THE TRIFECTA OF EXAMINING PERFORMANCE OF OHIO PUBLIC HIGH SCHOOLS: STUDENTS, TEACHERS AND SCHOOL PREPAREDNESS

A Dissertation

Presented to

The Graduate Faculty of The University of Akron

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

Kula A. Francis

May, 2007
THE TRIFECTA OF EXAMINING PERFORMANCE IN OHIO PUBLIC HIGH SCHOOLS: STUDENTS, TEACHERS AND SCHOOL PREPAREDNESS

Kula A. Francis

Dissertation

Approved: 

Authorized Signature
Advisor
Dr. Raymond W. Cox, III

Accepted: 

Authorized Signature
Department Chair
Dr. Sonia Alemagno

Committee Member
Dr. RaJade M. Berry-James

Dean of College
Dr. Ronald F. Levant

Committee Member
Dr. Peter J. Leahy

Dean of Graduate School
Dr. George R. Newkome

Committee Member
Mr. Sylvester Murray

Date

Committee Member
Dr. John E. Queener

ii
ABSTRACT

At all levels of government, it is of the utmost importance that the state of the education system is intact. In as much as a great deal of energy is being spent on education and the improvement of schools, there remains major problem in a number of areas. An analysis of today’s schools illustrate that many students are dropping out of school. Of the students who stay in school, many are either skipping classes or failing to score a minimum pass on standardized exams.

American schools show that there is a substantial education gap between specific groups of students. This education gap separates Whites students from minority students and privileged students from underprivileged students. As a potential solution to the education gap problem, the No Child Left Behind Act was passed. The full title, to close the achievement gap with accountability, flexibility and choice, so that no child is left behind seeks to close the achievement gap between high and low performing students.
Using the concept of accountability, this research study explored factors which affect school performance (as measured by performance index) in public high schools in the state of Ohio. Utilizing stepwise multiple regression analysis, 462 public high schools were included in the testing of three models: (1.) socio-economic model; (2.) teacher functioning and preparedness model; (3) school preparedness model. The results indicated that all three models were significant.

The findings proved to be in line with current literature on education performance. For example, it was indicated that schools with increased numbers of students receiving free or reduced lunch had reduced school performance. Schools with small enrollments have higher school performance than schools with large enrollments in Ohio public high schools. Schools with more fully certified teachers have higher school performance. Lastly, schools with increased graduation and attendance rates have increased school performance. Policy implications and future recommendations are also discussed in this paper.
DEDICATION

This dissertation is dedicated to my family - my first and most essential institution.

To my mother, thank you for ALWAYS being the greatest cheerleader, confidant and motivator in my life. Your sacrifices have never been taken for granted.

To my father, thank you for teaching me the importance of holding strong to my values, the strength to live for me, and the ability to remember the Kings and Queens from whom I have descended. Thank you for always reminding me to never doubt my decisions and never let my doubts determine my decisions.

To my brother, thank you for teaching me the most important lessons of life. Thank you for always setting an excellent example of integrity and pride. You are truly the greatest brother a sister could ever have.

Thanks for everything that I am - Together, our ‘LYNK’ (Leonard, Yvonne, Nyere and Kula) is forever strong.
ACKNOWLEDGEMENT

Patience is a virtue that I have certainly learned through the process of completing this dissertation endeavor. I would like to extend my deepest gratitude to my dissertation committee chair, Dr. Raymond W. Cox, III, for your constant direction and unending faith in my capabilities. I am forever indebted to Dr. RaJade M. Berry-James for providing me with the opportunity to develop professionally, for your unlimited and invaluable availability and guidance, and for your methodological expertise. Thank you to Drs. Peter J. Leahy and John Queener, Cleveland State Univ. Professor Sylvester Murray for your input and assistance. Without my entire committee, this project would not be possible - Thank you!

Thank you to Dr. Lathardus Goggins, who is responsible for my attending the Univ. of Akron’s graduate program. Through Dr. Goggins, many very intellectual minds were given the opportunity to pursue graduate degrees.

Thank you to all of my family and friends for always believing in me. To my grandmother, Doris, grandfather,
Edgar, and my aunts Donna, Denise, Valorie, Joyce and Alma, thank you for your unfailing encouragement and support. To my niece and nephew, Madison-Denai and Nyere, Jr., I love you both always! To all of my cousins, especially Zakiyah, Kenya, Shantelle, Kambia, Genelle, Prasada, Ashanti, Shawna and Jermaine, I am truly blessed to have grown up with close cousins. Our childhood could not have been any better. To my special little cousins, Sadajah, Sundara, Ahimsa, Genesis, Makeba, Terrance, and Terrell, my god daughter, Shaniya, and my special “AKA-nieces”, Myla and Maris – your futures inspire me to do my part to ensure that your education is exactly what you deserve – The BEST!

To my newest family, Kenny Hendrickson, thank you for your availability, assistance and constant encouragement. It meant the WORLD to me!

To Dr. Milton James and family, thank you for your enduring support and for allowing me into your home, some days past 2:00 A.M.

To my colleagues and friends, Cryshanna, Augustine, Lee, Nichole, Gail, and Gary, thank you for everything!

Finally, and most importantly, I thank GOD for HE has been with me all the days of my life, and undoubtedly will continue to be with me for all the days to follow.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>xii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>xiv</td>
</tr>
</tbody>
</table>

## CHAPTER

### I. THE PROBLEM

<table>
<thead>
<tr>
<th>Statement of the Problem</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of the Study</td>
<td>11</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>11</td>
</tr>
<tr>
<td>Research Approach</td>
<td>15</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>17</td>
</tr>
<tr>
<td>Organization of the Study</td>
<td>19</td>
</tr>
</tbody>
</table>

### II. REVIEW OF THE LITERATURE

<table>
<thead>
<tr>
<th>Introduction</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving Schools</td>
<td>21</td>
</tr>
<tr>
<td>Use of Multiple Measures</td>
<td>27</td>
</tr>
<tr>
<td>Designations for school</td>
<td>27</td>
</tr>
<tr>
<td>And School Districts</td>
<td>30</td>
</tr>
<tr>
<td>Recognition or Consequences</td>
<td>31</td>
</tr>
</tbody>
</table>
Accountability for
Various Groups.......................................................... 31

Results for Stakeholders................................. 32

School Attendance....................................................... 33

Graduation/Dropout ............................................. 36

Standardized Testing.................................................. 38

School Size................................................................. 42

Student/Teacher Ratio.............................................. 48

Teacher Functioning and Preparedness............... 48

Teacher Qualification
And Certification.................................................... 49

Teacher Salary......................................................... 53

Teacher Attendance............................................... 55

Educational Gaps/Socioeconomic Status............ 58

Educational Accountability Movement............. 65

Conceptual Framework.................................................. 70

Research Hypotheses................................................. 78

III. RESEARCH METHODOLOGY........................................... 80

Introduction............................................................... 80

Research Design.......................................................... 80

Population................................................................. 83

Data/Data Collection Procedures ..................... 83

ODE........................................................................ 86

NCES...................................................................... 87
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of Analysis</td>
<td>90</td>
</tr>
<tr>
<td>Statistical Analysis and Techniques</td>
<td>91</td>
</tr>
<tr>
<td>Limitations</td>
<td>99</td>
</tr>
<tr>
<td>IV. DATA ANALYSIS AND RESULTS</td>
<td>100</td>
</tr>
<tr>
<td>Introduction</td>
<td>100</td>
</tr>
<tr>
<td>Description of Data</td>
<td>100</td>
</tr>
<tr>
<td>Extraction and Manipulation Of Data</td>
<td>103</td>
</tr>
<tr>
<td>Characteristics of Data</td>
<td>107</td>
</tr>
<tr>
<td>Statistical Technique Used</td>
<td>117</td>
</tr>
<tr>
<td>Results</td>
<td>121</td>
</tr>
<tr>
<td>Model One</td>
<td>121</td>
</tr>
<tr>
<td>Model Two</td>
<td>128</td>
</tr>
<tr>
<td>Model Three</td>
<td>135</td>
</tr>
<tr>
<td>V. CONCLUSION AND RECOMMENDATIONS</td>
<td>142</td>
</tr>
<tr>
<td>Introduction</td>
<td>142</td>
</tr>
<tr>
<td>Examination of the Literature</td>
<td>144</td>
</tr>
<tr>
<td>Summary of the Findings</td>
<td>147</td>
</tr>
<tr>
<td>Limitations</td>
<td>150</td>
</tr>
<tr>
<td>Policy Implications &amp; Conclusions</td>
<td>151</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>153</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>161</td>
</tr>
</tbody>
</table>

x
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Operationalization of Variables</td>
</tr>
<tr>
<td>4.1</td>
<td>Frequency Distribution of School Locale</td>
</tr>
<tr>
<td>4.2</td>
<td>Frequency Distribution of School Population Receiving Free and Reduced Lunch</td>
</tr>
<tr>
<td>4.3</td>
<td>Frequency Distribution of Fully Certified Teachers in Ohio Public Schools</td>
</tr>
<tr>
<td>4.4</td>
<td>Frequency Distribution of Teacher’s Salary</td>
</tr>
<tr>
<td>4.5</td>
<td>Frequency Distribution of Ohio Public School Enrollment</td>
</tr>
<tr>
<td>4.6</td>
<td>Frequency Distribution of Graduation Rates for Ohio Public High Schools</td>
</tr>
<tr>
<td>4.7</td>
<td>Frequency Distribution of School Population Student Attendance Rates</td>
</tr>
<tr>
<td>4.8</td>
<td>Frequency Distribution of Teacher Experience for Ohio Public High Schools</td>
</tr>
<tr>
<td>4.9</td>
<td>Frequency Distribution of Teacher Attendance Rates for Ohio Public High Schools</td>
</tr>
<tr>
<td>4.10</td>
<td>Frequency Distribution of School Population of Number of Minority Students Enrolled</td>
</tr>
</tbody>
</table>
4.11 Enrollment by Race/Ethnicity in Ohio Public High Schools AY 2004-05

4.12 Frequency Distribution of Ohio Public High School Teachers with at least Bachelor’s Degree

4.13 Correlation Matrix for Socio-Economic Model (1)

4.14 Collinearity Statistics – Tolerance And Variance Inflation Factor (VIF) For Socio- Economic Model (1)

4.15 Stepwise Regression for Socio-Economic Model (1)

4.16 Correlation Matrix for Teacher Functioning & Preparedness Model (2)

4.17 Collinearity Statistics – Tolerance & Variance Inflation Factor (VIF) For Teacher Functioning & Preparedness (2)

4.18 Stepwise Regression for Teacher Functioning and Preparedness Model (2)

4.19 Correlation Matrix for School Preparedness Model (3)

4.20 Collinearity Statistics – Tolerance And Variance Inflation Factor (VIF) For School Preparedness Model (3)

4.21 Stepwise Regression for School Preparedness Model (3)
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Rand Report Projected Growth of Population by Race</td>
<td>13</td>
</tr>
<tr>
<td>1.2</td>
<td>Educational Achievement Gap</td>
<td>18</td>
</tr>
<tr>
<td>2.1</td>
<td>Four Pillars of No Child Left Behind Act (NCLB)</td>
<td>25</td>
</tr>
<tr>
<td>2.2</td>
<td>Interrelated Factors that Affect Achievement</td>
<td>57</td>
</tr>
<tr>
<td>2.3</td>
<td>Accountability for School Reporting</td>
<td>76</td>
</tr>
<tr>
<td>3.1</td>
<td>Conceptual Model $H_{01}$</td>
<td>93</td>
</tr>
<tr>
<td>3.2</td>
<td>Conceptual Model $H_{02}$</td>
<td>95</td>
</tr>
<tr>
<td>3.3</td>
<td>Conceptual Model $H_{03}$</td>
<td>97</td>
</tr>
<tr>
<td>4.1</td>
<td>Research Model $H_{01}$</td>
<td>125</td>
</tr>
<tr>
<td>4.2</td>
<td>Research Model $H_{02}$</td>
<td>133</td>
</tr>
<tr>
<td>4.3</td>
<td>Research Model $H_{03}$</td>
<td>139</td>
</tr>
</tbody>
</table>
CHAPTER I

THE PROBLEM

Recognized widely as one of the leading issues facing the United States, is the plight of our schools and the state of the education system (Noguera, 2005, p. 11). The academic condition of schools all over the country has citizens up in arms. More and more, students are dropping out of school, not attending school regularly and not scoring the minimum pass on standardized tests (Chester, 2005; Dyson et al, 2003; Erickson, 1987; Greene, 2002; Haycock, 2001; Jencks, 1992; Peterson & West, 2003). There is no specific factor causing the negative education performance of specific students in many schools today (Erickson, 1987; Greene, 2002; Jencks, 1992; Peterson & West, 2003).

Former Secretary of Labor, Ray Marshall stated that education is crucial, and cannot be viewed separately from a state’s economic strategy. Moreover, education is an essential component of national economic investment
strategy. Additionally, in a competing and global environment, increased education investment that leads to the production of high skilled and educated workforce is imperative for future economic growth (Alexander, 2000).

The academic achievement problem for specific groups of students in the United States was first recognized during the civil rights movement of the 1960’s. Shortly after this time, some progress was made that showed a more equal outlook between groups who previously were not achieving and those who were (Haycock, 2001). This “achievement equality” has returned to its original negative differences between those who are excelling academically, and those who are not in the last two decades (Haycock, 2001; O’Day & Smith, 1993). Since then, there has been little empirical research done on this growing policy issue (Bowen & Bok, 1998; Haycock, Gerard & Haung, 2001; O’Day & Smith, 1993).

Disapproval on the status of public schools throughout the United States has been observed for failing to provide students with sufficient training and abilities to compete in the world economy (Deere & Strayer, 2001). A great deal of time and money is being used to address academics in school. Yet, the importance of specific factors affecting
school achievement is unknown. The factors which explain school achievement gaps among groups are not clear. There is no clear examination of school factors associated with academic achievement gaps (Erickson, 1987). There is a great amount of literature on educational performance; however, there is a paucity of studies specific to socio-demographic factors, and school performance. With educational gaps widening, it is necessary that more research is performed specifically on the socio-demographic factors and possible effects on educational performance.

Tending to the problems of academic achievement, the country has three narrowly focused reforms dominating current policy discussions: testing, standards and accountability; and vouchers (Noguera, 2005).

Testing is perhaps the primary reform used today. The second reform of the day is standards and accountability. Noguera (2005) claimed that the states of California and Massachusetts list schools according to results on their state achievement tests. Additionally, Noguera (2005) added that it is always expected that affluent students from suburban schools would be at the top of the school lists, and poor students from inner city schools at the bottom (p. 14). Moreover, Noguera (2005, p. 14) paralleled
that there would be no clear difference if schools were listed by the percentage of students of free or reduced priced lunch and gain identical results. As far as vouchers, Noguera (2005) believed that public confidence is undermined when public officials make decisions that affect public education. Subsequently, this is the case of vouchers. Additionally, poor children who are receiving school vouchers are not going to get into elite private schools since Noguera (2005) claimed that elite schools specifically keep poor students out (p. 15).

Realizing the importance of producing solutions to the problems of school achievement among all students, the No Child Left Behind Act (Section 20 U.S.C. 6301 et seq.) is presently in the spotlight among educators, policy makers, parents, school administrations, and others. The No Child Left Behind Act of 2001 established the reliance on accountability and assessment approaches as a mechanism for improving school success and achievement (Linn, Baker & Betebenner, 2002).

The No Child Left Behind Act (NCLB) is the short title for the law. Its full title is more descriptive and indicative of its central purpose “to close the achievement gap with accountability, flexibility and choice, so that no
child is left behind” (Section 20 U.S.C. 6301 et seq.). Title I of NCLB – Improving the Academic Achievement of the Disadvantaged, seeks to “close the achievement gap between high and low performing children, especially the achievement between minority and non-minority students and between disadvantaged children and their more advantaged peers” (Section 20 U.S.C. 6301 et seq.). As a result of NCLB, all states are required to increase the accountability of schools and school districts by collecting data on every school and school district as a means of finding solutions to the academic problems (DOE, 2005). These accountability measures are based on school performance, such as standardized test scores, attendance rates, and graduation rates (DOE, 2005).

In response to the NCLB mandate, the Ohio Department of Education (ODE) established new accountability measures, but also continued to use measures that include performance indices as well as growth calculations over time (ODE2, 2006). The ODE produced designations for schools, which allows the community to identify schools that are excelling, to those that are in academic emergency. Information that provides the ODE with its accountability
system is developed through data collected by the Electronic Management Information System (EMIS).

Through the ODE’s accountability system, various measurements and assessments are being analyzed including attendance and graduation rates, standardized achievement tests, school size, student-teacher ratio, as well as socio-economic components. The variety of measures collected in attempt to find the answer to the problem most facing schools across the nation: Educational achievement gaps between high and low performing students.

Data collected and analyzed by the Ohio Department of Education, Electronic Management Information System (EMIS) and the National Center for Education Statistics, Common Core Data (CCD). These entities collect data on variables that are considered instrumental in defining the major concerns of public schools (ODE, 2005; DOE, 2000).

In as much as states are required to collect data on specific variables, such as school size, standardized test scores, attendance rates, and graduation rates, few studies have examined all variables inclusively. Evidently, more research is essential to increase our understanding of factors influencing school’s educational performance. This
study addresses the lack of attention on factors affecting school performance, which leads to educational gaps.

As a way of bridging the gaps in the literature, this present research study explores social-demographic factors and school factors to determine if these factors are significantly affecting educational performance on public high schools across the state of Ohio.

Attendance rates are one of the most widely collected school factors. Failure to attend school has long been viewed as an indicator of school failure, school dropout, poor earning potential later in life, and run-ins with the correctional system (Epstein & Sheldon, 1996; Ford & Sutphen, 1996; Jenkins, 1997; Lamdin, 1998). Because of these social problems, assessing school attendance is important in understanding the role of attendance in the achievement gaps found in schools across the nation (Jenkins, 1997; Lamdin, 1998).

