Spring 5-1-2015

Factors That Impact End-of-course Assessments in Indiana Public, Non-charter High Schools

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FACTORS THAT IMPACT END-OF-COURSE ASSESSMENTS IN INDIANA PUBLIC, NON-CHARTER HIGH SCHOOLS

A Dissertation

Presented to

The College of Graduate and Professional Studies

Department of Educational Leadership

Indiana State University

Terre Haute, Indiana

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

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May 2015

Keywords: Achievement, assessment, high school, instructional expenditures, socioeconomic status

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ABSTRACT

The purpose of this study was to determine whether a relationship exists between Indiana End-of-Course Assessments (ECA) in English 10 and Algebra I and the following indicators at the high school level: (a) socioeconomic status, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education students. This study examined which indicators had the greatest effect on English 10 ECA scores and Algebra I ECA scores in Indiana. To expand the purpose of this study to a specific variable, the study also examined if there was a relationship between SES of a building and the instructional expenditures. The study used quantitative research data collected from all public, non-charter high schools in Indiana from 2008 through 2013. In this study, a significant relationship was found between SES and instructional expenditures per student. The impact of an increase on the percentage of a school's SES significantly impacts a school's instructional expenditures per student.

Findings in this study concluded that five out of the eight factors analyzed had a significant impact on the passing rate percentage of English 10 ECA. Specifically, the significant factors for the passing rate percentage of English 10 ECA were SES, attendance rate, enrollment, minority rate, and percentage of special education. Factors that did not have a significant impact on the passing rate percentage of English 10 ECA were instructional expenditures per student, percentage of English limited learners (ELL) and mobility rate.

Findings in this study concluded that two out of the eight factors analyzed had a

significant impact on the passing rate percentage of Algebra I ECA. Specifically, the significant factors were SES and attendance rate. Factors that did not have a significant impact on the passing rate percentage of Algebra I were instructional expenditures per student, enrollment, percentage of ELL, mobility rate, minority rate, and percentage of special education. The finding that instructional expenditures per student did not have a significant impact on Algebra I ECA could be significant as educational leaders attempt to allocate funds in schools. It is also significant to evaluate the three factors that did not impact Algebra I ECA but did impact English 10 ECA.

ACKNOWLEDGEMENTS

This study has been a process of challenges over the past three years. The challenges have helped me become a better person and educator through perseverance and encouragement from others. Each day I read a quote for encouragement from Joshua 1:9: "Be strong and courageous. Do not be afraid: do not be discourage, for the Lord your God will be with you wherever you go."

I want to thank my committee chair, Dr. Terry McDaniel, for his wisdom, guidance, and constant encouragement through this study. I also want to thank Dr. Michael Langevin who was on my committee and was instrumental in giving insight, feedback, and guidance throughout this study. Our friendship has grown over the past three years. I want to thank my other committee members, Dr. William Barratt, who challenged me to think critically, and Dr. Nicole Singer, who gave me confidence in completing this study. A special thank you goes to Mrs. Rhonda Beecroft and Mrs. Judy Barnes for all of their assistance over the past three years.

I want to thank my uncle, Dr. Lee Harman, for his positive talks, his guidance, and his inspiring quotes. To my parents, Lavon and Barb Harman, I want to thank them for always being there for me through the good times and the bad times. They are the best parents anyone could ask for. And to my three children, Haylee, Bo, and Bryce, I hope this degree will serve as a sign of the importance of education and following their dreams. I am very proud of the individuals they are becoming. I can only hope they know how much joy they have brought to my life.

Finally and most importantly, I want to thank my best friend and the love of my life, Shannon. She has given me great support and encouragement as I have followed my dream of earning this degree. She has shown true love to me and my love for her grows each and every day of my life.

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INTRODUCTION

Statement of the Problem

"We simply cannot afford to ignore the more than 1 million students who currently drop out of high school each year and the millions more who graduate without the skills needed to obtain good jobs or pursue postsecondary education" (Simon as cited in Thompson & Barnes, 2007, p. 12). On January 8, 2002, President George W. Bush signed into law P.L. 107-110, the No Child Left Behind Act of 2001 (NCLB), which stressed accountability, flexibility, research-based reforms, and parental options, such as school choice (U.S. Department of Education [USDOE], 2007). The Federal legislation, NCLB, and Indiana's Public Law 221 aimed to close the achievement gap by mandating stronger accountability for schools and students (Indiana Department of Education [IDOE], 2011b). NCLB has required each state to establish its own standards of what students should know and be able to do in the core subjects—reading, math, and science (USDOE, 2007). Additionally, each school must meet adequate yearly progress (AYP), and each state must establish an AYP definition and process that must be approved the federal government. If a school does not make AYP, then the school is labeled as a failing school.

