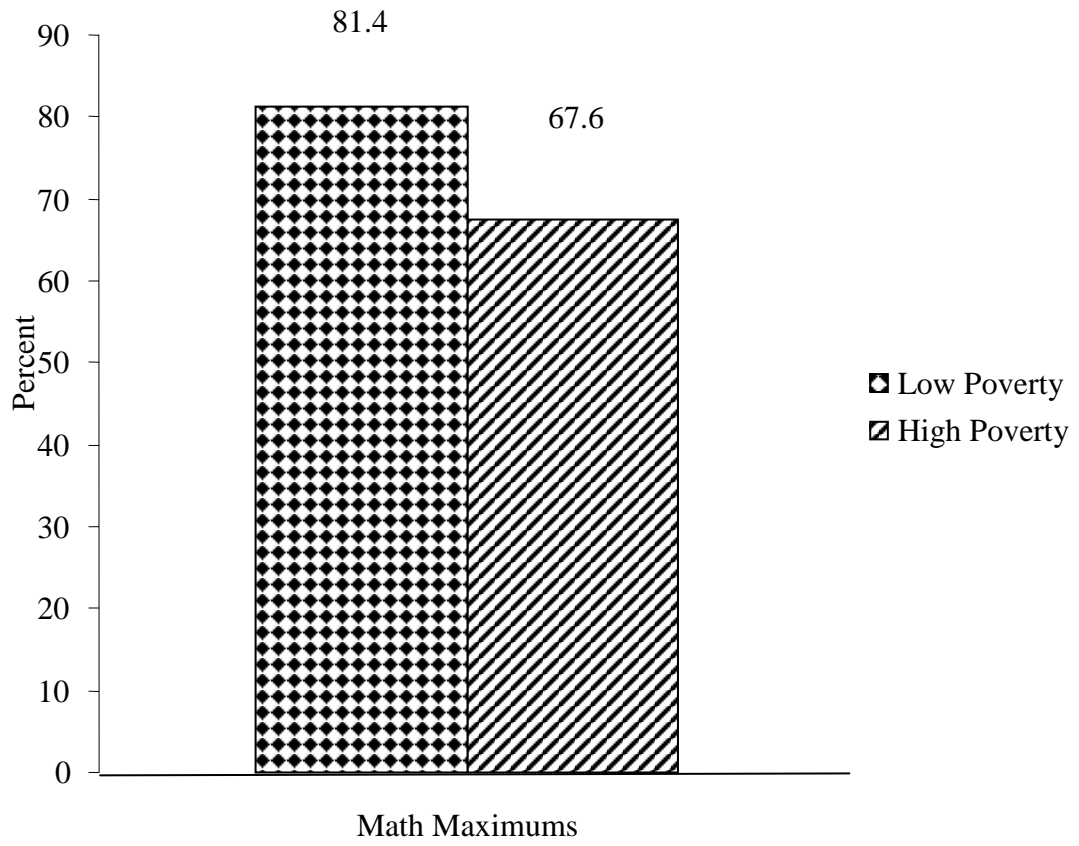Figure 14

Communication Art Maximums

Figure 15

Math Maximums
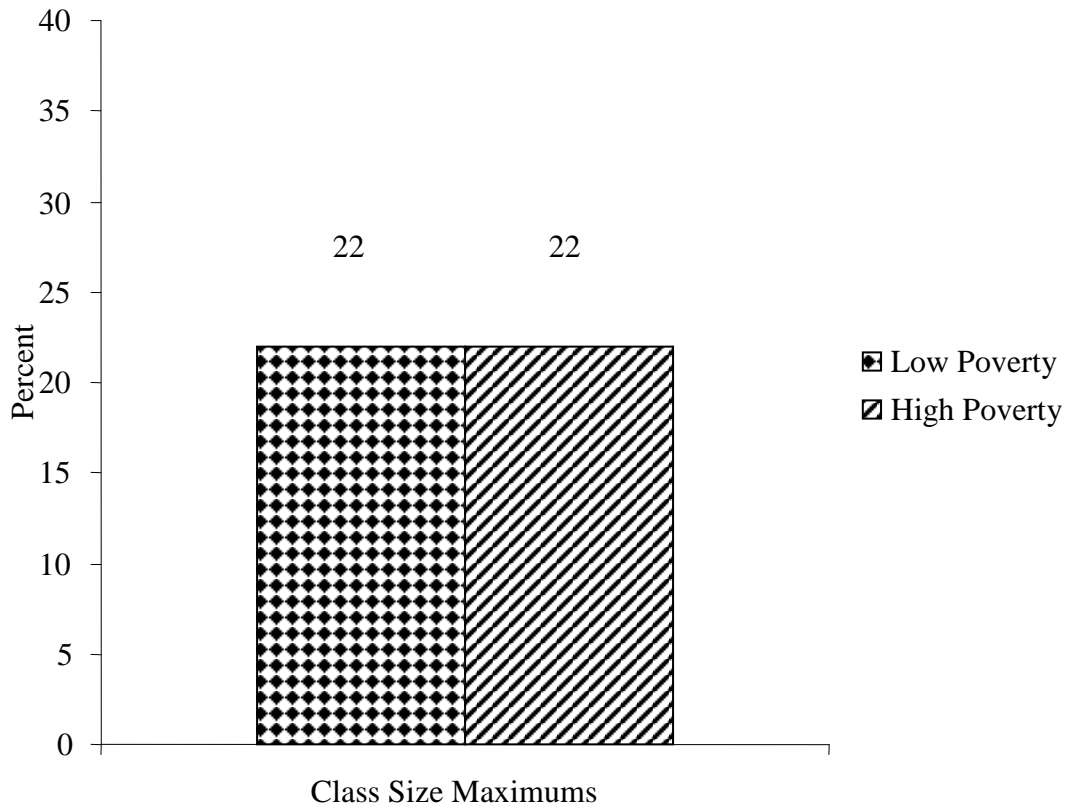
VITA

Cherita Graber presently works for Gibson Technical Center at Reeds Springs School District in Reeds Spring, Missouri, as the Evening Program Director. She also teaches Business Technology and Marketing classes. Her education includes over 24 years of teaching experience in various grade levels, as well as post-secondary education. Cherita is interested in serving as a full-time administrator.

Cherita is from the small town of Baxter Springs, Kansas. She received her undergraduate degree from Pittsburg State University in Pittsburg, Kansas, in Business Education. Her Master's Degree was attained at Oral Roberts University in Business Administration. The Specialist Degree was earned from Lindenwood University at the Nixa, Missouri campus. Her major was Educational Administration. Her Doctor of Education was also attained through Lindenwood University in Educational Administration.

Cherita is married to Steven Graber, who is a General Manager of several Branson hotels. She has two grown children and five grandchildren. Her interests include spending time with family, especially her grandchildren; traveling; and outdoor activities.