Graduation rates have longed been viewed as a key factor in determining how it affects school performance (Ford & Sutphen, 1996). The value of the graduation rate is especially highlighted since, when large numbers of students fail to graduate from high school, the society pays the price in the long run (Ford & Sutphen, 1996;
Greene & Winters, 2005). Students who do not graduate from high school are more likely to depend on social services, be in the correctional system, and have lower paying jobs (NCES, 1995).

The most frequently used factor for understanding the status of school performance is standardized test scores (Catterall, 1989; Goertz & Duffy, 2003). Schools turn to test scores as a major indicator of the level of school achievement. Additionally, test scores are used by real estate agents to determine good and bad schools and school districts, and by some school’s personnel department to determine merit pay (Haladyna, Nolen & Haas, 1991).

Students are tested on a variety of areas across the board. Although these tests are given to the individual student, the school is where recognition or blame falls, since schools are assessed based on the student’s performance on the standardized exams (Goertz & Duffy, 2003; Herring, 1989).

School size data is collected and utilized to find relationships and indicators of schools. School size has caused much debate about its ability to affect academic failure or achievement (Cotton, 1996). There are strong arguments for both sides of the debate. One side asserts
that smaller schools allow students’ attendance and school participation to increase (Barker & Gump, 1964; Gerwertz, 2001; Kuziemko, 2006).

On the other hand, proponents of large schools believe that small schools limit students in terms of geographic area, not allowing students the exposure of different cultures and backgrounds and there is great the economic gains as compared to smaller schools (Hart, 2006; Lee & Smith, 1997; Kenny, 1982). Very similar to the school size argument is student-teacher ratio. The issue here is whether the labeled larger classrooms are truly suffering because of the amount of students per teachers (Stoddard, 2003).

The major concern in all education reform is to determine why specific groups are affected more than others. Certain groups of students, such as minorities, poor, or underprivileged do not perform at the level of students who are White, or are from privileged or from non-poverty stricken neighborhoods (English, 2002; South et al, 2003).

Statement of the Problem
It is important that the problem statement first looks statistically at the problem at hand: The national
graduation rate for the 1998 school year was 71%, with White students graduating at 78%, African-American students at 56%, and Hispanic students at 54%. Georgia, Nevada, and Florida had the lowest overall graduation rate in the nation at 54%, 58% and 59% respectively (Greene, 2002).

Among the nation’s fifty largest school districts, Cleveland City had the lowest overall graduation rate with 28%, followed by Memphis, Milwaukee, and Columbus. Cleveland City schools also had the lowest graduation rates for African Americans at a rate of 29%, as well as the lowest graduation rate for Hispanic students at 26% (Greene, 2002).

Looking at the educational performance issue in Ohio is important because of the great differences in education achievement throughout the states (Greene, 2002). Holistically, the state of Ohio is not among States that have a low overall graduation rate. However, if one were to look at the graduation rates by school district or school, the state of Ohio is on the top of the list for both Cleveland City and Columbus City schools and school districts among the top three (Greene, 2002). There is therefore a great need to understand what factors affect education performance in Ohio.
Purpose of the Study

The purpose of this study is to explore whether socio-demographic and school factors affect school performance in Ohio public high schools. Generally, achievement gaps and academic performance of students are examined, non-inclusive of the academic performance of schools. Additionally, current literature has failed to look specifically at all factors comprehensively that may be linked to school performance and education disparities. The gaps in the literature as it pertains to the academic performance of schools need to be explored.

This study intends to provide important background information related to this major issue of public policy importance. Second, this study offers an in depth exploration of educational achievement in Ohio public high schools as a means of adding to the lack of literature.

Significance of the Study

It is common knowledge that education accounts for the majority of policies made in the United States. Furthermore, the education policies that are created today, affects every facet (i.e., economic, social) of the American society for years to come. Specifically, the academic achievement gap is one of the most pressing
challenges for urban education in the United States today (Norman, et al, 2001). This study is significant because of three specific reasons:

First, with the United States’ minority population continuing to grow rapidly, the future of this country is in need of all ethnic and social segments of its population to excel academically. If all segments of the population are afforded the opportunity to excel academically, fewer students would eventually drop out of school, more students would complete post secondary education, and the society does not become dependent on the social services (such as welfare, food stamps, SSI, social security, Medicaid, Medicare, school lunch and energy assistance) or in the correctional system (juvenile justice, probation, parole, and prison). The society instead creates a society of positive citizenry (Vernez, et al, 1999).

By closing the achievement gaps, the United States is in line to benefit from savings in decrease in the need for income transfers and public social programs. Additionally, there would be an increased tax revenue and disposable income for the U.S. citizenry (Vernez, et al, 1999).

According to a Rand Report (Carroll, et al, 1999), minority groups in the United States are rapidly growing.
In fact, Rand has estimated that in the State of California, state taxes collected would increase a little over 11% if the level of education among minorities increased to that of Whites. Nationally, this rate would increase state taxes received by 9.6% (Carroll, et al, 1999).

By the year 2015, it is expected that minorities will make up almost half of the United States population (Carroll, et al, 1999). If educational achievement gaps maintain their present direction, a rather large percentage of the population will lack the education necessary for the country to continue to compete in the global economy (Carroll, et al, 1999).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>2.8</td>
<td>6.3</td>
<td>124.1</td>
</tr>
<tr>
<td>Black</td>
<td>12.9</td>
<td>15.6</td>
<td>20.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10.6</td>
<td>21.3</td>
<td>100.9</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>62.3</td>
<td>59.2</td>
<td>-5.1</td>
</tr>
<tr>
<td>Total</td>
<td>88.6</td>
<td>102.4</td>
<td>15.5</td>
</tr>
</tbody>
</table>

*Figure 1.1*
Rand Report Projected Growth of Population by Race
(Carroll, et al, Rand Corporation, 1999)
Second, the United States of America claims to offer equal rights to all its citizens. It is important that possible disparities in the educational system are viewed. If groups of students are not gaining the skills necessary to exist in this society, this country is failing to provide the simple elements that provide freedom and justice. Disparities in opportunities cannot exist between the minority and non minority; the disadvantaged and the advantaged; or the urban and the suburban (Norman, et al, 2001).

Third, if the reason behind educational gaps is not realized, the performance of minority and underprivileged students could continue to draw farther away from students who are excelling in school (English, 2002). Achievement gaps have been said to have lifetime consequences, limited opportunities for minority students in future education, future career and earning potential (English, 2002; Jencks, 1992; Ogbu, 1994; Gould, 1999). With the widening of the educational gap, the future projects a population that is not educated enough to have a grip on society (Vernez, et al, 1999; Ogbu, 1978, 1982).

With the older, less educated, generation (including immigrants) dying, the adult population (including first
generation Americans) of the next 15 years would have been replaced by more educated workforce that is largely separated by minorities and underprivileged segments of the population. Naturally, the divide between these groups would grow more and more with time (Vernez, et al, 1999). The need to close the educational gap is very much a global issue. The United States rely on its citizenry, to compete in an international economy. The need for the United States to maintain its position as a powerful nation is important, and may be realized in the future only if quality education is provided to all students (Hunter & Bartee, 2003).

Concerns about the current conditions of the American education system are a major public policy issue. The significance of this research study is of utmost importance to researchers, practitioners and policymakers and the future society. This study also contributes to a better understanding of the educational performance gaps in the state of Ohio’s public high schools.

Research Approach

The literature shows that several variables have important implications on public school performance, both nationally and in the State of Ohio. This research will be
investigated by manipulation of data from Ohio Department of Education and the National Center of Education Statistics. The variables used for this study will include (1) school size data, (2) attendance rates, (3) graduation/dropout rate, (4) student-teacher ratio, (5) socio-economic conditions and (6) standardized test scores, (7) certification of teachers, (8) teacher’s salary, and, (9) teacher’s years of experience.

To determine if socio-demographic and the related variables listed above affect school performance, the following are the research question to be explored:

1. Is there a significant relationship between school performance and socio-economic factors in public high schools in the State of Ohio?

2. Is there a significant relationship between school performance and the functioning and preparedness of Ohio public high schools’ teachers?

3. Is there a significant relationship between school performance and student and school preparedness?
Definition of Terms

Accountability – Although there are immense definitions of accountability found throughout the literature, the term is quite elusive and cliché. Accordingly, Lipsky (1980) identified accountability as the link between bureaucracy and democracy. Additionally, a democracy depends on the ‘accountability of bureaucracies to carry out policies and otherwise administer the ongoing structures of governmentally determined opportunity and regulation’ (Lipsky, 1980, p. 160).

Educational (achievement) gaps – The distance between schools who are excelling academically and schools who are failing (As observed by school designation in Ohio). Those who are achieving tend to be White, while the failing students tend to be minority; or the excelling schools tend to have enrollment of upper or middle class (privileged) students, while the failing schools enroll students from (underprivileged) backgrounds.
Minorities – For the purpose of this study, minority includes African American, Asian, Hispanic and Native Americans.

Underprivileged – Refers to students who are eligible to receive free or reduced lunch in school. A student’s eligibility is determined based on family’s income in relation to the federally established poverty level. Free lunch is set at 130% of the poverty level or below, and reduced lunch prices are between 130% – 185% of the poverty level. To simplify, a family of four would be at 130% if the family annual income was $24,505 or less to be eligible for free lunch. For students to qualify for reduced lunch, the same family of four would be at 185% with a household income between $24,506 and $34,873 (NCES, 2006).
Organization of Paper

This research will consist of five chapters. The first chapter is an introduction of the general study, and gives details of the subject matter. Specifically, this chapter presents the problems, significance, and focus of the study. This chapter ends with the questions that will be investigated.

The second chapter provides a review of relevant literature on variables focused on to determine the educational gaps in public high schools. This chapter ends with the conceptual framework of this study.

The literature consists of an overview of attempts to improve public schools through the No Child Left Behind Act as well as the State of Ohio accountability measures. The literature then focuses on variables used by the governmental guidelines (such as NCLB and Ohio accountability system) to determine progress. These variables include school attendance, graduation/dropout rate, standardized testing, school size, student-teacher ratio, and socio-economic status.

The conceptual framework section will end with a view of accountability, and explain the relationship of accountability to answer the question as a whole of this
study. Chapter two then looks at educational gaps of ‘majority’ and ‘minority’ students. The review of the literature closes with the research hypotheses.

Chapter three discusses research methodology used in this study. This chapter proposed the source of the data, research design for the study, unit of analysis, statistical analysis and techniques and limitations. Chapter four presents a discussion of findings of this study. This chapter also interprets results. The fifth and final chapter presents a summary and conclusion from the study. Implications for future public policies will lead to suggestions for further research in this area.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The purpose of this chapter is to provide a detailed review of relevant literature and hypotheses. This chapter is comprised of five general sections: The first section looks at present attempts to improve public schools nationally (No Child Left Behind), and in the State of Ohio (Ohio Accountability System).

The next section looks at legal and regulatory environment collected, in attempt to improve schools. These factors/variables for defining school success include school attendance, graduation/dropout rate, standardized testing, school size, student-teacher ratio, and socio-economic status. The third section relates to literature on education performance and the gaps in education among majority and minority students, poverty stricken and non poverty stricken students, and the like. The fourth section looks at the concept of accountability in education.
system. This section ends with the research hypotheses for this study.

**Improving Schools**

There are many factors that may affect educational achievement. This section highlights the current literature used to explain a number of concerns in public schools. At the top of the political agenda in the U.S. is improving the current status of public schools (Aronson, 2002; Heck, 2000).

The nation’s latest attempt to improve schools resulted in the passing the federal *No Child Left Behind Act* of 2001 (NCLB), which received strong bipartisan support (Section 20 U.S.C. 6301 et seq.). To improve schools, the federal *NO Child Left Behind Act (NCLB) of 2001* (Section 20 U.S.C. 6301 et seq.) was passed by President George W. Bush who declared that NCLB was the start of a “new era” in American public education (White House, 2002). President George W. Bush continued on to say that “America’s schools will be on a path of reform and a new path of results” (White House, 2002).

The landmark No Child Left Behind codified a developing policy view that standards, testing, and
accountability were the path to improved performance (Hanushek & Raymond, 2004). NCLB was included as part of the federal reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA) (Section 20 U.S.C. 6301 et seq.). Title I Part A of NCLB dates back to the 1965 ESEA, which directs resources to economically disadvantaged children. At full volume, title I is the crux of federal aid to education (Rudalevige, 2003). In fiscal year 2003, $11.8 billion was appropriated for school districts in the United States (Rudalevige, 2003).

With NCLB, states who received Title I money were required to develop academic standards, allowing all students to become proficient in reading, math and science. Test results would be required and it was necessary that these results were categorized by race, ethnicity, and economic status, so that schools that had high overall scores did not mask specific groups of students who were not performing up to par (Rudalevige, 2003).

In a 2004 study, Hanushek & Raymond looked at the effect of accountability on educational achievement. It was found that the introduction of accountability systems into states result in improved achievement growth, than if it would if an accountability aspect was not included
(Hanushek & Raymond, 2004). Additionally, it is important to note that school achievement improves by schools and school districts adding consequences and rewards to school results, as opposed to simply reporting results of school systems (Hanushek & Raymond, 2004). Hanushek & Raymond (2004) concluded by expressing the difficulty in analyzing the effects of accountability on student performance since states all differ on their approach to testing accountability as well as their characterization of accountability. However, local schools and districts have common structures.

NCLB imposes accountability requirements on states through testing specific subjects and grade levels, and recommends accountability features to a high degree of specificity (Chester, 2005).
Strong Accountability for Results – States must work to close the achievement gaps and make sure all students, including those who are disadvantaged, achieve academic progress. Schools not making progress must provide supplemental services, such as free tutoring or after-school assistance; take corrective action; and if still not making adequate yearly progress after five years, make dramatic changes in the way the school is run.

More Freedom for States and Communities – States and school districts have unprecedented flexibility in how they use federal education funds, allowing the district to use funds for their particular needs, such as hiring new teachers, increasing teacher pay, improving teacher training and professional development.

Proven Education Methods – NCLB puts emphasis on determining which educational programs and practices have been proven effective through rigorous scientific research.

More Choice for Parents – Parents of children in low-performing schools have new options. If school fails to meet state standard for two consecutive years, parents may transfer their children to a better performing public school within their district.

<table>
<thead>
<tr>
<th>Figure 2.1</th>
<th>Four Pillars of NO CHILD LEFT BEHIND ACT (NCLB) (DOE, 2006)</th>
</tr>
</thead>
</table>

Ohio accountability system was enacted in 2003, and merges the accountability system of Senate Bill 1 (2001) with requirements of House Bill 3 (2003), HB 493 (2004) and the federal No Child Left Behind Act (NCLB) (ODE, 2006). To complement and facilitate implementation of the No Child Left Behind Act, the state of Ohio has created an
“accountability” system which focuses on a five key components (ODE, 2005).

According to Gormley & Weimer (1999, p. 36-37), the use of report cards could be beneficial if six values are followed: Validity, comprehensiveness, comprehensibility, relevance, reasonableness and functionality. First, information that is provided by a report card must be valid and focus on measures, which closely approximate outcomes.

Second, information in report cards must be comprehensive in terms of importance to the extent of organizational performance and contain an array of indicators.

Third, the information presented should be comprehensible to potential users (consumers and policy makers). Additionally, data should be presented as information, and the form of media used should include all areas to account for potential users.

Fourth, the information on report cards needs to be relevant to stakeholders, with specific focus on the unit of analysis.

Fifth, a report card should be reasonable in goals and demands it places on the organization. Additionally,
sufficient time needs to be allotted for requirements (i.e., paperwork).

Sixth, a report card needs to be functional. To achieve functionality, a report card needs to have the ability to convince organizations to engage in appropriate behaviors.

*Use of Multiple Measures*

Report cards are the most common format used by states for providing public schools district performance information to the general public (Rubin, 2004, p. 154). In a 1999 study, the measures most used on report cards included test scores, graduation and dropout rates, class size, pupil-teacher ratio, and attendance. Additionally, less frequently, report cards include family and peer information, financial information, teacher qualifications and parent involvement (Rubin, 2004, p. 155).

The first of the five components of the Ohio accountability system is the use of multiple measures, and is completed through the use of the Ohio report card system. The Ohio report card system measures four areas; state indicators, performance index, growth calculation illustrate and adequate yearly progress (AYP) (ODE, 2006).
There are a total of 23 performance indicators that schools and districts can earn by meeting or exceeding the following requirements: Must meet the 75% proficient or above requirement on: 3\textsuperscript{rd} grade achievement tests in reading and mathematics; 4\textsuperscript{th} grade proficiency tests in mathematics, citizenship, and science and 4\textsuperscript{th} grade achievement tests in reading and writing; 5\textsuperscript{th} grade achievement test in reading; 6\textsuperscript{th} grade proficiency tests in reading, writing, mathematics, citizenship, and science; 7\textsuperscript{th} grade achievement test in mathematics; 8\textsuperscript{th} grade achievement tests in reading and mathematics; 10\textsuperscript{th} grade Ohio Graduation tests in reading, writing, mathematics, social studies, and science.

Schools must also meet the 90% state requirement in graduation rate, and must meet the 93% requirement in attendance rate.

The second measure, performance index, rewards the achievement of every tested student, not just those who score proficient or higher. Schools and districts earn points based on how well each student does on all tested subjects in grades 3-8 and the Ohio Graduation Test (OGT). Achievement tests have five performance levels: advanced, accelerated, proficient, basic and limited (ODE, 2006).
A student score at the advance level earns 1.2 points; accelerated, 1.1 points; proficient earns 1 point; basic scores 0.6 points; limited earns 0.3 points; and students not tested score zero points (ODE, 2006). Each school’s and school district’s total is averaged and multiplied by 100 to generate a school and district index. Schools and districts that have higher index scores are given higher designations.

The third measure is growth calculation. Here, schools and districts that are or were in academic watch and academic emergency are given growth calculation rewards for improving its performance index by at least 10 points over two years, and are allowed to move up one designation (ODE, 2006).