Prior to the NCLB, each individual state in the United States was responsible for its education unlike countries such as Taiwan and the United Kingdom, where there is a single

national education administration. State control over education has created diversity in the accountability system of each state related to testing, rewards, and sanctions (Hanushek & Raymond, 2006). With the establishment of the NCLB, improving standards, higher accountability, and increasing student achievement through collaboration with the federal government, states and school districts were required to follow national goals put forth by The Commission on No Child Left Behind (Thompson & Barnes, 2007).

The NCLB requires states to measure student performance in reading/language arts and mathematics annually in Grades 3 through 8 and at least once in high school. Science must be assessed at least once in Grades 3 through 5, 6, and at least once in high school (Thompson & Barnes, 2007). With this requirement, each state assesses high school students in some format by utilizing standardized testing for language arts and mathematics (Thompson & Barnes, 2007). In 2006, the state of Indiana mandated End-of-Course Assessments (ECA) in English 10 and Algebra I at the high school level (IDOE, 2013a). With these regulations, in order to earn a general diploma or CORE 40 diploma from Indiana, a high school student is required to pass the English 10 and the Algebra I ECAs (IDOE, 2013a).

According to Rumberger and Palardy (2005), effectiveness can be measured at the high school level by two indicators: graduation rate and dropout rate. As a nation, graduation rates have increased over the past decade. According to Banchero (2013), the U.S. graduation rate in 2000 was 72% and in 2010 the graduation rate for the nation increased to 78%. The graduation rate in the United States is a direct reflection of the dropout rate (Rumberger & Palardy, 2005). Comparing high school graduates to those students who drop out of high school, students who do not graduate high school have lower earnings, higher rates of unemployment, and an increased need for government assistance (Rumberger & Lim, 2008). In 1973, $13.00 per hour was the

expected earnings for a high school dropout and by 2005, the earnings per hour for a high school dropout decreased to $11.00 (Wiliam, 2011). According to Wiliam (2011), in 1973 a high school graduate earned two times the earnings of a high school dropout and in 2005, the difference was almost three times. Finn, Gerber, and Boyd-Zaharias (2005) followed students from kindergarten through the 12th grade and found a strong relationship between the student's reading and mathematics academic achievement and the student graduating from high school.

Rumberger and Lim (2008) reported Black students, Hispanic students, English limited learner (ELL) students, and students with disabilities have higher dropout rates than other student subgroups. Two indicators have been linked to whether a student graduates from high school or drops out of high school—test scores and grades (Rumberger & Lim, 2008). Rotermund (2007) concluded students who drop out of high school and do not graduate do so for various reasons including a high rate of absenteeism and low academic success.

A student's absenteeism is the most common indicator for a student to drop out of high school (Rumberger & Lim, 2008). In a study by Rumberger and Palardy (2005), researchers determined schools that were effective in improving student achievement and student growth were not necessarily successful in reducing their dropout rate. Rumberger and Palardy also found high schools have little impact on their dropout rate relative to other student outcomes. Balfantz, Bridgeland, Bruce, and Fox (2013) concluded the overall graduation rate for minority students, low SES students, ELL students, and students with disabilities remain extremely low compared to other sub-groups of students. The dropout rate and the importance of graduation rates from various studies and in schools created an awareness the federal and local governments, as well as schools, needed to address (Rumberger & Lim, 2008).

President Obama placed great importance on graduating from high school on July 24, 2009, when he revealed Race to the Top to improve the educational system and to assist high schools to better prepare American students to graduate ready for college as well as ready for the work force (Obama, 2009). Race to the Top, part of the American Recovery and Reinvestment Act of 2009 (ARRA; USDOE, 2009), focused on adopting standards and assessments designed to ensure student success in college and the workplace after high school. Teacher performance and evaluations would now be tied to student performance. Recruiting, developing, and retaining effective teachers especially in low-achieving schools also was a focal point (USDOE, 2009). As the initiatives of Race to the Top to improve assessments, teacher performance, and student performance were put into place, a school's overall performance was going to be evaluated (USDOE, 2009).

The process of evaluating a school's success based on student performance measures is known as school accountability (Figlio & Loeb, 2001). Many states utilize a category designation (A-F grades) based on student performance that measures the effectiveness of a school district and a school. The accountability of a school district and school can impact bonuses for teachers, the housing market in a community, stakeholder involvement in the school, and the restructuring or closing of a school. The accountability measures of a school district and school can have positive impacts as well as negative impacts on a school and community. Positive impacts include increased resources, bonuses for teachers, and increased public relations while negative impacts include decreased moral and the closing of a school (Figlio & Loeb, 2001). Such factors create increased pressures on districts and schools to demonstrate positive school accountability; and therefore, various standardized tests and assessments have been created to measure the school's accountability (Figlio & Loeb, 2001).