The fourth and last report card measurement is adequate yearly progress (AYP). Following the federal AYP requirements, this measure identifies a series of goals that each school and district must reach. For example, an AYP goal can detail the percentage of students who must score proficient or above in reading and mathematics, the percentage of enrolled students who must participate in reading and mathematics testing, and the percentage who must be in attendance and graduate during the school year.
(ODE, 2006). AYP goals for percentage of proficient and participating students are applied to each school and district. Failure to meet any of the proficient or participation goals, attendance levels and graduation targets result in the school or district ‘missing AYP’ (ODE, 2006 p. 5).

Schools or districts that meet AYP can be designated no lower than continuous improvement. An excellent or effective district or school that fails to meet AYP goals for more than two years can be rated no higher than continuous improvement (ODE, 2006).

**Designations for School and School Districts**

The second accountability system’s component is that schools and districts are given designations, which are excellent, effective, continuous improvement, academic watch, and academic emergency (ODE, 2006). Schools and districts are rated as excellent when 94% - 100% of district indicators are met, or 100 - 120 is the performance index score. Effective is determined when 75% - 93.9% of district indicators are met, or 90 - 99.9 is the performance index score. Continuous Improvement is seen when 0 - 74.9% of the indicators are met or 0 - 89.9 is the performance index score, or the AYP has been met; or when
50 – 74.9% of indicators have been met or 80 – 89.9 is the performance index score, and the AYP has not been met (ODE, 2006). Academic watch is seen with 31 – 49.9% of indicators met, or 70 – 79.9 is the index score. And the AYP has not been met. Lastly, academic emergency is 0 – 30.9% of indicators met, and 0 – 69.9 is the index score, and AYP has not been met (ODE2, 2006).

Recognition or Consequences

Ohio accountability system’s third component is that schools and districts are recognized or given consequences for schools that do or don’t show improvement. In cases where improvement is shown by an increase of 10 points on the performance index, schools and districts that were previously academic emergency or academic watch are moved to continuous improvement (ODE2, 2006).

Accountability for Various Groups

The fourth component of the Ohio accountability system is ‘accountability for groups of students’, such as economically disadvantaged. To assure accountability, ODE has designated 10 student groups that must be tested individually, and must meet the AYP goals. These 10 student groups are as followed: All students, African-American, Asian/Pacific Islander, Economically
disadvantaged, Hispanic, limited English proficient, multi-racial, Native American, students with disabilities and White (ODE, 2006, p. 6).

To meet AYP, every school and district is required to test at minimum 95% of their students enrolled at the time state tests are given. Also, every school and district must test at least 95% of their student in the 10 groups (ODE, 2006, p. 6).

Results for Stakeholders

Finally, the last key measure of Ohio’s accountability system is due to a requirement of NCLB. School results on exams are to be reported from the end of one school year prior to the start of the next school year so that parents are aware of any academic problems at schools where they may have a child enrolled. At that time, parents have the ability to transfer children from failing schools to other schools in the same district (ODE, 2006).

Below is a summary of the Ohio Department of Education’s Accountability system:
Summary of Ohio Accountability System

The Use of multiple measures. The Performance Index and Growth Calculation illustrate the achievement level of students, and progress over time.

Designations for school districts, school buildings and community schools. (Excellent, Effective, Continuous Improvement, Academic Watch and Academic Emergency)

Recognition or consequences for schools that do or do not show improvement.

Accountability for various groups of students, such as Economically disadvantaged students; students from major racial ethnic groups; students with disabilities; students with limited English proficiency.

More timely results for families, schools, and school districts – results are published before the start of the next school year.

(Ohio Department of Education, 2006)

School Attendance

School attendance is critical to successful school achievement. In addition to the fact that poor attendance predicts dropping out of school, being absent can result in other negative consequences for student and schools. Students who are not in class lose opportunities to learn (Epstein & Sheldon, 2002).

The standard by which attendance is measured nationally is on the 90 percent mark. In the state of Ohio, the standard of a 93 percent average is observed. Although 93 percent stands as the standard, the state of Ohio in the 1999 school year saw attendance percentages
ranging from 85 to 99 percent (Roby, 2004, p. 12). Only 79% of all public schools in Ohio are meeting the attendance rates benchmark (Roby, 2004).

According to Lamdin (1996), students with better attendance score higher on achievement test than their more frequently absent peers. For students who are absent or tardy often, large amounts of instructional time are lost. For example, if a student is 10 minutes late everyday of one school year, that student is missing a total of 30 hours of instruction. These 30 hours can make a great difference on the academic performance of a student, which will be demonstrated on the standardized exams (National Association of Elementary School Principals, 2001).

Students who are absent from school subsequently impact the quantity of funding allocated each year to school districts. Since most school districts’ budgets are based on the average daily attendance rates, loss of funding perpetuates into a distressed quality of education for the students, and the future society (Ford & Sutphen, 1996; Epstein & Sheldon, 2002). When students are absent, school systems lose funding based on formulae that emphasize the numbers of students in attendance (Weller, 2000). With high student absences in some areas, school
systems lose some of its state operating funds, which may represent a significant portion of the school system’s annual revenues (Weller, 2000). If students are not attending school, the result is simple – fewer students mean fewer resources (Weller, 2000).

School characteristics may have an effect on student attendance as well. Large schools tend to have more problems with student attendance than small ones. Attempting to reduce student absenteeism, a Baltimore High School portioned itself into smaller academies. This change increased student-teacher interactions and decreased the anonymity of students at the school. Student attendance rose dramatically as a result of this change (McPartland et al, 1998).

Failure to attend school ultimately creates large numbers of citizens with minimal education (Lamdin, 1996). Without possessing a necessary education or skills is an alarming implication for the United States, a nation competing in a global economy (McPartland, et al, 1998). These attendance problems are affecting the structure of the nation’s education system. Schools nationwide need effective strategies and approaches to increase daily school attendance (McPartland, et al, 1998).
Graduation/Dropout

A high school diploma has become an essential requirement for one’s social mobility today. According to the National Center for Educational Statistics (1995), the precursors of dropping out of school are poor academic performance, lack of social connection to school, low expectations of the student on self and by the teacher, school discipline problems, low socioeconomic status, and parents’ non-completion of high school.

Reducing the number of dropouts has become a national policy concern (Hall, 2005). Why are all levels of government so concerned about the dropout rate? The answer is a simple one – dropouts cost money. Dropouts are less likely to find and hold jobs that pay enough money to keep them off of public assistance (NCES, 2000). In 1998, the unemployment rate for dropouts was 75% higher than for high school graduates (NCES, 2000). Of those high school dropouts who do hold jobs, one-third of them work in ‘low wage’ positions that in 1990 paid less than $12,195 per year. The $12,195 figure represents the official poverty rate for a family of four (U. S. Bureau of the Census, 1992).
The cost of dropout goes deeper. According to Rumberger (1987), dropouts are also more likely to have health problems, engage in criminal activities, and become dependent on welfare and other government programs than high school graduates. The society suffers when an increased number of people rely on welfare and government assistance, or end up in the criminal justice system.

Prior to 2001, the Department of Education tested high school graduation rate based on students who have earned a high school diploma or an equivalency diploma, such as the GED. Greene (2002) developed an alternative method to calculate graduation rates. He used enrollment and diploma counts to decipher graduation rates. In other words, he figured out the percentage of 9th grade students who graduated four years later (2002).

Poor and minority students such as Hispanic, African American, Native American, and low-income, single headed household families, and students in large urban schools are the most likely to drop out (National Center for Educational Statistics, 2000). Steele (1992) claimed that people of all races avoid situations where they expect others to have negative stereotypes about them, even in cases where these specific stereotypes do not apply. This
is the case of minorities in education. Minority students tend to ‘disidentify’ with school because of the difficulty of creating a personal identity that is based on academic competence, since it entails a commitment to dealing with academic stereotypes on a daily basis (Steele, 1992).

Standardized Testing

According to Card & Krueger (1992), the highly influential Coleman report (1966) claimed to find little association between the quality of schools and student achievement on standardized tests (Coleman et al, 1966). Since then, researchers have seesawed between findings that show association, and others that do not (Hanushek, 1997; Rizzuto & Wachtel, 1980). Despite the fact that measures have always played an important role in the education system, the concentration on standards and accountability has lead to a dramatic growth in the importance of test taking for students, teachers and schools (Goertz & Duffy, 2003). Test results are used for an assortment of reasons. Test results are important for student diagnosis, placement, student promotion, high school graduation, school and district performance accountability, and program assessment (Goertz & Duffy, 2003, p.6). Additionally, test
scores may determine whether a student will be promoted, or even receive a high school diploma (Goertz & Duffy 2003).

In New York, Regent examinations are given to test student’s command of high school curriculum since the 19th century. By the 1970’s more than 40 states introduced some sort of mandated statewide testing (Catterall, 1989). Originally, high stakes test such as the Regents test, Scholastic Aptitude Test (SAT) or Advanced Placement (AP) Tests were given to students for college entrance or for individual student performance, and not for school performance. Today, standardized tests are used in every state to test the overall school’s performance (Carnoy & Loeb, 2002; Loeb & Page, 2000).

With the passing of NCLB, all states are required to generate local report cards at the individual school and district level. The report cards include, at minimum, a student’s performance on state and local testing (Goertz & Duffy, 2003). There has been much debate concerning the value of these exams and accountability in general (Blau, Moller & Jones, (2004); Catterall, 1989). Catterall (1989) examined minimum standardized testing in American secondary schools that must be passed before obtaining a high school diploma, and the effects of these tests on low-achieving
high school students. The findings showed that standardized test failure may reduce academic aspirations and thereby contribute to decisions to drop out of school (Catterall, 1989). Additionally, the study claimed that students who failed a test were significantly more likely to express doubts about the prospects of graduating (Catterall, 1989).

Haladyna, Nolen & Haas (1991) contend that the standardized achievement test has been the operational definition for educational achievement, and raising test scores has been equated with educational improvement. In addition, test scores are used by school district personnel to determine merit pay and make other personnel decisions. Real estate agents also use test scores to rate neighborhoods by quality of schools in specific areas (Haladyna, Nolen & Haas, 1991). The concern for test scores becomes clear by the increase use of test scores for accountability, especially when it is realized that test results often are used without considering the complexity of achievement and its causes (Haladyna Nolan, & Haas, 1991, p. 4).

Another segment of the test score debate is viewed with the notion that test score gaps between White and
black students is due to the tests being culturally biased (Jencks, 1998). Blau, Moller & Jones (2004, p. 410) contend that although cultural differences are present between black and Whites, but the gaps are due, instead, to blacks and Whites being prepared differently and holding different meanings to testing and test results.

Steele (2001, p. 60) claims that considerable research shows that standardized tests are advantageous to students who are from better-off socioeconomic backgrounds, that they are not particularly strong indicators of subsequent performance, and that college admissions and schools that put much weight on standardized exams should be cautious and consider other information about students.

Steele (2001) added that issues of standardized exams are not simply an issue of socioeconomic status, and that non-Asian minorities (even those from well off neighborhoods) are seriously affected as well. In these cases, students who are prepared, from middle class backgrounds are still falling way below a successful pass on standardized exams. The stereotypes threat is an isolated factor that explains depress standardized test performance among any group whose abilities are negatively stereotyped in the larger society (Steele, 2001, p. 61).
School Size

One of the most important and controversial characteristics of schools is the size of a school. Research completed on the consequences of school size has been inconclusive due to the fact that there are advocates for smaller and larger schools (Tajalli & Opheim, 2004).

School size has been under discussion for the last few decades because of possible implications to school achievement (Cotton, 1996). Additionally, urban and suburban school enrollment have seen averages sizes easily between 2000 and 3000, with New York City seeing almost 5000 students in one school.

Smith and DeYoung (1988) recognized factors that have caused the creation of larger schools. In attempt to make schools efficient, schools have are now consolidating students. Additionally, when schools were forced to comply with desegregation and entitlement programs of the 1960’s, consolidated schools resulted. Another reason for changes in school size is due to the need to be cost effective, while offering a varied and large curriculum (Cotton, 1996).
Offering classes in the arts, civics, home economics, and other classes require specially trained teachers in each field. Schools with smaller enrollment just cannot afford to maintain the workforce which would afford students a well-balanced education (Cotton, 1996).

Concerns about the detrimental effects of large schools are not new. In the book, “Big school, small school: High school size and student behavior” (Barker & Gump, 1964), it was shown that schools that are smaller have significantly higher numbers of students who are participating in extracurricular activities. The authors (1964, p. 195) conclude that smaller schools are superior to larger schools. Since Barker and Gump’s work, more than 40 years ago, much research has been done on the “big school small school debate” (Cotton, 1996; Kuziemko, 2006; Lamdin, 1996; Lee & Smith, 1995; Lee & Smith, 1997; Pribesh & Downey, 1999). Proponents and opponents of big schools have rallied with their explanation to the school size that works best.

Proponents for smaller schools have been around since the 1950’s, but has recently began to gain much support, since new alliances with the United States Department of Education as well as the Bill and Melinda Gates Foundation
(Gerwertz, 2001). The Bill and Melinda Gates Foundation spent $240 million to promote smaller schools (Kuziemko, 2006).

Recently, the United States Department of Education compared crime at small high schools (with 300 students or less) to large high schools (more than a thousand students). The findings showed that big schools incurred 825% more violent crime, 394% more fights, and 378% more theft (DOE2, 2006). According to Hart (2006), larger schools require additional workforce in areas such as administrators, support staff, and security officers, adding cost, instead of savings (p. 64). This study rebuts the economic benefits of larger schools in what the Bill and Melinda Gates Foundation call “diseconomies of scale” (Hart, 2006, p. 64).

In a meta-analysis on secondary school size research, Cotton (1996) produced the following conclusions:

- The academic achievement of student in small schools (especially those from low income and minority backgrounds), is equal to or better than the achievement of comparable students in large schools.

- Attitudes of students in small schools toward education are more positive than those students in large schools.
Students in small schools participate in extracurricular activities at a greater rate than students in large schools.

Small schools have consistently higher attendance rate than do large schools.

Small schools have lower dropout/graduation rates than do large schools.

Students in small schools have higher levels of parent involvement than do larger schools.

To combat problems of unacceptable attendance and graduation rates, and other school ills, many urban cities (such as Chicago, Philadelphia, and New York) have attempted to use the small school strategy (Gerwertz, 2001). The small school strategy turns large urban high schools into smaller school sections to combat scholastic failure, the anonymity that can fuel disengagement, high dropout rates, and violence. Many of the time, the large school is sectioned into two or three different schools (Gerwertz, 2001).

The argument for big schools stems from efficiency by enabling economies of scale (Gerwertz, 2001; Kenny, 1982). The foundation of the economies of scale is that you gain the potential to increase savings by reducing redundancy and increasing resource strength as schools get bigger (Lee & Smith, 1997).
The idea behind bigger schools is that if the cost of supplies is reduced when purchasing greater amounts you are able to sustain at a relatively flat level regardless of the number served (Lee and Smith, 1997). Other costs (such as heat and electricity) remain relative regardless of students in the same space. Therefore, by spreading the relatively lower per person cost over a larger based reduces overall spending on core costs (Kenny, 1982). Larger schools can accrue resources, cut costs by buying school supplies in bulk and also fill numerous classes, and develop specialized curriculum (Crosnoe, Johnson & Elder, 2004, p. 1261).

Supporters for large schools believe that small schools are limited to a small geographic area, and because of this, students are not exposed to varying backgrounds. Another argument of larger schools state that students from larger schools are allowed to develop socially into social groups or cliques, and feel more comfortable in finding a group to fit in (Kuziemko, 2006, p. 64).

In the 1995 school size research study, Lee and Smith found that the relationship between school educational outcomes and school size has been inconsistent because of poor research methodology and uncertainties between
variables that may have been affected by school size. A follow-up study by Lee and Smith (1997, p. 205) revealed that most existing schools are too large to maximize their student’s educational progress.

Despite the strong debate on school size from both sides, less research makes mention of the benefits of larger school size. The literature on school size is saturated to one side – small schools.

More recent research has indicated that the effects of school size may depend on the socio-economic status of students. Specifically, it was found that students from impoverished neighborhoods are more likely to benefit from smaller schools. Alternatively, there is a positive relationship between larger schools and the output measures of affluent students (Lee & Smith, 1997; Tajalla & Opheim, 2004).

School size, a topic owning its fair assortment of literature for over the past 40 years, has been thoroughly examined during this time period. Unfortunately, the discovery of the most advantageous school size still remains in disarray.
Student - Teacher Ratio

Stoddard (2003) ask the question, “Why has the number of teachers per student risen while teacher quality has declined?” In her study, Stoddard shows that there has been a rise in the student - teacher ratio in the past 40 years. There were 3.7 teachers for every 100 public school students in 1955. By 1998, there were 5.8 teachers for every 100 students (Stoddard, 2003, p. 458). As suggested by Stoddard (2003), the problem seems to be that schools turned to hiring quantity, not quality. Apparently, the demand for more teachers came at a cost, since teachers who where otherwise unqualified were being hired.

According to Chuderewicz (2002), raising the teacher-pupil ratio results in poorer student performance. Poorer student performance was even more significant among elementary schools when compared to secondary schools (Chuderewicz. 2002).

Teacher Functioning and Preparedness

There are a number of teacher factors such as teacher preparedness that have recently gained value among education and policy research concerning the importance of teacher choices and preparation, and its ultimate effect on school achievement. Some of the most scrutinized aspects
of a teacher’s effect on school achievement include teacher attendance or absenteeism, teacher qualification and certification, teacher salary, and teacher tenure.

**Teacher Qualification and Certification**

The qualification and certification of teachers are important areas today in determining teacher’s quality (Grissmer & Kirby, 1997).

A 2002 study by Lankford et al examined the qualification of teachers as well as attrition rate of specific teachers from certain areas throughout the state of New York. Attributes such as inequities or inadequacies among instructional resources or teachers were tested to decipher the differences among schools in specific areas of New York (Lankford, et al, 2002, 37).