According to Vandevoort, Amrein-Beardley, and Berliner (2004), the quality of a teacher in the classroom is the single most important factor in determining how well a child learns. With the emphasis of standardized test scores, it is important to examine and study factors other than the quality of the teacher in the classroom that affect graduation rates. This study examined English 10 and Algebra I ECA scores in Indiana public, non-charter high schools over the past five years and examined if specific factors could predict the outcome of an Indiana high school student's English 10 and Algebra I ECA scores.

Purpose of the Study

The purpose of this study was to determine whether a relationship exists between Indiana ECAs in English 10 and Algebra I and the following indicators at the high school level: (a) socioeconomic status, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education students. This study examined which indicators have the greatest effect on English 10 ECA scores and Algebra I ECA scores in Indiana. To expand the purpose of this study to a specific variable, the study also examined if there was a relationship between SES of a building and the instructional expenditures. The study used quantitative research data collected from all public, non-charter high schools in Indiana from 2008 through 2013. The need to examine specific indicators for this study allowed me to focus on eight predictor variables that may impact ECA scores in English 10 and Algebra I in Indiana.

According to Raumberger and Palarady (2005), research has concluded a variety of student characteristics such as ethnicity and SES are related to student outcomes such as student achievement, dropout rate, and graduation rate. Heubert (2009) concluded that high-stakes testing has a great effect on minority students, ELL students, students with disabilities, and low-

SES students. The eight indicators were selected due to the research cited that is associated with dropout rates and graduation rates. Also data pertaining to the eight indicators have been collected by the IDOE and Department of Local Government and Finance involving these indicators.

Research Questions

The research questions for the study were as follows:

1. Is there a significant relationship between SES of the building and the instructional expenditures per student?
2. Do the following indicators serve as predictors of English 10 ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?
3. Do the following indicators serve as predictors of Algebra I ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?

Null Hypotheses

The following null hypotheses were generated through the research questions:

1. There is not a significant relationship between SES of the building and the instructional expenditures per student.
2. The following indicators do not serve as significant predictors of English 10 ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate,

(g) minority rate, and (h) percentage of special education.

3. The following indicators do not serve as significant predictors of Algebra I ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education.

Significance of the Study

This study will contribute to the field of education by examining factors outside of the individual teacher and the classroom instruction that occurs in the classroom. By examining which factors have the greatest relationship when compared to academic performance on the English 10 and Algebra I ECAs, the results could bring a school's awareness of a particular factor within their control. Additionally, if a particular factor cannot be controlled, then the school's awareness of other factors may be addressed.

In Indiana, the success of passing the ECA in English 10 and Algebra I is required to receive the basic high school diploma, which is the CORE 40 diploma (IDOE, 2011a). The success of a student passing the ECA in English 10 and the ECA in Algebra I has a direct effect on a high school's graduation rate in Indiana. Although much research has been conducted on student achievement and its effects on academic success, this study is important because academic standards and the performance results of ECA of the academic standards have become a focal point in the state of Indiana. In Indiana, the ECAs impact graduation rates as well as the school's letter grade based on the NCLB. Therefore, schools are continuously exploring factors that have impacts on their school and specifically to this study—ECAs in Algebra I and English 10.

Definitions

The following terms are defined to assist the reader in understanding:

Attendance rate is the percentage of students attending school on a given day as reported to the IDOE (2014a).

Class size is the average number of students in a class at a high school as reported to the Indiana Department of Education.

CORE 40 diploma is the Indiana graduation requirement for a general high school diploma (IDOE, 2011a).

Criterion-referenced assessment is an assessment linked to predefined standards and is designed to measure a student's academic performance based on those standards (IDOE, 2013b).

*Dependable variable i*s a variable that is not manipulated by the researcher. Dependable variable can also be referred as the outcome variable (Field, 2009).

High school is a school consisting of Grades 9, 10, 11, and 12.

Indiana Algebra I ECA is a part of the assessment of NCLB that is required to determine basic skills in mathematics. This is a criterion-referenced assessment administered to students in Indiana after the completion of Algebra I (IDOE, 2014b).

Indiana Algebra I ECA score is the dependent variable score that is the passing rate percentage for the Algebra I ECA at the end of Grade 10.

Indiana English 10 ECA is a part of the assessment of NCLB that is required to determine basic skills in language arts. This is a criterion-referenced assessment administered to students in Indiana after the completion of English 10 (IDOE, 2014b).

Indiana English 10 ECA score, the dependent variable score, is the passing rate percentage for the English 10 ECA at the end of Grade 10.

Instructional expenditure per pupil is the averaged value of the total instructional expenditures divided by the total number of students reported to the IDOE. The instructional expenditure includes the direct costs of teaching pupils and interaction between the pupils and teachers.

Low SES is the status of a student who is eligible for free or reduced lunches at school as reported to the IDOE.

Mean raw score is the average of the numbers of items answered correctly by a group.