At the completion of the study, Lankford, et al, (2002) concluded that there are some remarkable variations in the qualifications of teachers across New York schools. Additionally, Urban areas of New York found themselves with far less qualified teachers than other areas of the state. Students who are in urban areas tend to come from low income, low-achieving schools, happen to be non-White students, are most likely being taught by teachers who are least skilled (Lankford, et al, 2002, 49).
All in all, Lankford, et al (2002, p. 55) believe that if policies fail to see the importance of not only looking at improving the achievement of low-performing students, but also the dynamics of the teacher market, schools in the urban areas will be strongly disadvantaged.

In California, the American Civil Liberties Union has brought a lawsuit on behalf of school children in the state of California against the State of California. The conditions of specific school throughout the state lacks basic and necessary tools; most important of the litany of needs are trained teachers. Cochran-Smith (2002, p. 99) states that as little as 13 percent of teachers in the California have full teaching credentials. Additionally, many schools frequently utilize substitute teachers, and consistently have important teaching and staff vacancies.

Of the schools included in the lawsuit against the State of California, 96.4% consist of school children of color, as compared to 59% across the entire state. (Cochran-Smith, 2002, p. 99). The most important basis of this lawsuit holds that well prepared and qualified teachers is not only critical to an excellent education, but is also a chief divide in the experience of school
children from advantaged and disadvantaged socioeconomic and racial backgrounds (Cochran-Smith, 2002, p. 99).

Darling-Hammond & Berry (2006) talk of a 15 year old Central Los Angeles girl named Jenny, who has a reading disability and struggles in most subjects. Almost every student in Jenny’s school qualifies for free or reduced school lunch. Additionally, about 55 percent of the students are ‘English as a Second Language’ (ESL) students (Darling-Hammond & Berry, 2002).

The problem with Jenny and many of her counterparts is that teachers are not equipped with the skills to teach Jenny efficiently and effectively what she needs to learn, especially since poor students and non White students are more likely taught by inexperienced and under-qualified teachers. The future for Jenny is dim. She, as many of her peers is likely to drop out of school, since it is become more and more difficult for her to keep up with the demands of school. For reasons as this, Darling-Hammond and Berry (2006, p. 15) believe that one of the most important aspects of the No Child Left Behind Act is ensuring that highly qualified teachers are available for every student.
Since the inception of NCLB, there has been marked improvements to the total amount of teachers that are highly qualified. As a matter of fact, 33 states earned good ratings from the NCLB teacher quality provision (which reported that at least 90 percent of classes are taught by highly qualified teachers) (Darling-Hammond & Berry, 2002, p. 16).

On the negative end of the spectrum, up to 30 percent of teachers do not meet the law’s definition of highly qualified (Darling-Hammond & Berry, p. 16). Most important to note, however, is that there is a large gap between low income and high income schools, and this gap continues to grow (Darling-Hammond & Berry, 2002).

Goldhaber and Brewer (2000) empirically tested the effects of 12 grade students based on their teacher’s certification status. Teacher certifications were characterized into probationary certification, emergency certification, private school certification, no certification in their subject area, and teachers who had standard certification in their subject area.

Goldhaber and Brewer (2000) found that teacher licensure requirement systematically affect student achievement. On the other hand, in the area of math,
teachers with standard certifications have a statistically significant positive impact on student test scores. This study also amazingly found students who had teachers with emergency credentials did not score any worse than their counterparts with teachers with standard teaching credentials (Goldhaber & Brewer, 2000, p. 129).

Teacher Salary

Teacher’s salary is distinguished mostly by years of teaching experience, academic degree, and the type of school district. Despite of quality, teachers within school districts are given equivalent increases for their teaching experience and degrees.

Apart from with experience and degrees, the main way teachers look for higher pay is by transferring to schools that have the best blend of pay and working conditions. However, only pay is higher in inner-city schools, the blend of pay and working conditions meant that the best teachers will go and stay to school with good pay and better students (Grissmer & Kirby, 1997, p. 53).

Teacher salary, according to Lankford et al. (2002, p. 51), did not seem to be the driving force in the disparities among teacher characteristics across schools in New York. However, as it pertained to retention, teachers
who have a tendency to leave urban schools were by far more qualified than teacher they left behind because qualified teachers seized the opportunity to leave difficult work surroundings for more attractive settings (Lankford, et al, 2002. p. 55).

In *Teacher Pay and Teacher Quality*, Ballou and Podgursky (1997) looked at the influence of a teacher’s salary on the quality of teacher, which in turn, would improve the depth of education among students.

To carry out this study, Ballou and Podgursky (1997) examined indicators such as student success, principal ratings, and salary growth as it relates to teacher recruitment. It was found that there is little actual evidence that shows any link between teachers increased salaries and teacher’s job quality.

Greenwald, Hedges, and Laine (1996) reviewed the effect of school resources, including teacher earnings on student achievement in their meta-analysis. Here, it was found that some resources were positively related to student outcomes. Additionally, most significant was that the increases in spending may have some association with significant increases in student achievement (Greenwald, Hedges, & Laine, 1996, p. 15).
Jacobson (1988) examined the effects of pay incentives on a teacher’s absence in one New York district. During the implementation of the teacher perfect attendance incentive plan, teacher perfect attendance rose from eight percent to 34 percent. Overall, this study discovered that the implementation of an incentive plan which monetarily rewards teachers significantly decreases the amount of absences teachers have every year (Jacobson, 1988, p. 284).

Ehrenberg, et al, 1989 completed a study, which looked at the leave policies of school districts and how it affects teacher absenteeism and school achievement. It was found that provisions in teacher contracts could make serious improvement in attendance. For example, when teachers are able to cash out unused leave days that have been accumulated over the years at retirement, they are less likely be absent for unwarranted reasons. By holding on to leave days (instead of feeling the need to ‘use them up’) this provision has benefits for teachers, students and tax payers (Ehrenberg, et al, 1989, p. 72).

In another teacher attendance study, Madden, et al (1993) looked at the value of examining the issue of teacher absenteeism as an essential educational policy. In
the study, it was found that teacher’s attendance is problematic and has an effect on student achievement. To examine the effects, a correlation between teacher attendance and student achievement was completed. A total of 191 secondary schools in the state of South Carolina were tested. At the conclusion of the study, it was found that teacher attendance could not directly be attributed to student achievement (Madden, et al, 1993).

Lastly, we look at Uehara’s (1999) policy report on teacher attendance in the pacific region. Uehara (1999) illustrated that teacher attendance is not only correlated to student attendance, but also to school performance.

Further, Uehara (1999) asserted that high teacher absenteeism could be responsible for Pacific students not faring well on standardized exams (p. 7). Figure 2.2 shows Uehara’s hypothesis in full.
At the conclusion, Uehara (1999) listed policy recommendations for Pacific students. First, Uehara (1999) recommended that teacher incentives be given to reward teachers that have perfect attendance. Second, teachers should be allowed to carry over sick days from school year to school year, rather than losing days. If teachers were allowed to carry over sick days, they may not feel the need to use them up prior to the end of a school year.
Next, make good attendance a requisite for employment (Uehara, 1999, p. 16). In other words, include attendance factors as part of the criterion for contracts to be renewed. Lastly, Uehara (1999) believed requiring teachers to personally phone principals when calling in sick would also help to lessen teacher absenteeism.

Although it is generally expected that student are the persons who skip school, it is equally as common for teachers to have poor attendance reports. The implication of teacher’s attendance therefore is necessary to realize its effects on school performance.

There are many teacher characteristics that affect the achievement of a school. Wayne and Young (2003) asserted that there is a clear relationship between teacher qualification and characteristics and level of income of pupils. Specifically, Wayne and Young (2003) tested the connection between teacher characteristics and a student’s standardized test scores. In every case, it was found that teacher characteristics are associated and an important part of a student’s score (Wayne and Young, 2003, p. 96).

**Educational Gaps/ Socio-Economic Connection**

The students who are generally at greater risk of school failure are students from poor and low-income
households, racial, ethnic, and linguistic minorities (National Center for Educational Statistics, 2002). Remembering Brown vs. Board of Education of 1954 is important since it was found at that time that the racial composition of schools may be relevant to achievement. Additionally, the Coleman Report was legislatively mandated in the Civil Rights Act of 1964, which produced concentration on the racial composition of schools (Hanushek & Raymond, 2004). Since then, the majority of research on the education process has focused on the relationship between variants in outcomes, such as standardized test scores, and differences in observable factors that serve as inputs in the production of the outcome (Deere & Strayer, 2001).

Noguera (2005) asserted that the public holds schools accountable on the presumption that the measures of accountability are equitable. Additionally, although all students are expected to perform equally on standardized exams, nothing has been done to ensure that all students have equal chance to reach set standards (p. 14-15).

Essentially, most of the interest in accountability and federal legislation (i.e., NCLB) concentrates on low achievers (who tend to be minority groups). With this
comes the assumption that accountability will lessen the large achievement gap found between racial and ethnic groups. These gaps between racial and ethnic groups have been realized because of the mandatory categorizing of students based on performance by a number of factors (Hanushek & Raymond, 2004). When Hanushek & Raymond looked at the academic performance of minority groups, it was found that Hispanic students gain most from accountability, while black students gained the least (2004). In a previous study, Hanushek, Kain & Rivkin (2002) found that a concentration of blacks in schools has unfavorable effects on black achievement, but does not have the same results for Whites or Hispanic students.

Some of the ethnic and racial achievement gaps were substantially narrowed in the 1970’s and 1980’s, but during the 1990’s, the gaps returned to its original pattern. Essentially, between 1970 and 1988, the achievement gap between African Americans and White students was cut in half, and Hispanic and White by one-third. Since 1988, the closing of the gap subsided, and began to return to its extremes (Haycock, 2001).

Issues of racial and ethnic differences in educational achievement have gained increased attention from the public
policy arena, and thus, have been responsible for the introduction of an assortment of theories. With the United States population projected to comprise of 45 – 50% ethnic minority groups by the year 2100, it is crucial that academic achievement gaps be reduced (U.S. Bureau of Census, 2000).

The large gap between majority and minority students has led to many theories and studies that attempt to explain the ailing educational performance. During the 1960’s, the well-known explanation for achievement gap was that minorities (specifically Blacks) experience substandard family structure (Moynihan, 1965). During that same time period, Jensen (1969) asserted that Minority lower school achievement was attributed to mediocre genetic makeup, which changed the course of research and debate in the area of intelligence and heritability of intelligence. Jensen’s work was re-presented in Herrnstein and Murray’s (1994) publication, *The Bell Curve*.

The educational performance gap has been attributed to minority’s experience of the economic disadvantaged life due to racial segregation (Massey & Denton, 1993; Wilson, 1987). Wilson (1987) sees the underclass as being in
social isolation, causing the poor to develop poor work ethic, and no desire to do well in school or to finish.

Attributing the achievement gap to genetic differences leaves educators without any expectation of changing the status quo because it is assumed the outcome has already been biologically determined (Norman, et al, 2001). These racial inferiority notions are being subscribed by some educators, who bring a negative attitude into schools, hence causing the effects of the stereotype threat (Steele, 1997).

South et al, (2003, p. 5), re-examined the impact of community socioeconomic status on educational outcomes. Previous studies (Wilson, 1987) on community effects on educational outcomes have placed emphasis on the peer group behavior affecting the value of educational and academic success. Simply put, students from disadvantaged neighborhoods are more likely than others to make poor grades and drop out of school because they are exposed to peers who encourage or embrace such behavior. South et al’s (2003, p. 30) findings explained that one third of students who were economically disadvantaged discontinued high school because of peer / neighborhood effects.
English (2002) offers a bold stance by stating that outright discriminatory practices based on race were banned, but continues under other guises. Because this discrimination continues, the educational gaps between minority (African American & Hispanic) students and their White counterpart will remain unresolved (p. 298). English (2002, p. 298) specifically is concerned with standardized tests which are supposed to determine a student’s ability. With states using these exams as their accountability system, it could very well be false notions of fairness and equity.

The school achievement gaps affect students for a lifetime. The gaps between racial and ethnic limit opportunities for minority students in higher education, as well as earning potential and employment status (Lee, 2002). Greene and Winters (2005) indicated that 71% of the class of 2002 graduated high school with a regular diploma, with only a little more than half of all Hispanic and African American students who enter ninth grade graduated from high school. The unacceptable graduation rates have caused policymakers to look for answers to combat low graduation problems.
The presence of poverty greatly affects school achievement. Family poverty decreases IQ, verbal ability, and achievement scores of children (Smith, Brooks-Gunn, & Klebanov, 1997). The effect of child poverty is heightened when neighborhoods are clusters with low income families (Wilson, 1987). Schools in these low income areas will have a concentration of children in poverty, who run the risk of having a lower level of school achievement and motivation for achievement (Dyson, Hett & Blair, 2003).

According to Haycock (2001), one of the major problems within high poverty schools is that teachers are not qualified to teach certain areas that they are forced to teach. High poverty schools are more likely than other schools to have teachers without even a minor in the subject teaching. Teachers from low income schools are teaching the fundamental subjects, such as math, English, and science to students although they are under-qualified (Haycock, 2001).

In the state of Ohio, because of the wide achievement gaps, a taskforce to close the Ohio achievement gap was formed (OSBOE CAGTF, 2003). The Closing Achievement Gaps Taskforce of Ohio consists of 27 members who are in the education field, parents, community and business leaders,
and policy leaders. According to the taskforce (2003), tens of thousands of students in the state of Ohio are below the academic standards put forward by the state. These students are disproportionately from low income neighborhoods, African American, Hispanic/Latino, among others. The taskforce also believes that there is no justification to the patterns of differences in educational gaps in among specific minority groups (ODE/CAGTF, 2003). The taskforce agree that the achievement gap in Ohio is quite serious.

In Ohio, the Hispanic student dropout rate is more than double the dropout rate for White students. In addition, students scheduled to graduate in 2007 were the first to be required to pass 5 sections of a graduation test. The results of the test were surprising, especially for African Americans. Only 43% of White students passed all sections of the test. On top of the 43% surprise, a mere 11% of African Americans passed all sections (ODE/CAGTF, 2003).

Educational Accountability Movement

This section looks at past educational reform movement literature as a result to review significant concerns that impact current accountability efforts.
The National Commission on Excellence in Education was formed by the Secretary of Education in 1981 to examine the state of the education system in the United States. Consequently, *A Nation at Risk: The Imperative for Education Reform* was released in 1983. At that juncture, public perception of the education system was seriously remiss, and hence, started the educational reform movement (Ahearn, 2000). In many ways, this report acted as a catalyst for the multitude of school improvement strategies intended to address the apparent deficiencies in the United States. As a result of this report, state policymakers in 49 states (excluding Iowa) developed standards, with all states (with the exception of the State of Nebraska) implemented assessment policies. Many of these school assessment policies included consequences to tests in order that schools, administrators, and the entire student body was held accountable for achieving the new standards that were a result of the 1983 report (Amrein & Berliner, 2002).

This educational reform movement would later be commonly described as 'waves' (Ahearn, 2000; Carnoy & Loeb, 2002; Hopkins & Reynolds, 2001; Linn, 2000; Smith & O’Day, 1991), although there are differing views on the amount of
waves that education has went through within the last few decades.

The first wave occurred during the early 1980’s, and focused on top-down mandates for change in areas such as course taking and graduation requirements. This wave brought awareness of the need for change, but lacked systematic, programmatic changes (Hopkins & Reynolds, 2001). Additionally, the connection of student learning outcomes and teacher and school evaluation were not realized as possessing importance.

During the early 1990’s, the second wave was centered on a more bottom-up emphasis. In this case, the focus was on decentralization as seen through a school based management movement. Additionally, administrators began to connect school improvement with school effectiveness theories (Hopkins & Reynolds, 2001). Moreover, a knowledge base was created that was formed by methods and techniques in schools that supposing worked in regard to increased student learning outcomes (Hopkins & Reynolds, 2001).

A third wave is the basis of the current standards-based movement, which were advanced during the late 1990’s (Ahearn, 2000; Hopkins & Reynolds, 2001). According to Hopkins & Reynolds (2001), during the third wave, the
following areas gained attention: (1) an increased attention in the teacher’s instructional behaviors; (2) a development and management of best practices and research findings; (3) a growth in the amount and quality of professional development opportunities for staff members; (4) an adoption of mixed methodologies, both quantitative and qualitative data for research; (5) an appreciation of the importance of changing the culture in order to sustain school improvement, and (6) an increased concern to ensure the improvement of programs that relate to and impact continued training, education and development.

Today’s educational reform can be described as having two different directions: systematic and school level:

Systematic approaches, which are characterized by taking on standards and assessments. Systematic approaches continue to expand in every state with local expansion of these components in many schools and school districts (Ahearn, 2000). Even before the third wave, Goertz, Flodden and O’Day (1996) observed that reformers need to realize that there needs to be more challenging standards and assessments to raise education success.

School level has received negative scrutiny for having negative influence on political pressures as well as
faculty opposition (Ahearn, 2000). Furthermore, Smith & O’Day (1991) state that the use of school level approaches makes it difficult to generalize school success due to the lack of coherence in the educational system.

Conversely, Linn (2000) claimed that there have been five waves in education reform, starting with the role of tracking and selection, to the use of program accountability, minimum competency testing programs, to school and district accountability, and lastly, to the standard based accountability system.

Another effort of public school reform was observed with the introduction of charter schools. The charter school movement has rapidly grown from only two schools in 1992, to 2,036 schools in the year 2000; just eight years later (Kane & Lauricella, 2001). There have been very few reforms that have spread as quickly as the charter school movement (Kane & Lauricella, 2001).

Charter schools claim to have firm accountability as a central benefit of the charter concept. The strong sense of accountability is probably so since most state charter legislation requires that the contractual agreement between the school and the sponsoring agency must explain in simple terms clear outcomes that the school is required to achieve.
in order to retain its charter (Kane & Lauricella, 2001, p. 210).

The push for accountability is not serious for charter schools only. Accountability plans are at the head of the majority of state’s reform policy, even before the passing of the No Child Left Behind Act which now requires all states to have accountability measures. Prior to the passing of the No Child Left Behind Act, the accountability plans generally rest on seven fundamental elements: state standards; tests to measure whether schools have met these standards; summary report cards of individual schools’ performance; a ranking system to determine performance thresholds; targeted assistance to help improve schools; performance based rewards; and the authority to take over, close or reconstitute schools (Olson, 1999).

Conceptual Framework

Adding exponential value to this discussion was President George Bush’s No Child Left Behind Act of 2001. NCLB required that all states establish accountability systems to include annual testing, and disaggregated data on student performance for all schools. NCLB also made the use of data a must since achievement outcomes (as measured by standardized assessments) determine how schools are
ranked (Acker-Hocevar & Touchton, 2001), and if schools will receive sanctions or rewards for performance (O’Day, 2002). In a nutshell, the NCLB Act is the newest attempt at standard based reform. In this case, there is a requirement for national, state, district and school levels to actively develop, and coordinate accountability systems (Lasky, 2004). It is evident that school accountability has received significant public attention; even more since the passing of the NCLB Act (Garn, 2001).

This section focuses on the concept of ‘accountability’, and how this concept relates to this present study. The concept of accountability is important to many areas of public policy. Especially so, is the importance of how duties and responsibilities of public agencies may affect citizens (Gormley & Weimer, 1999). According to Smith & Lipsky (1993), democratic government requires that government effectively hold all agencies that implement public policy accountable for every action (Smith & Lipsky, 1993, p. 13).

Lipsky (1980) maintains that in theory, quantitative measures should be easy to perform, and gain validity, however, it is not so for street-level bureaucracies.
School administrators or street-level bureaucrats focus on areas where activities are assessed. Lipsky (1980) explained with police officers whose performance is measured based on tickets will undoubtedly give more tickets. Consistently, the prediction of the increase in ticketing can be recognized since street-level bureaucrats have control over their ability to focus on specific aspects of their duties (Lipsky, 1980, p. 166). Comparable to police officers, when teachers are evaluated on the amount of passes on exams, teachers will “teach the test” (Lipsky, 1980, p. 166).

According to Ahearn (2000, p. 1), accountability is the most frequently cited defining element of the current educational reform movement. In 1974, Levin published A Conceptual Framework for Accountability in Education. Levin’s (1974) research suggested that there are four distinct concepts of accountability: 1. as performance reporting; 2. as a technical process; 3. as a political process; and 4. as an institutional process. The first and most applicable concept for this paper is accountability as performance reporting.

Performance reporting holds that information on educational outcome is necessary to enable constituents to
assess the competence of schools (Levin, 1974, p. 364). Generally, accountability is thought of as identical to a financial and performance assessment. However, accountability as performance reporting looks less at the distribution of expenditures and other such measurements, and instead looks more on data on many of the outcomes of schooling (Levin, 1974, p. 364).

Accountability as technical process assumes that there is agreement on the goals of the school. The problem arises in having applicable goods (education) delivering to schools. The third, accountability as a political process, presumes that schools are accountable to specific groups, but not to others (i.e., minorities, Spanish speaking, urban students). Accordingly, only some groups are focused on causing problems in fulfilling the demands of specific group (Levin, 1974).

Lastly, accountability as an institutional process looks at the production and delivery of education (Levin, 1974). The problem here is that many constituents have issues with the legitimacy of the processes of educational goals, and therefore cannot be accountable to society (Levin, 1974).
Additionally, it is important that it is noted that the most straightforward interpretation of the accountability concept, according to Levin, (1974, p. 364) appears to be that of performance reporting. In this case, the performance reporting analysis is seen in the facts and figures on educational outcomes is necessary to enable all participants to evaluate the proficiencies of the schools.

Ryan (2002, p. 436) contends that there are a few concerns that arise due to the implementation of assessments used in accountability systems. These issues include the following: (1) Why are assessments assigned particular weights; (2) what should actually be assessed (all subjects or just math and reading?); (3) when to assess (all grades or selected grades); (4) how to access performance (selected response only or a combination of multiple choice and performance assessments, portfolios); (5) how to aggregate scores into an omnibus performance index; and (6) whether to have high school graduation exams.

Gormley & Weimer (1999) state that report cards can contribute to accountability in terms of services in two ways: through top-down accountability and bottom down accountability. Gormley & Weimer (1999) believe that
better informing consumers (i.e. school stakeholders) help to give options. Seemingly, the more information a report card provides, the greater the choices available to stakeholders (Gormley & Weimer, 1999). Gormley & Weimer (1999, p. 22) illustrate how report cards contribute to accountability in figure 2.1.

It is important to note that the three principal audiences for report cards are consumers, policy makers and service providers. Consumers include individuals, such as persons who are tax payers, and students. Policy makers include elected officials, such as legislators (who establish rules for schools), appointed officials (i.e., political executives, civil servants, judges and citizens) (Gormley & Weimer, 1999, p. 94). Service providers include schools and school districts.

More recently, Rubin (2004) described the variety of accountability for school performance reporting. According to Rubin, top down accountability is seen when legislators design programs such as performance reports as an attempt to hold educators accountable through a top down process (Rubin, 2004, p. 149).
Performance reports used for top down accountability is typically in the form of performance information such as measures of student achievement and skills. In this case, it is administrators who decide if teachers receive merit.
rewards or if other actions are necessary to improve the manner in which education is delivered (Rubin, 2004). Additionally, top down accountability depend on how well decision makers understand the connection between educational inputs and performance. To arrive at the connection between educational inputs and performance, achievement test scores and graduation rates are used to measure student and school performance (Rubin, 2004).

Instead of school administrators being solely responsible, Rubin (2004) claims that bottom up accountability allows the education system to have influence on service providers such as voucher programs, charter school programs, magnate and private schools (all subject to bottom up accountability) (Rubin, 2004, pp. 150-151).

Collectively, both top down and bottom up accountability desire information on school success, such as test scores, graduation rates, as well as environmental factors such as attendance rates. Both school administrators and service providers have information available that allows for the assessment of education performance. Rubin asserts that education accountability, whether top down or bottom up, requires near the same
information regarding the inputs, outputs, outcomes and efficiency of the education process. Additionally, it is important that constituents demand information that is collected will enhance the possibility for better education accountability information (2004, p. 163).

Schneider (2001) contends that only a few studies have analyzed data of the information used by schools that look at the type of accountability or its ability to be put side by side for either top down or bottom up accountability.

As a result of reviewing the literature, hypotheses have emerged to complement this study.

Research Hypotheses

Based upon the research questions, the hypotheses for this study is as followed:

H1: Is there a significant relationship between school performance and Socio-Economic factors in public high schools in the State of Ohio?
H2: Is there a significant relationship between school performance and the functioning and preparedness of Ohio public high schools’ teachers?
H3: Is there a significant relationship between school performance and student and school preparedness?
CHAPTER III
RESEARCH DESIGN & METHODOLOGY

Introduction

This chapter describes the methods and procedures that are utilized to explore differences in educational achievement in public high schools in the state of Ohio. This chapter illustrates and justifies the research design, sample, data collection procedures, and describes the unit of analysis of this study as well as the limitations of the study.

Research Design

This study explores factors which affect school performance in public high schools in Ohio through a cross-sectional design. A cross-sectional study involves observations of a sample of a population that are made at one point in time, as opposed to longitudinal study, which is collected over a long period of time (Babbie, 2005). Cross-sectional studies are the most frequently used non-experimental design (McClelland, 2002).
A cross-sectional design is a study that collects data on all relevant variables at one time. Cross-sectional design often calls for the collection of many pieces of data, where investigators may access, manipulate, and analyze a database for their own personal interests (O’Sullivan & Rassel, 1989, p. 34).

This cross-sectional study utilized data from the National Center for Education Statistics, Common Core Data as well as the Ohio Department of Education for the school year of 2004-05. The two extensive data sets were necessary to ensure that elements that may not be collected by one organization were available by the other data source. For example, the National Center for Education Statistics collects data on socio-economic factors, while the Ohio Department of Education does not distribute data on socio-economic factors. In this case, in order to analyze socio-economic factors, it was necessary to combine both data sets.

A cross-sectional study works best for this study because cross-sectional designs best fit since no intervention is added, it is not necessary for the study to be repeated over any period of time. Additionally, cross-sectional studies are not as time consuming as longitudinal
study, therefore appropriate for the researcher’s available resources.

According to O’Sullivan & Rassel (1989), a research investigator designs how each variable will be measured in a model. Then, measurements are collected and investigators use statistical models to examine the relationships between variables (p. 21). The benefit of the cross-sectional design is that it is suitable and holds sufficient justification for studies that collect data on many variables, from a large group of subjects, or studies involving samples that are geographically dispersed (O’Sullivan & Rassel, 1989).

This present study uses data which collects many variables, and from a large group of subjects; two classifications which make a cross-sectional design effective for this study. The major function of the cross-sectional design is to uncover relationships, such as extensive data on health, or environmental variables (O’Sullivan & Rassel, 1989, pp. 21-22).

An example of cross-sectional study is a single United States Census which describes the population of the United States at the beginning of every decade (Babbie, 2005, p. 104). A cross-sectional design may be considered a more
limited design since it only gives a “snapshot”, which can be seen as a generalization as opposed to the use of a longitudinal study, which would require more time and money (Babbie, 2005).

Population

The population utilized for this study is regular public high schools in the state of Ohio. A regular public high school in the state of Ohio is a school encompassing grades 9th to 12th grade, and is academic base, and not any form of an alternative school. The population is limited to schools that have supplied (as required by law) school data to the Ohio Department of Education and the National Center for Education Statistics.

Both organizations collect and analyze school data on standardized exam scores, attendance rates, graduation rates, school size, free and reduced school lunch and other appropriate variables which were use in this study.

Data Source / Data Collection Procedures

Data for this study was collected from school data submitted to the National Center for Education Statistics’ Common Core Data as well as Ohio Department of Education’s Education Management Information System (EMIS) for the School year of 2004-05.
The National Center for Education Statistics Common Core Data’s original data set for the State of Ohio consisted of a total of 608 high schools. It is important to note that some of the 608 schools were charter, special, and schools with grades below the ninth grade. Also, there were schools that lacked some important information such as school lunch data. These schools were removed from the study.

The Ohio Department of Education EMIS consisted of a complete listing of all schools in the state of Ohio (3537). High schools were extracted from the EMIS original list schools in the State of Ohio. Of the 3537 schools in Ohio, 598 were high schools with grades 9 to 12. Of this list, charter schools and schools with missing data were removed. After the combination of both extensive data sets, a total of 462 high schools in the State of Ohio were utilized.

The current study uses secondary analysis, which is increasingly used by researchers because it is relatively inexpensive, permits comparisons across groups, nations or time, and facilitates replication (Neuman, 1999). As in existing statistics research, the researcher locates a source of previously collected information, (often in form
of government reports or previously conducted surveys) then takes this information, and reorganizes or combines the information to address new research questions (Neuman, 1999).

This procedure of analyzing secondary data is used in the dissertation research by combining data from the Ohio Department of Education, and the United States Department of Education’s, National Center for Education Statistics, Common Core Data. The reliability and validity of both data sources have been made certain. For example, each school district is required to submit data to an acquisition site which then performs a comprehensive analysis of the data to identify additional errors. Staff from the Ohio Department of Education also provides detailed instructions online and on hard copy to ensure the reliability and accuracy of data (ODE, 2005).

Also, all districts are required to identify an EMIS coordinator, and conduct a conference with sessions devoted to data. There are also other staff members that complete quality checks and verification of data as part of the monitor reviews, which adds to ensuring validity and reliability of EMIS data of the Ohio Department of Education (ODE, 2005). Additionally, the NCES addresses
high priority educational data needs, which are consistent, reliable, complete and accurate indicators of the status of education in the United States (Planty & DeVoe, 2005).

Ohio Department of Education

The Ohio Department of Education collects data on a number of areas on all 1.8 million students in Ohio public schools, state operated programs and community schools (ODE, 2005). A part of the Ohio Department of Education, the Education Management Information System (EMIS), provides the reporting of data for the Department of Education. EMIS was originally designed as the heart of the Ohio State’s accountability system for students, schools and districts (ODE, 2005).

EMIS is a source of accountability which helps to determine funding for specific schools based on their progress and need for the Ohio Department of Education and federal requirements (ODE, 2005). EMIS also is the method by which school districts report test scores, which is the basis of the accountability system and local report cards for Ohio. Through local report cards, schools, school districts and Ohio Department of Education are able to comply with NCLB requirements (ODE, 2005).
EMIS, more specifically, is the statewide data collection system for primary and secondary education. Through EMIS, staff, student, building, and financial information are collected. More specifically, the data collected include student and staff demographics, teacher and student attendance, school district and school building data, and course information (ODE, 2005).

**National Center for Educational Statistics**

The National Center for Education Statistics (NCES) is the primary federal entity for collecting, analyzing and reporting data related to education in the United States and other nations. The NCES provides services based on a congressional mandate to collect, collate, analyze, and report full and complete statistics on the condition of education in the United States (Planty & DeVoie, 2005).

One of the many programs of the NCES is the Common Core Data (CCD). The data from the Common Core Data of NCES is the primary database on public elementary and secondary schools in the United States. Information from the CCD is collected annually from the individual schools, school districts, and states (Sable & Hoffman, 2005).

The CCD provides an official listing of school and school districts in the nation. From this database,
samples can be drawn, and descriptive statistics are usually carried out. The data allows for specific information to be gathered on items discussed in the literature review section of this paper such as size of school; student – teacher ratio; size of school district as well as region of school’s locale; racial/ethnic composition; percent of free lunch eligible students and graduates (Hoffman & Sable, 2006).

The utilization of data collected by ODE and NCES is necessary for this study since school performance in Ohio is realized through factors collected, such as school standardized exam scores and graduation rate. To collect other variables, it is also important that the two data collection tools already in place be used. These other variables include ethnicity of students in schools, poverty level (as seen through the number of students who participate in the free and reduced lunch program), school size, attendance rates, as well as teacher information. Table 3.1 illustrates the operationalization of variables used in this study. Through this table, definitions are given on variables and data source is explained.
Table 3.1
Operationalization of Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Definition</th>
<th>Variable Type</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>School performance</td>
<td>Performance Index (standardized test scores)</td>
<td>Dependent</td>
<td>ODE</td>
</tr>
<tr>
<td>School Locale</td>
<td>Location of school where, 1= large central city; 2= large town; 3= midsize central city; 4= rural; 5= small town; 6= urban fringe of a large city; and 7= urban fringe of midsize city.)</td>
<td>Independent</td>
<td>NCES</td>
</tr>
<tr>
<td>Free or reduced school lunch</td>
<td>Total enrollment receiving free or reduced school lunch</td>
<td>Independent</td>
<td>NCES</td>
</tr>
<tr>
<td>School Size</td>
<td>Student Enrollment</td>
<td>Independent</td>
<td>NCES</td>
</tr>
<tr>
<td>Certified Teachers</td>
<td>Number of teachers fully certified</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Teacher Attendance</td>
<td>Teacher Attendance Rate</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Teacher Salary</td>
<td>Average Wages of Ohio High School</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Years of Teaching experience</td>
<td>Average years of experience for each Ohio High School</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Teachers bachelor’s degree</td>
<td>Teachers with at least a bachelor’s degree</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Student Attendance Rates</td>
<td>Dummy variable, 0 = 92.9% or less; 1 = 93% or more</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>Dummy variable, 0 = 89.9% or less; 1 = 90% or more</td>
<td>Independent</td>
<td>ODE</td>
</tr>
<tr>
<td>Minority Students</td>
<td>Percent of student population minority</td>
<td>Control</td>
<td>NCES</td>
</tr>
</tbody>
</table>

Notes: NCES= National Center for Education Statistics; ODE= Ohio Department of Education
The data for this study was taken from Ohio Department of Education for public high schools within the state. All data presented were from the 2004-05 school year. The 2004-05 school year was selected since it allowed for all necessary data from both sources to be made available. Consequently, the 2004-05 school year is the most recent year of which both data sources are available. This gives enough time for the No Child Left Behind requirements and the ODE accountability system to connect.

The (EMIS and CCD) secondary data sets were appropriate for this study since these data sets encompass data which could answer the main questions of the study. Additionally, due to time, availability and convenience, these data sets were most suitable for this study (Creswell, 1994).

UNIT OF ANALYSIS

This study’s unit of analysis is Ohio’s public high school. The unit of analysis looks at both the national and state accountability processes (NCLB and ODE), and their specific aims, which are to establish educational achievement for all students. It is important to note that legislation from the NCLB and ODE use the school as the unit of measurement. Additionally, with all schools
required to have their performance observed as well as sanctions imposed to this construct, this study is primarily concerned about school performance.

Statistical Analysis and Techniques

To answer the research questions of this study, this section provide hypotheses as well as statistical methods to be used and justification for usages.

Data analysis utilized Statistical Package for the Social Sciences (SPSS), which is a computer program for management and analysis of data. The program is integrated so that numerous types of analyses can be performed on the data that was entered and accessed (O’Sullivan & Rassels, 1989, p. 439).

Based upon the research questions, the hypotheses for this study is as followed:

H1: Socio-economic factors have a significant relationship on the school performance of Ohio public high schools.

This question utilized a multiple regression analysis. Multiple regression is used to describe relationships between a dependent variable (school performance) and
multiple independent variables (drawn from factors of socio-economic characteristics; a school’s locale, number of students receiving free or reduced lunch, and school size).

Stepwise multiple regression allows the researcher to describe a dataset, to estimate population parameter, to infer causality and also to forecast (O’Sullivan & Rassel, 1989; Vogt, 1999).

Regression results measure the direction and size of the effect of each variable on a dependent variable. The effect is measured precisely and given a numerical value. In the case of this model, the three independent or control variables (a school’s locale, number of students receiving free or reduced lunch, and a school’s size) simultaneously affect a dependent variable (school performance), with all variables controlling for the effects of one another (Neuman, 1999). Figure 3.1 illustrates H1 Conceptual framework.
Quantitative Equation - The variables for the first hypothesis are categorized by socio-economic factors (independent variables: school’s locale, free or reduced school lunch, and school size) that have a negative relationship towards school performance (dependent variables). The null hypothesis, $H_0: Y = \beta_0 + \beta_x + e = 0$,
means that the socio-economic factors have no relationship towards school performance.

If socio-economic factors (independent variables) have a negative relationship towards school performance (dependent variables), then the null hypothesis will be rejected; and the hypothesis will be accepted as followed:

$$H_{01}: Y = \beta_0 - \beta_x + e \neq 0.$$  

$H_2$: The functioning and preparedness of teachers have a significant relationship on the school performance of Ohio public schools.

Hypothesis two will also utilize stepwise multiple regression analysis. In this model, the dependent variable is school performance. The independent variables, teacher functioning and preparedness is measured by teacher attendance, teacher salary, teacher’s average years of experience, number of certified teachers, and teachers who have at least a bachelor’s degree. Figure 3.2 illustrates the conceptual model for hypothesis 2.
Quantitative Equation - The variables for the second hypothesis are categorized by teacher functioning and school performance.
preparedness (independent variables: certified teachers, teacher’s attendance, teacher’s salary, years of experience and teacher’s with at least a bachelor’s degree) have a negative relationship on school performance (dependent variables).

The null hypothesis, \( H_0: Y = \beta_0 - \beta_x + e = 0 \), means that the teacher functioning & preparedness have no relationship on school performance. If teacher functioning & preparedness (independent variables) have a negative relationship on school performance (dependent variables), then the null hypothesis will be rejected and the hypothesis will be accepted as follow \( H_{02}: Y = \beta_0 - \beta_x + e \neq 0 \).

\( H_3: \) Student and school preparedness has a significant relationship on the school performance of Ohio public high schools.

The third hypothesis employs stepwise multiple regression analysis. The dependent variable here is school performance (as measured by the Ohio performance index) and the independent variables are student and school preparedness (as found through student attendance rates, graduation rates, and the percent of student population
that is minority). Figure 3.3 is an illustration of the conceptual model for hypothesis 3.

Quantitative Equation - The variables for the third hypothesis are categorized by school preparedness (independent variables: students’ attendance rates, graduation rates, and minority students) have a negative
relationship on school performance (dependent variables). The null hypothesis, \( H_0: Y = \beta_0 - \beta_x + e = 0 \), means that school preparedness have no relationship towards school performance. If school preparedness (independent variables) has a negative relationship on school performance, (dependent variables) then the null hypothesis will be rejected and the hypothesis will be accepted as followed:

\[ H_{03}: Y = \beta_0 - \beta_x + e \neq 0. \]

In this study, school performance serves as the dependent variable. Here, school performance is examined through Ohio Department of Education School’s performance index. Performance index consists of standardized test scores for the state of Ohio. Additionally, underprivileged enrollment/poverty level was examined through school lunch eligibility.

School attendance was viewed through attendance rates, where 93% (Ohio State standard) is a positive attendance rate, and less than 93% is a negative attendance rate.

Lastly, graduation rate was measured adhering to the Ohio Department of Education’s mark of 90%. In this case, schools who have a 90% graduation rate or more, is
considered as positive, and schools falling under the 90% graduation rate is considered negative (ODE, 2005).

Limitations

One of the limitations of this study is presented because of the nature of the cross-sectional research design. A cross-sectional design may be considered a more limited design since it only gives a “snapshot”, which can be seen as a generalization as opposed to the use of a longitudinal study, which would require more time and money (Babbie, 2005).

Since the geographic scale of this research study is limited to Ohio’s public high schools, the study cannot be generalized for public schools across the nation.
CHAPTER IV
DATA ANALYSIS AND RESULTS

Introduction

This chapter highlights the results of the analyses of this study. The present chapter consists of five sections in which this introduction section is included. The second section gives a description of the data. The third section illustrates data extraction and manipulation procedure. The fourth section gives the characteristics of the school data by reporting the frequency distribution of variables in this study; the fifth and final section describes the statistical technique used, as well as reports and discusses the results of the study.

Description of the Data

The data analysis was performed using Statistical Package for the Social Sciences (SPSS) for multiple regression analysis. In all, 462 public high schools in the State of Ohio were included in this study.
Data utilized in this study came from two sources: The Ohio Department of Education (2004-05 school year data), and the National Center for Educational Statistics, Common Core Data. Originally, this data obtained from the Ohio Department of Education consisted of a complete listing of all schools in the State of Ohio, (including elementary, middle and high school grades) including those schools that were charter schools or specialized school. Initially, the Ohio Department of Education’s list contained a total of 3,537 schools.

Of the 3,537 schools listed, the majority of schools listed were elementary schools, with the remaining coming from middle and other schools that did not fall in the lines of this present study. Because these schools did not fall within the lines of the study, they were deleted from the study.

In addition to the Ohio Department of Education data, a search was completed with the National Center for Education Statistics data. This search included public high schools in Ohio that included grades 9-12. From this search, a total of 608 schools were derived for the 2004-05 school year. From this list, there were a few schools that were not selected for inclusion in this study. These
schools were not included because this study focuses on school performance at the high school level and includes grades 9 to 12 only. In addition, the study is limited to analysis of regular public schools. Regular public schools are defined as public high schools in the state of Ohio, encompassing grades 9 to 12, and not a charter school. In addition, public high schools that did not provide performance data for the 2004-05 School year were not included in the analysis.

The two data sets (Ohio Department of Education and National Center for Education Statistics) were merged to create a complete and comprehensive data set on school performance measures.

Next, each school was matched to verify that information from both data sets corresponded. In some instances, schools within the state with the same names were matched by county and school district. For example, several high schools in the State of Ohio have the same name. To ensure that the correct data are matched to the correct schools, school names were verified by county and school district. In the case of South High School, there were three with the same title. Each South High School was verified and matched with its appropriate school district.
and county. In such, South High Schools were found in Lake County, Ohio; Clark County, Ohio; and Cuyahoga County, Ohio. These schools are a part of the Willoughby-Eastlake, Springfield, and Cleveland Municipal School Districts, respectively.

*Extraction and Manipulation of Data*

Some of the schools were recoded for purposes of simplifying the analysis and/or to make certain that there were an adequate number of cases in the group for effective statistical analysis (Neuman, 2000).

Schools that did not report free or reduced lunch enrollment were deleted from the final study. Additional schools were removed from the final list due to the fact that these schools failed to list designations and test score results. For example, an extracted school is the Akron Alternative Academy, which was removed from the study because this school is not a regular high school, but instead an alternative school focusing on and geared to students who are potential dropouts, behind a grade level, have failed one or more grade or have already dropped out of school and are between 15 and 21 years old.

In some instances, the data were recoded to create a dichotomous variable.
First, the attendance rate was recoded into dummy variables, where zero (0) was equal to 92.9% or lower and considered a negative attendance rate, and; one (1) was equal to 93% or higher for attendance rates, where 93% was considered a positive attendance rate. 93% was used because attendance rates of 93% or higher is considered a positive attendance rates by the Ohio Department of Education.

Second, graduation rates at 89.9% or lower were recoded as zero (0) and 90% or higher were recoded as one (1). Here, 0 is a negative graduation rate, and 1 is a positive graduation rate, following the Ohio Department of Education’s scales.

Third, free school lunch and reduced school lunch categories were combined into a new category; thereby simplifying the data in this regards as either receive or do not receive lunch. The researcher elected to combine free and reduced lunch because essentially free and reduced lunch both illustrate the same concept; students at or above the poverty line.

The lunch variable was then adjusted to a new category of the percent (instead of an actual number) of school population which received free or reduced lunch.
Next, school’s race and ethnicity were originally categorized by White, Black, Hispanic, Asian, and Native American, but were changed to include minority (inclusive of all minority groups) and non-minority (Whites).

School locale was also recoded from its original eight categories of 1. Large city; 2. Mid-size city; 3. Urban Fringe of a Large City; 4. Urban Fringe of A Mid-size City; 5. Large Town; 6. Small Town; 7. Rural, Outside MSA; and 8. Rural, Inside MSA.

Here, a large city is defined as a central city having a population greater than or equal to 250,000. A mid-size city is a central city of a CMSA or MSA, with the city having a population less than 250,000. An urban fringe of a large city is found outside principal city and inside an urbanized area with a population of 250,000 or more (NCES3, 2006).

An urban fringe of a mid-size city is defined as a city outside a principal city and inside an urbanized area with a population of 250,000 or less. A large town is an incorporated place (or Census-designated place with a population greater than or equal to 25,000, and is located outside a CMSA or MSA. A small town is an incorporated place or census-designated place with a population less
than 25,000 and greater than 2,500, and is located outside a CMSA or MSA (NCES3, 2006).

A rural, outside MSA is designation by the census bureau that the territory is outside a CMSA or MSA of a large or Mid-size city. Finally, a rural, inside MSA is any territory designated as rural by the Census Bureau that is within a CMSA or MSA or a large or mid-size city.

It is important to note that a CMSA is an area that has met the requirements to qualify as a Metropolitan Statistical Area, (MSA) and has a population of 1,000,000 or more (NCES, 2006). Additionally, an MSA is one or more contiguous counties that have a core area with a large population nucleus and adjacent communities and are integrated with the core (NCES3, 2006).

To assess school performance, 462 schools were utilized in this present research. The 462 schools contained in this study vary in locale, percent of student enrollment who receive free or reduced lunch; student enrollment; schools with fully certified teachers; as well as school attendance and graduation rates (The characteristics of the school population is displayed in tables 4.1 - 4.16).
Characteristics of Ohio Public High School Population

The frequency distribution of school’s locale is shown on Table 4.1. Of the 462 schools, more than 40% were from rural and small towns in Ohio. Approximately another 37% were from urban fringes of both large and mid-size cities. Finally, large central, large town, and mid-size central cities made up about 12% of the total population.

<table>
<thead>
<tr>
<th>LOCALE</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Central City</td>
<td>34</td>
<td>7.4</td>
</tr>
<tr>
<td>Large Town</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>Mid-Size Central City</td>
<td>26</td>
<td>5.6</td>
</tr>
<tr>
<td>Rural, inside CBSA</td>
<td>98</td>
<td>21.2</td>
</tr>
<tr>
<td>Rural, outside CBSA</td>
<td>89</td>
<td>19.3</td>
</tr>
<tr>
<td>Small Town</td>
<td>43</td>
<td>9.3</td>
</tr>
<tr>
<td>Urban Fringe of Large City</td>
<td>99</td>
<td>21.4</td>
</tr>
<tr>
<td>Urban Fringe of Mid-size City</td>
<td>72</td>
<td>15.6</td>
</tr>
<tr>
<td>Total</td>
<td>462</td>
<td>100</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>138</td>
<td>29.9</td>
</tr>
<tr>
<td>156</td>
<td>33.8</td>
</tr>
<tr>
<td>100</td>
<td>21.6</td>
</tr>
<tr>
<td>68</td>
<td>14.7</td>
</tr>
<tr>
<td>462</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: National Center for Education Statistics (SY 2004-05)
Table 4.2 represents the frequency distribution of Ohio students who receive free and reduced school lunch. Almost one third (30%) of students in Ohio public high schools had 10 percent or less of its total population receiving free or reduced school lunch. More than 30% of schools had student populations that received between 11% and 25% free lunch.

A little over 20% of schools had between 26% and 50% of its total population receiving free or reduced lunch. Finally, almost 15% of Ohio schools have more than 50% of its student population receiving free or reduced school lunch.

| Table 4.3 Frequency Distribution of Fully Certified Teachers In Ohio Public High Schools SY 2004-05 |
|-------------------------------------------------|-----------------|-------------|
| Number | Percentage |
| 97.9% or less | 133 | 28.8 |
| more than 98% | 329 | 71.2 |
| Total | 462 | 100 |


Table 4.3 displays a frequency distribution of fully certified teachers in Ohio public high schools. More than a quarter of public high schools in Ohio have less than 98% of teachers that are fully certified. A little less than
three quarters have 98% or more of teachers fully certified.

<table>
<thead>
<tr>
<th>Teacher Salary Range</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$30,621 to $39,600</td>
<td>34</td>
<td>7.4</td>
</tr>
<tr>
<td>$39,601 to $49,600</td>
<td>266</td>
<td>57.6</td>
</tr>
<tr>
<td>$49,601 to $59,600</td>
<td>143</td>
<td>31.0</td>
</tr>
<tr>
<td>$59,601 to $67,816</td>
<td>19</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>462</td>
<td>100</td>
</tr>
</tbody>
</table>


Table 4.4 represents a frequency distribution of the Ohio High school teacher’s annual salary. The lowest salary for high school teachers in Ohio was $30,621, while the highest salary was observed at $67,816. The mean salary among Ohio public high school teachers was $49,218. More than half of the teachers in Ohio public high schools had a salary which ranged between $39,601 and $49,600. Also, less than 5% of Ohio public high school teachers earned more than $59,601.
Table 4.5 represents a frequency distribution of school enrollment of Ohio public high schools. More than 31% of schools in Ohio contain a total student body of more than 1000 students.

Additionally, 20.3 percent of schools had student enrollment between 701 and 1000; 29.9 percent of schools had student enrollment between 401 and 700 students; and 18.4 percent, of schools in this study had student enrollment of 400 students or less.

Table 4.6
Frequency Distribution of Graduation Rates for Ohio Public High Schools AY 2004-05

<table>
<thead>
<tr>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 90%</td>
<td>137</td>
</tr>
<tr>
<td>at or above 90%</td>
<td>325</td>
</tr>
<tr>
<td>Total</td>
<td>462</td>
</tr>
</tbody>
</table>

Table 4.6 illustrates a frequency distribution of graduation rates for Ohio public high school. 29% of schools have graduation rates below 90%. 70.3 percent of public high schools in Ohio have graduation rates at or above the 90% mark.

<table>
<thead>
<tr>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 93%</td>
<td>81</td>
</tr>
<tr>
<td>at or above 93%</td>
<td>381</td>
</tr>
<tr>
<td>Total</td>
<td>462</td>
</tr>
</tbody>
</table>

Table 4.7 illustrates a frequency distribution of student attendance rates for Ohio public high school population. A little less than 20 percent of schools have attendance rates below 93%. A little more than 80 percent of schools have attendance rates higher than 93%.
Table 4.8 displays the frequency distribution of Ohio public high school’s average years of teacher experience. A majority (approximately 80%) of teachers in Ohio public high schools have between ten and 19 years of teaching experience; with 47% coming from 10 – 14 years of teaching experience, and 41% with 15 – 19 years of experience.

Additionally, a little over five percent of teachers in Ohio public schools have nine years or less of experience. Only a little over five percent of teachers in Ohio public high schools have 20 years or more of experience.
Table 4.9 illustrates a frequency distribution of Ohio public high school’s teacher attendance rate. More than 50 percent of schools employ teachers who have attendance rates at 95.9 or less. Additionally, a little less than 50 percent of public high schools in Ohio have teacher attendance rates at or above 96 percent.

Table 4.10 displays a frequency distribution of school population of number of minority students enrolled in Ohio.
public high schools. More than 65 percent of Ohio public high schools have minority enrollment of less than six students.

Additionally, 18.4 percent of public high schools in Ohio have minority student enrollment between six and 21 students. A little more than five percent of Ohio public high schools between 21 and 40.9 percent of its student population are minority. Lastly, a total of 11 percent of all Ohio public high schools have minority student enrollment at or above 41.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>5 students or less</th>
<th>6 to 20 students</th>
<th>21 to 200 students</th>
<th>201 or more students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>African-American</td>
<td>202</td>
<td>44</td>
<td>96</td>
<td>20.6</td>
</tr>
<tr>
<td>Asian</td>
<td>277</td>
<td>59.9</td>
<td>121</td>
<td>26.0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>248</td>
<td>53.8</td>
<td>137</td>
<td>19.6</td>
</tr>
<tr>
<td>Native American</td>
<td>448</td>
<td>97.0</td>
<td>14</td>
<td>3.0</td>
</tr>
<tr>
<td>White</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Notes: # = number of students; % = Percent of students; Percentage due to rounding
Table 4.11 displays the enrollment of Ohio Public High Schools by Race/Ethnicity. African American, Asian, Hispanic, Native American and White students are characterized by actual number and percentages.

About 65 percent of Ohio public high schools had African American student enrollment at or below 20. Another 19 percent of Ohio public high schools had African American student populations between 21 to 200; Less than 10 percent of Ohio public high schools had African American student enrollment between 201 to 500. Finally, 8 percent had African American student enrollment of 501 or more.

For Asian, the majority of Ohio public high schools (34.6%) have Asian student enrollment at one or at none. Additionally, 25.3 percent of Ohio public high schools had Asian enrollment between two and five; 14.5 percent of Ohio public high schools had Asian enrollment between 6 - 10; 25.5 percent of Ohio public high schools had Asian enrollment at 11 or higher. Of this group, the highest enrollment of Asians in Ohio public high schools was 184.

More than 80 percent of public high schools in Ohio had Hispanic student enrollment of 20 students or less. Less than 10 percent of Ohio public high schools had Hispanic student enrollment between 201 - 500. Only one
(0.2%) Ohio school had Hispanic student enrollment at or above 501.

Only two schools or .4 percent of Ohio public high schools had Native American student enrollment of 11 or more. Additionally, just fewer than three quarters of public high schools had Native American enrollment at one or below. Another 22.7 percent, or 105 schools had Native American enrollment between two and five; 2.6 percent of Ohio public high schools had Native American enrollment between 6 and 10. The high Native American enrollment was 13. A total of 244 Ohio public high schools listed having no (0) Native American students enrolled.

Just fewer than 60 percent of all public high schools in Ohio had White student enrollment of 501 or more. Another 33 percent of Ohio public high schools had White student enrollment of 201 to 500. Only three (.6%) of Ohio public high schools have White student enrollment of 20 students or less. Just 6.5 percent of Ohio public high schools had White student enrollment between 21 to 200.
Table 4.12 illustrates a frequency distribution of Ohio public high school teachers with at least a bachelor’s degree. Seventy-two percent of public high schools in Ohio had teachers (100%) with at least a bachelor’s degree. More than 25% of the public high schools in Ohio do not have teachers with a bachelor’s degree.

**Statistical Technique Used**

According to O’Sullivan & Rassel (1994), regression analysis gives public administrators and policy makers a statistical technique that is efficient in describing complex relationships.

Using SPSS, multiple regression may utilize enter, stepwise, forward, backward and remove methods. Actually, stepwise multiple regression analysis was used because it is one of the most sophisticated, and allows each variable entered in sequence and its value assessed (Brace, et al,
George and Mallery (2003) state that stepwise regression combines both backward and forward method procedures, and that it is possible for variables that are entered into the model will lose some of its predictive validity when other variables are entered. Additionally, weaker variables are removed, leaving only the strongest predictors.

Additionally, it is important to note that variables that contribute to the model are retained, and all others are then retested to see if they are contributing. If these variables are no longer significantly contributing, they are removed from the model. This method makes certain that the researcher ends up with the smallest set of predictor variables included in each model (Brace, et al, 2000, p. 210).

Some of the most important points of interest used in the SPSS regression analysis output include R-Square, Adjusted R-Square, and B, and will be explained below:

R-Square is the proportion of variance in the dependent variable (such as in this case, school performance) that can be predicted from the independent variables (such as in this case, socio-economic factors, teacher functioning and preparedness, and school
preparedness). Additionally, R-Square is sometimes called the coefficient of determination.

As predictors are added to a model, each predictor will explain some of the variance in the dependent variable. By continuing to add predictors, the model improves its ability to explain or predict the dependent variable. This is called the adjusted R-Square.

The B is the values for the regression equation for predicting the dependent variable from the independent variable. They are unstandardized coefficients because they are measured in their natural state.

A major concern whenever multiple regression is used is the term multicollinearity. Multicollinearity is the problem of having highly correlated independent variables in a regression model. Clearly stated, multicollinearity is found when an independent variable is highly correlated with one or more of the other independent variables in a multiple regression model (Allen, 1997).

It was important for the researcher to ensure that multicollinearity was not a factor in this study since when two variables are highly correlated the regression equation is not able to accurately estimate the effect of the

As Neeleman (1973) puts it, multicollinearity is very important because if it is present, there is the possibility that the equation is under-identified and because of this, cannot be estimated (Neeleman, 1973, p. 11).

Mansfield & Helms (1982) explained that ample adverse effects on estimated coefficients in a multiple regression analysis can occur, and because of this, it important that researchers can understand how to detect when it exists. The VIF, or Variance inflation factor is an indicator that provides researchers with a measure that lets you know how much variance of estimated coefficients are affected by the multicollinearity (Mansfield & Helms, 1982, p.160).

A rule of thumb for the VIF is that VIF’s greater than 10 or more is considered too much. In SPSS the VIF is given with the tolerance - although the tolerance is the inverse of the VIF. In other words, researchers should look for low VIF’s (less than ten) and high tolerance (approaching one).

There are many options available to dealing with multicollinearity. In SPSS, which is being used in this
study, the collinearity diagnostics option allows for the assessment of possible problems with Collinearity in data (Brace, et al, 2000).

Results

Stepwise multiple regression analysis was utilized using SPSS to answer the three following research questions:

1. Is there a significant relationship between school performance and Socio-Economic factors in public high schools in the State of Ohio?

2. Is there a significant relationship between school performance and the functioning and preparedness of Ohio public high schools’ teachers?

3. Is there a significant relationship between school performance and student and school preparedness?

Model One

All variables included in model one make up the socio-economic factors (student enrollment, percent lunch, and school’s lunch). The relationship between the dependent and independent variables is characterized using multiple regression model one:
H₀₁: \( Y = \beta_0 - \beta_1 x_1 + \beta_2 x_2 - \beta_3 x_3 + e \neq 0. \)

Where

\( y \) = school performance (as seen by the Performance Index Scores)

\( x_1 \) (socio economic factor) = Student Enrollment (Number of students attending specific Ohio public high school.)

\( x_2 \) (socio-economic factors) = Percent Lunch (Percent of students receiving free or reduced school lunch acquired by dividing the total number of students receiving free or reduced lunch with total number of students enrolled.)

\( x_3 \) (socio-economic factors) = School Locale (Location of school where, 1= large central city; 2= large town; 3= midsize central city; 4= rural; 5= small town; 6= urban fringe of a small large and 7= urban fringe of midsize city.)

Before accepting the regression model one, both the correlation matrix and the collinearity statistics was viewed to make sure that multicollinearity was not an
issue. Table 4.13 represents a correlation matrix for model one (Socio-economic model) and Table 4.14 represents the Collinearity Statistics.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Performance Index*</th>
<th>Student Enrollment</th>
<th>Percent Lunch</th>
<th>Locale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Index*</td>
<td>1.000</td>
<td>.046</td>
<td>-.619</td>
<td>.445</td>
</tr>
<tr>
<td>Student Enrollment</td>
<td>.046</td>
<td>1.000</td>
<td>-.195</td>
<td>.105</td>
</tr>
<tr>
<td>Percent Lunch</td>
<td>-.619</td>
<td>-.195</td>
<td>1.000</td>
<td>-.364</td>
</tr>
<tr>
<td>Locale</td>
<td>.445</td>
<td>.107</td>
<td>-.364</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Key: *= Dependent Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-economic factors - percent lunch</td>
<td>.843</td>
<td>1.186</td>
</tr>
<tr>
<td>Socio-economic factors - school locale</td>
<td>.866</td>
<td>1.154</td>
</tr>
<tr>
<td>Socio-economic factors - student enrollment</td>
<td>.961</td>
<td>1.041</td>
</tr>
</tbody>
</table>

Table 4.14 illustrates the collinearity statistics for model 1 (socio-economic model). Because the tolerance for percent lunch, school locale and student enrollment are at
.843, .866, and .961, respectively, they are not close to zero, and therefore, there is no multicollinearity present. The reciprocal of the tolerance, the VIF, is smaller than 10 for model one with 1.186, 1.154, and 1.041 respectively. It is therefore safe to say that model one does not show to be multicollinear.

Figure 4.1 reflects the completed research model for H₀₁. In figure 3.1, it was originally stated that the null hypothesis was H₀: Y = β₀ – βₓ + e = 0, which means that the socio-economic factors have no relationship on school performance. Since the socio-economic factors (independent variables) do have a relationship on school performance (dependent variables), the null hypothesis was rejected; and the hypothesis was accepted as H₀₁: Y = β₀ – βₓ + e ≠ 0.

Figure 4.1 also reflects that there are inverse effects for both free or reduced lunch and school size with school performance. When school performance increases both free or reduced lunch as well as school size decreases.
At the completion of the stepwise regression analysis for model one, the following variables were included in the model in order of inclusion in step: The percent of students receiving free or reduced lunch ($x_2$), school locale ($x_3$) and student enrollment ($x_1$).

The results and interpretation of model one is listed below as followed:

$$y = 97.528 - 22.827x_2 + 1.446x_3 - .002x_1$$
The stepwise output for model one indicated that the most significant socio-economic factor was percent lunch. Here, as schools that had increased numbers of students receiving free or reduced lunch, had decreased school performance indices in Ohio public high schools.

Next, school locale enters the model. In this case, the second socio-economic factor was school’s locale. School locale was viewed as having a significant effect on school performance. Essentially, schools located in urban areas are more likely to have lower school performance indices than schools in other areas of Ohio. Lastly, student enrollment enters the model.

In total, the stepwise regression results showed that the socio-economic factors (x_2 = percent lunch, x_3 = school locale and x_1 = school enrollment) explained over 44 percent of the variance in the dependent variable (school performance).

The socio-economic model findings explained that there is a significant inverse relationship between percent lunch and school performance. The inverse relationship means that in schools with increased numbers of students who receive free or reduced school lunch, have lower performance scores. The findings suggested that school
performance was best when little to no students attending an Ohio public high school received free or reduced lunch.

Additionally, a slight inverse effect (at -.002), was observed with student enrollment (school size). In this case, in schools where there are increased numbers of students attending, there schools had lower performance scores. This finding suggests that schools with fewer students enrolled do better than schools with larger enrollment numbers.

<table>
<thead>
<tr>
<th>Stepwise Regression for Socio-Economic Model (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>Socio-economic factors-percent lunch</td>
</tr>
<tr>
<td>Socio-economic factors-school locale</td>
</tr>
<tr>
<td>Socio-economic factors-student enrollment</td>
</tr>
</tbody>
</table>

Note: Intercept= 97.528; Adjusted R²= .446
*Significant at alpha level=.05
Model Two

All variables included in model two make up the teacher functioning and preparedness variables [percent of teachers certified ($x_1$), teacher attendance ($x_2$), teacher annual salary ($x_3$), teacher’s years of experience ($x_4$), and teachers holding at least bachelor’s degree ($x_5$)].

The relationship between the dependent and independent variables is characterized using stepwise multiple regression in model two:

$$H_{02}: Y = \beta_0 + \beta_1 x_1 - \beta_2 x_2 + \beta_3 x_3 - \beta_4 x_4 - \beta_5 x_5 e \neq 0.$$  

Where

$Y$ = school performance (as seen by the Performance Index Scores)

$X_1$ = Percent of Certified Teachers (Percent of Ohio high school teachers that have the minimum certification.)

$X_2$ = Teacher Attendance Rate (Rate of Ohio high school teachers school attendance.)

$X_3$ = Teacher’s Annual Salary (The average annual salary of Ohio high school teachers.)
\(X_4=\) Teacher’s Years of Teaching Experience (Total years of teaching experience of Ohio public high school teachers.)

\(X_5=\) Teachers holding at least a Bachelors degree (Number of Ohio public high school teachers holding at least a bachelors degree.)

Before accepting the regression model two, both the correlation matrix and the collinearity statistics was viewed to make sure that multicollinearity was not a concern. Table 4.16 represents a correlation matrix for model two (teacher functioning and preparedness) and Table 4.17 represents the Collinearity Statistics.
### Table 4.16
Correlation Matrix for Teacher Functioning and Preparedness (Model 2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Performance Index*</th>
<th>Fully Certified</th>
<th>Teacher Attendance</th>
<th>Teacher Salary</th>
<th>Teacher Exp.</th>
<th>Percent w/ Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Index*</td>
<td>1.000</td>
<td>.225</td>
<td>-.011</td>
<td>.070</td>
<td>-.001</td>
<td>.092</td>
</tr>
<tr>
<td>Fully Certified</td>
<td>.225</td>
<td>1.000</td>
<td>-.009</td>
<td>.107</td>
<td>.004</td>
<td>.154</td>
</tr>
<tr>
<td>Teacher Attendance</td>
<td>-.011</td>
<td>-.009</td>
<td>1.000</td>
<td>.012</td>
<td>.054</td>
<td>.089</td>
</tr>
<tr>
<td>Teacher Salary</td>
<td>.070</td>
<td>.107</td>
<td>.012</td>
<td>1.000</td>
<td>.142</td>
<td>-.031</td>
</tr>
<tr>
<td>Teacher Experience</td>
<td>-.001</td>
<td>.004</td>
<td>.054</td>
<td>.142</td>
<td>1.000</td>
<td>.102</td>
</tr>
<tr>
<td>Percent w/ Bachelors Degree</td>
<td>.092</td>
<td>.154</td>
<td>.089</td>
<td>.031</td>
<td>.102</td>
<td>1.000</td>
</tr>
</tbody>
</table>
preparedness model). Because the tolerance for percent of teachers who are fully certified, teacher attendance, average teacher salary, average years of teacher experience and number of full time teachers who have at least a bachelors are at 1.000, 1.000, .989, 1.000, and .997 respectively, they are not close to zero, and therefore, there is no multicollinearity present.

The reciprocal of the tolerance, the VIF, is smaller than 10 for model two with 1.000, 1.000, .989, 1.000 and .997 respectively. It is therefore safe to say that model two does not show to be multicollinear.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher functioning and preparedness (percent of teachers who are fully certified)</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Variables Removed From Step</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher functioning and preparedness (Teacher attendance rate)</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Teacher functioning and preparedness (Average Teacher Salary)</td>
<td>.989</td>
<td>1.012</td>
</tr>
<tr>
<td>Teacher functioning and preparedness (Average Years of teaching experience)</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Teacher functioning and preparedness (Number of fulltime teachers who have at least a masters degree)</td>
<td>.997</td>
<td>1.003</td>
</tr>
</tbody>
</table>
Figure 4.2 below reflects the completed research model for $H_{02}$. In figure 3.2, it was originally stated that the null hypothesis, $H_0: Y = \beta_0 + \beta x + e = 0$, means that the teacher functioning and preparedness have no relationship on school performance. Since teacher functioning & preparedness (independent variables) do have a negative relationship on School Performance (dependent variables), then the null hypothesis is rejected and the hypothesis is accepted as follow $H_{02}: Y = \beta_0 + \beta x + e \neq 0$.

Figure 4.2 also reflects that teacher attendance, average teacher salary, average year of teacher experience and number of teachers holding a bachelors degree were moved from the study. The complete results are listed below:
Figure: 4.2 Research Model (2) - $H_{02}$

Dependent Variable:
School Performance

Independent Variables:
2.) Teacher Functioning & Preparedness:

Teacher Attendance*
Teacher Salary*
Years of Experience*

Certified Teachers

Teachers At least Bachelor’s Degree*

Note: * = removed from step (final) model
At the completion of the stepwise regression analysis for model two, the following variable was included in the model: The percent of teachers who are fully certified ($x_1$).

The percent of teachers who are fully certified ($x_1$) explained five percent of the variance. A total of four teacher preparation and functioning variables were removed from this model to make certain it is the strongest possible model in predicting school performance: Teacher attendance ($x_2$); average teacher salary ($x_3$); teacher’s years of teaching experience ($x_4$) and teachers holding at least a bachelors degree ($x_5$).

The results and interpretation of regression model two is expressed as followed:

$$y = 47.126 + 0.511(x_1)$$

The stepwise regression model two included the percent of teachers who are fully certified ($x_1$) for inclusion in this model. The results of the following regression equation are summarized in Table 4.18. The findings suggest that schools with increase certified teachers have higher school performance.
Table 4.18
Stepwise Regression for Teacher Functioning and Preparedness Model (2)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable In Step</th>
<th>Adjusted R²</th>
<th>Regression Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher functioning and preparedness</td>
<td>1</td>
<td>.049</td>
<td>.511*</td>
</tr>
<tr>
<td>(percent of teachers who are fully</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>certified)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>.049</td>
<td>.511</td>
</tr>
</tbody>
</table>

Note: Intercept: 47.126; Adjusted R²=.049

*Significant at alpha level=.05

Model Three

All variables included in model three make up the independent variable school preparedness [students attendance rates (x₁); graduation rates (x₂); percent minority student (x₃)].

The relationship between the dependent and independent variables is characterized using stepwise multiple regression in model three:

\[ H_{03} : y = \beta_0 - \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \epsilon \neq 0. \]

Where

\[ H_{03} : Y = \text{school performance (as seen by the Performance Index Scores)} \]
X₁ = Minority Students (Percent of Ohio public high school students that are minority. The variable minority student is acquired by dividing the number of minority students by the total student enrollment).

X₂ = Student Graduation (where 0 is 89.9 percent or lower represents a negative graduation rate; and 1 is 90 percent or higher represents a positive graduation rate, as set forth by the Ohio Department of Education.)

X₃ = Student Attendance (where 0 is 92.9 percent or lower represents a negative attendance rate; and 1 is 93 percent or higher represents a positive attendance rate, as set forth by the Ohio Department of Education.)

Before accepting the regression model two, both the correlation matrix and the collinearity statistics was viewed to confirm that multicollinearity was not a concern. Table 4.19 represents a correlation matrix for model three.
Table 4.19

Correlation Matrix for School Preparedness Model (3)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Performance Index*</th>
<th>Attendance Rate</th>
<th>Graduation Rate</th>
<th>Percent Minority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Index*</td>
<td>1.000</td>
<td>.503</td>
<td>.541</td>
<td>-.613</td>
</tr>
<tr>
<td>Attendance Rate</td>
<td>.503</td>
<td>1.000</td>
<td>.424</td>
<td>-.466</td>
</tr>
<tr>
<td>Graduation Rate</td>
<td>.541</td>
<td>.424</td>
<td>1.000</td>
<td>-.367</td>
</tr>
<tr>
<td>Percent Minority</td>
<td>-.613</td>
<td>-.466</td>
<td>-.367</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Key: *= Dependent Variable

Table 4.20

[Collinearity Statistics]
Tolerance & Variance Inflation Factor (VIF)
for School Preparedness Model (3)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>School preparedness – student graduation</td>
<td>.748</td>
<td>1.337</td>
</tr>
<tr>
<td>School preparedness – minority students</td>
<td>.784</td>
<td>1.276</td>
</tr>
<tr>
<td>School preparedness – student attendance</td>
<td>.709</td>
<td>1.410</td>
</tr>
</tbody>
</table>

Table 4.20 illustrates the collinearity statistics for model three (school preparedness model). Because the tolerance for student graduation, minority students, and
student attendance are at .748, .784, and .709, respectively, they are not close to zero, and therefore, there is no multicollinearity present.

The reciprocal of the tolerance, the VIF, is smaller than 10 for model three with 1.337, 1.276, and 1.410 respectively. It is therefore safe to say that model one does not show to be multicollinear.

Figure 4.3 reflects the completed research model for $H_{03}$. In figure 3.3, it was originally stated that the null hypothesis was $H_0: Y = \beta_0 - \beta_x + e = 0$, which means that school preparedness has no relationship with school performance. Since school preparedness (independent variables) has a negative relationship on school performance, (dependent variables) the null hypothesis was rejected and the hypothesis is accepted as $H_{03}: Y = \beta_0 - \beta_x + e \neq 0$.

Figure 4.3 also reflects that there is an inverse effect for minority student. A complete analysis and interpretation of model three is listed below:
The results of model three are summarized below as follows:

All three variables remained in the stepwise model. First, percent minority($X_1$) enters the model, and is
responsible for predicting .376 or 38 percent of the variance. Second, student graduation is entered into the model. The model at this point (including both percent minority and student graduation) now accounts for .491 or 49 percent of predicting the variance. Last, student attendance entered the school preparedness model to include percent minority, student graduation, and student attendance. The model now predicts .513 or 51 percent effect that the independent variables (school preparedness variables) affect the dependent variable (performance index scores).

In total, 51 percent of the variance in the dependent variable (school performance) can be predicted from the independent variables (percent minority, student graduation, and student attendance).

The results and interpretation of regression model three is expressed as followed:

\[ y = 91.454 - 15.963(x_1) + 6.215(x_2) + 4.200(x_3) \]

The stepwise regression model three included a total of three steps \((x_1-x_3)\) for inclusion in this model. The school preparedness model also showed an inverse effect on...
percent minority with school performance. This effect shows that schools with increased numbers of minority students enrolled have decreased school performance.

The results of the following regression equation are summarized in Table 4.21:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable In Step</th>
<th>Partial Adjusted $R^2$</th>
<th>Regression Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>School preparedness – student graduation</td>
<td>1</td>
<td>.376</td>
<td>.471*</td>
</tr>
<tr>
<td>School preparedness – minority students</td>
<td>2</td>
<td>.116</td>
<td>-10.192*</td>
</tr>
<tr>
<td>School preparedness – student attendance</td>
<td>3</td>
<td>.022</td>
<td>.856*</td>
</tr>
</tbody>
</table>

Note: Intercept: 91.454; Adjusted $R^2$=.514

*Significant at alpha level=.05
CHAPTER V
CONCLUSION

Introduction

This study explored public high school’s educational performance in the State of Ohio. The performance of schools nationally has been under harsh scrutiny because of unacceptable levels of school failure. Particularly, identified groups of schools continue to demonstrate substandard progress in education achievement. The primary focus of this study has been the academic condition of schools in the state of Ohio.

This study was organized around four inter-related elements. First was an examination of the relevant literature on variables focused on to determine the educational gaps and school performance of public high schools. The literature included an overview of the attempts made to improve public schools through the No Child Left Behind Act as well as the State of Ohio accountability measures. The literature then focused on
variables used by the governmental guidelines (such as NCLB and Ohio accountability system) to determine progress. These variables included school attendance, graduation/dropout rate, standardized testing, school size, student-teaching ratio, and socio-economic status. Next, accountability as the conceptual framework was presented, with the explanation of its relationship to this study. The literature provided a framework within which to define and categorize the ‘problem’ of underperforming schools.

With that understanding, it was possible to outline a course of action for investigating and exploring the problem of underperforming schools. This is the second element of the study and was presented in Chapter three. This element of the study offered a review of the data sources available by which to conduct the study - the National Center for Education Statistics, Common Core Data, and the Ohio Department of Education. The research design for the present study was also specified, as well as the unit of analysis, statistical analysis and techniques and limitations.

The key elements of the study are the analysis of the data and the conclusions and recommendations that can be drawn from that analysis. Chapter four presented a
description and discussion of data, data manipulation procedure used, as well as the statistical techniques, and ends with the analysis, findings of this study as well as an interpretation of results.

The fifth and final chapter presents a summary and conclusion from the study. This final chapter presents a total of seven sections including this introduction, of which this section is part. The second section offers a summary of the study; the third section gives a reflection of the literature; the fourth section is the summary of findings; the fifth section looks at limitations of the study; the sixth section focuses on policy implications and conclusions, and the final section focuses on recommendations for the future.

Examination of the Literature

Through an examination of the literature, this research describes an assortment of possible explanations for and subjects related to the academic conditions of schools. Based upon current knowledge, the four most significant expectations and explanations are summarized below:

- First, student attendance has been among the most collected variables for schools in determining
its standing. Viewed as an indicator of school failure, attendance not only has the ability to affect a school’s budget (Ford & Sutphen, 1996; Epstein & Sheldon, 2002), it also affects student’s achievement test scores (Lamdin, 1998), and the graduation rate (Greene, 2002).

Second, graduation rates are rather important since a high school diploma is unarguably a vital necessity for a good quality of life in the United States. An elevated amount of high school dropouts is a national policy concern. Despite the fact that the high school dropout problem is more alarming in areas specific to minorities, it is important that all segments of the population focus on techniques to reduce school dropout. The effects on the society can be seen through the 1998 unemployment rate for dropouts in the United States, which was as much as 75% higher for high school dropouts than high school graduates (NCES, 2000).
Third, probably one of the most debated areas concerned with school performance is standardized testing. Standardized testing has proven to be the most relied on element of determining school performance. As a matter of fact, Haladyna et al (1991) asserted that standardized achievement tests have been the operational definition for education achievement. It is also important to realize the importance of test scores to determine school accountability.

Fourth, the size of a school has been under heavy discussion. Proponents of larger schools contend that not only economical gains are afforded, but also students are able to enroll in classes that are usually not offered in small schools (Cotton, 1996; Lee & Smith, 1997). On the other side, many believe that smaller schools are superior since students have the opportunity to work more closely with the entire school, on a more personal level (Gerwertz, 2000; Kuziemko, 2006).
Summary of the Findings

The expectations and explanations that emerged from the literature suggested the following three research questions:

1. Is there a significant relationship between school performance and socio-economic factors in public high schools in the State of Ohio?

2. Is there a significant relationship between school performance and the functioning and preparedness of Ohio public high schools’ teachers?

3. Is there a significant relationship between school performance and student and school preparedness?

The three research questions stated above yielded three regression models (Model One – Socio-Economic Factors; Model Two – Teacher Functioning and Preparedness; and Model Three – Student and School Preparedness). The socio-economic model was statistically significant (the null hypothesis was rejected) and retained ‘student enrollment’, ‘percent lunch’ and ‘school lunch’ in the
stepwise regression. This model was responsible for predicting over 44% of the variance. The socio-economic model findings explained that there is a significant inverse relationship between ‘percent lunch’ and ‘school performance’. For this model, the inverse relationship leads the researcher to believe that schools with a higher number of students receiving free or reduced lunch have lower school performance scores. There is also a slight inverse effect (at -.002), observed with ‘student enrollment’ (school size). This finding could suggest that Ohio public high schools with small enrollments have higher school performance when compared to schools with large enrollments.

The Teacher Functioning and Preparedness Model was statistically significant (the null hypothesis was rejected) and retained ‘percent certified teachers’ in the step, explaining a total of 5% of the variance. Additionally, the ‘teacher’s attendance rate’, ‘teacher’s annual salary’, ‘teacher’s years of teaching experience’ and ‘teachers holding at least a bachelor’s degree’ were removed from the model. The findings suggest that when there is an increase in certified teachers in public high schools in the state of Ohio, the performance indicators
for public high schools in Ohio are likely to increase.

The School Preparedness Model was statistically significant (the null hypothesis was rejected) and retained ‘student attendance rates’, ‘graduation rates’, and ‘percent minority student’ in the stepwise regression. This model predicted a total of 51% of the variance. The school preparedness model showed an inverse effect on percent minority with school performance. This effect shows that schools with increased numbers of minority students enrolled in Ohio public high schools were likely to have decreased school performance. Additionally, schools with increased graduation rates also had increased school performance. The same relationship is so of attendance, therefore, schools with increased school attendance above 90 percent and had higher graduation rates were also likely to be considered better performing schools.

All in all, although all models were significant, the strongest model was the school preparedness model. Accordingly, the weakest model was the teacher functioning and preparedness model. The overall findings suggest that socio-economic factors, student, teacher functioning and
preparedness and school preparedness are statistically significant models of explaining school performance.

Limitations of the Study

One of the limitations of this study is inherent in the nature of the cross-sectional research design. A cross-sectional design may be considered a more limited design since it only presents a “snapshot”, which can be seen as a generalization as opposed to the use of a longitudinal study, which would require more time and money (Babbie, 2005).

Since the geographic scale of this research study is limited to Ohio’s public high schools, the study cannot be generalized for public schools across the nation, the Midwest region, or private or parochial schools. Additionally, generalizations may not be appropriate for middle or elementary schools within Ohio.

Due to the fact that this study utilized secondary data, some schools that were otherwise eligible for inclusion in this study were removed because of missing data from the sources (the Ohio Department of Education or the National Center for Education Statistics, Common Core Data), which lessened the final number of schools utilized in this study.
Due to problems of multicollinearity, it was necessary to remove the analysis of student-teacher ratio as a factor affecting school performance in this study. The inclusion of student-teacher ratio may have provided more comprehensive information on size concerns of schools. This factor may have given some understanding as to whether large school enrollment is correlated with student-teacher ratio in Ohio public high schools.

Despite the limitations of this study, this study provides useful findings that may inform program development and delivery.

Policy Implications and Conclusions

This exploratory study provided a useful and comprehensive investigation of variables affecting school performance. The findings have implications for policy makers and education researchers. As was discussed in chapters one and two, there is a considerable volume of literature on educational performance, yet, a paucity of studies specific to socio-economic factors and school performance. This study has shed some light to the importance of socio-economic specific factors, and its need to be viewed when concerns of school performance surface. As previously indicated, the effects on the future society
may be enormously affected if the trends remain the same. Whether it be failure to sufficiently compete in the world economy, or an issue of achieving equality among all groups of students and schools, the effects that variables which affect school performance have is of profound consequences (Deere & Strayer, 2001; Haycock, 2001).

This study has also noted that the No Child Left Behind Act of 2001 established the reliance on accountability and assessment approaches as a mechanism for improving school success and achievement (Linn, Baker & Betebenner, 2002). The NCLB has attempted to find solutions to the problems of school achievement among all students. This examination suggests that the No Child Left Behind Act has failed to separate students in ways which are most critical to a complete ‘diagnosis’ of the problems. Although it can be argued that No Child Left Behind attempts to assess student progress specific to race and economic status, it focuses too much on test scores, and not enough on other factors such as attendance, graduation, teacher functioning and student behavior. There is a divide between who is being tested, and who receives sanctions or rewards for performance on these exams. There needs to be additional methods to assess the
performance of schools beyond the accountability requirements of No Child Left Behind.

Finally, the policies that are created today affect every facet of the American society for years to come. Failure for students to succeed in the education system leads to increase number of problems in the future. With increased school failure there is also increase in substance use, criminal activity, poor job or no job credentials, reliance on government programs such as welfare, and increased depression.

Recommendations for Future Research

The focus of education and policy research is placed on finding policies to improve the welfare of American schools. This study has reflected on some of the problems within the education system in the state of Ohio. More specifically, this study has described in a comprehensible approach, the factors that affect school performance in the state of Ohio public high schools. The following are suggested future studies to understand the dynamics of and improving the performance of schools throughout the nation:

First, it is suggested that student outcome beyond high school (i.e., college enrollment and completion, and future employment) be considered as an important measures
of school performance (Fetler, 2001). One’s educational attainment has importance on the future of the economic state of the union. It is important that students complete high school, but it has also become important that students continue on to complete additional schooling, as is feasible to the job market. Murphy and Welch (1989) pointed out that wages among college graduates and high school graduates are notable, largely due to the remarkable increase that the demand for college-trained employees has, and will continue to increase (Murphy and Welch, 1989).

Second, this study showed the widespread accountability interest that has been taking place in educational policy arena. An interesting future research should consider if rigorous or consequential accountability impacts the educational system. An example of this would be to question whether accountability increases cheating on exams, more classifications of students as special education (excluding them from the inclusion in overall results), or less teaching of necessary skills, in place of teaching for the tests (Hanushek & Raymond, 2004). If a teacher or school received increased pay, or praise for students and schools that performed well on tests, teachers may be more likely to gravitate towards teaching to the
specific test information on exams, and less on information that may be relevant to future success and or subject matter that are presumed necessary. Consequently, an interesting study would include looking at the value of a reward or sanction affects future school performance.

Third, a future study needs to look at what assessments work best and identify the ‘best practices’ among the strategies used to determine accountability of schools. Clearly stated, an abundance of factors are used to determine accountability. Unfortunately, it is often made to be ambiguous as to what is meant by accountability. Because there is not a well understood definition of accountability among our schools, school districts are implementing a colossal of methods to test an under-defined accountability.

Fourth, perhaps future studies might look at the processes of exclusion of specific students (minority groups) on reported standardized exam results as a technique of controlling smaller groups of students so that they are not singled out. In some cases, there may be very few (one or two) students in a specific racial/ethnic group. To assure that their results remain anonymous, they should be excluded from published reports of the standard
exams. In a case where there is one Hispanic student enrolled in a school, his or her test scores (whether bad or good) can be scrutinized specific to him or her. The test scores of this one student becomes public knowledge. However, there may be times when there are 10 to 20 students that make up a minority group, and the same process is followed. The necessity to protect a student has disappeared, and may only be implemented because of the expected (low) score on the exam. This practice may be performed due to the fact that it is expected that certain students do not perform well on standardized exams (Fryer and Levitt, 2004; Allport, 1954).

Fifth, it is also recommended that the manner in which school performance rewards and sanctions are established. There is a need for comparative studies focusing on how determinations differ among schools, school districts, counties, states and nationally.

Sixth, future research should explore the possibilities of standardized exams being racially and culturally biased. In 1989, Sacks asserted that standardized tests were racially biased, making it impossible for minorities to do well. Jencks (1998) believes that achievement exams are written in such a way
that they become biased in five ways: label bias, content bias, methodological bias, prediction bias, and selection system bias. Label bias is found when tests that are supposed to measure one thing measures other things which is a problem when claims are being made about testing aptitude or intelligence (Jencks, 1998, p. 55). Content bias claims to measure in an unbiased manner, but fails to do so when questions select specific questions focused on specific majority groups over others. Methodological bias is seen with tests that assess mastery of skills or methods that underestimate the competence of specific groups over others (Jencks, 1998, pp 55-56). Prediction bias plays a role when tests are used to predict future performance, such as the SAT. Selection system bias is present when performance depends on cognitive skills; it is easy to measure cognitive skills but difficult to assess other traits to influence performance, and the racial disparity in cognitive skills is larger than the racial disparity in the other traits that influence performance (Jencks, 1998). Jencks (1998) felt that with these biases, specific groups, such as African-Americans and Hispanics are at a great disadvantage to be tested based on what skills they lack, than the skills they have (Jencks, 1998, p. 58).
Seventh, it is strongly recommended that future studies focus on the effects of stereotype threat on student and school performance. Stereotype threat suggests that achievement gaps in the United States between specific groups of students who are achieving academically and those who are not, because specific groups of students are labeled and stigmatized. Specific students who are labeled as being unable to perform well in school attempt to disprove the stereotype, which affects a student’s ability to performance (Steele, 1997; Simmons, et al, 1978; Gonzalez et al, 2002). Stereotype threat could prove to hold answers to the overall performance of minority groups, and their school environment is unfavorable to minorities across the United States. In the last ten years, the stereotype threat has been empirically tested in a number of academic domains (Aronson, et al, 1999, 2001; Osborne, 1999, 2001; Steele, 1992, 1997, 2001; Stone, et al, 1999). In a study of Black and White Stanford University students, both groups were statistically equated based on ability level and then given a difficult half an hour test. Black students scored significantly worst than White students. Again, another set of statistically equated students were given the same exam. This time, students were told that it
was not a test, but instead, a problem solving task and had nothing to do with ability. The results this time showed that Black students performed equally as well as their statistically equated White counterparts. The difference here is that Black students perceived the situation to be non-aptitude based, and as a result, the simple change had profound difference in outcome (Steele, 2001). In Osborne’s (2001) study, “Testing Stereotype Threat: Does Anxiety Explain Race and Sex Differences in Achievement?” Osborne tested Steele’s Theory of Stereotype Threat. His findings were that anxiety explained significant portions of the racial differences in academic performance (Osborne, 2001). In another study, Aronson, et al (1999) looked at White college students who had score in the higher percentile in mathematics and math SAT’s and also hold math very important. The White students were then told that Asian students scored higher than Whites on the test that they were about the take. Because these students perceived that Asians outperformed Whites, they were less likely to complete the entire test, spent less time in completing questions, and got more questions incorrectly. At the completion of the study, the results were undeniably supportive of making the Asian stereotype depress the

In as much as the stereotype threat is an excellent area for future studies since it has never been tested on this level, the researcher cautions that there is great difficulty in quantifying specific effects of stereotype threat to schools and school performance.

Lastly, based on the findings of this research, future studies should examine factors that improve school performance through school attendance initiatives and programs. Additionally, studies should focus on the effects of larger schools on student performance. Since this study has established that large school enrollment in Ohio public high schools negatively affect school performance, it is also necessary that future researchers concentrate on specific indicators that make large schools less capable of performing as well as smaller schools.
REFERENCES


APPENDICES
APPENDIX A

MODEL ONE (SOCIO-ECONOMIC FACTORS) HISTOGRAM

Histogram

Dependent Variable: Performance Index Score 2004-05

Mean = -9.42E-15
Std. Dev. = 0.997
N = 462
APPENDIX B

MODEL ONE (SOCIO-ECONOMIC FACTORS) P- PLOT

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Performance Index Score 2004-05
APPENDIX C

MODEL TWO (TEACHER FUNCTIONING AND PREPAREDNESS) HISTOGRAM

Histogram

Dependent Variable: Performance Index Score 2004-05

Regression Standardized Residual

Mean = -3.17E-15
Std. Dev. = 0.999
N = 462

Frequency

N = 462
APPENDIX D

MODEL TWO (TEACHER FUNCTIONING AND PREPAREDNESS) P- PLOT

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Performance Index Score 2004-05
APPENDIX E

MODEL THREE (SCHOOL PREPAREDNESS) HISTOGRAM

Histogram

Dependent Variable: Performance Index Score 2004-05

Frequency

Regression Standardized Residual

Mean = -9.33E-15
Std. Dev. = 0.997
N = 462
APPENDIX F

MODEL THREE (SCHOOL PREPAREDNESS) P- PLOT

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Performance Index Score 2004-05

Expected Cum Prob

Observed Cum Prob