Minority rate is the percentage of students in a social group of a common national or cultural tradition reported to the IDOE (2014c).

Mobility rate is the value of the students transferring in and out of a school as reported to the IDOE (2013a).

Percentage of ELLs is the percentage of students whose native language is other than English as reported to the IDOE. The ELL student's limited abilities in the English language may require specialized or modified instruction in their academic course work (IDOE, 2014c).

Percentage of special education is the percentage of students who qualify for special education services reported as to the IDOE (2014c).

Public school is an accredited school in Indiana, which has been in existence for at least the past five years.

*School size i*s the total student enrollment of a high school as reported to the Indiana Department of Education.

Student Achievement is the student's academic performance level according to an assessment.

Limitations

In collecting this information, I did not have control of the accuracy of the data utilized in this study. This study was based upon the assumption the data was accurately reported by each individual high school with regard to SES, instructional expenditures per student, attendance rate, school size, percentage of ELLs, mobility rate, minority rate, and percentage of special education students. I did not have control over students who were not at the high school level taking the Algebra I ECA in Indiana. Other limitations included the measurement of error found within the assessments, the potential cultural biases of the assessments, and the difficulty of the assessments.

Delimitations

This study was limited to only Indiana public, non-charter high schools. The study was based only on the Indiana ECA in Algebra I and in English 10. This study considered ECA scores for a span of five years (2008 – 2013) in Indiana. This study did not consider value-added analyses that measure academic growth over time and the impact the teacher has on the student's learning. This study did not consider the instructional choices of the teacher and the motivation of the teacher. The study did not evaluate the motivation of the students on the assessments utilized in this study. This study did not separate rural, urban, or suburban areas nor did this study separate gender.

Summary

This study is divided into five chapters. Chapter 1 provided the statement of the problem, purpose of the study, research questions, null hypotheses, significance of the study, definitions of terms, and limitations and delimitations. Chapter 2 presents a review of the related literature and is subdivided into the following sections: introduction, the SES in the high school, the

instructional expenditures per student for a high school, the attendance rate at the high school; the school size of the high school, the percentage of ELLs at the high school, the mobility rate at the high school, the minority rate at the high school, and the percentage of special education at the high school.

Chapter 3 presents information about the methodology used during this study including the purpose of the study, research questions, null hypotheses, description of the sample, data sources, data procedures, and the method of analysis. Chapter 4 presents findings through the quantitative analyses of hypotheses presented. Chapter 5 presents a summary of the findings, results, implications, and recommendations for further research.

CHAPTER 2

REVIEW OF LITERATURE

This review of literature examined related research that studied the relationship between standardized test scores and the following factors at the high school level: SES, instructional expenditures per student, attendance rate, enrollment size, percentage of ELLs, mobility rate, minority rate, and percentage of special education students. The areas of the study were determined through review a review of literature.

Accountability and Standardized Testing

Accountability and standardized testing became a focal point at the time of the Industrial Revolution in American schools. As the Industrial Revolution took children from the farms and factories and into the classroom, standardized testing emerged as an easy way to test large groups of students (Fletcher, 2009). This process of testing allowed for accountability to occur for the placement of the students in ability groups.

The accountability movement in education came to the forefront in America on October 4, 1957, when the Soviet Union launched Sputnik and the Space Age began. The launching of Sputnik created fear and discomfort throughout the American public and its institutions as Americans felt threatened by communism (Garber, 2007). Following the launch of Sputnik, the National Defense Education Act (NDEA) was passed in 1958. The NDEA focused on providing federal aid to education for the first time (Urban, 2010). After Sputnik, the American public and

American educational system took aim and an emphasis was placed on science and mathematics. (Urban, 2010). This movement caused the American government to make a commitment to education, which included funding. For example, the science curriculum, post NDEA, involved over one billion dollars to be used by schools across America to increase student's academic performance in science (Abramson, 2007).

The publication of *A Nation at Risk* in 1983 had a dramatic effect on the landscape of education in America (National Commission on Excellence in Education, 1983). The purpose of the report was to raise teacher accountability and student achievement by increasing standards (National Commission on Excellence in Education, 1983). In the document, several key points were listed pertaining to student achievement:

- Around 23 million American adults were functionally illiterate by simple tasks such as reading, writing and comprehension.
- Functional illiteracy among minority youth could be as high as 40 percent.
- Average performance on standardized tests by high school students was lower than when Sputnik was launched.
- From 1963 to 1980, the College Board's Scholastic Aptitude Tests (SAT) average scores declined by over 40 points in verbal and mathematic scores. (National Commission on Excellence in Education, 1983, p. 11)

Since *A Nation at Risk*, the freshman high school graduation rate has increased by 1.8% (Givens, 2013). The results on the National Assessment of Educational Progress (NAEP) have dropped one point in reading and increased in math by four points (Givens, 2013). Both of these facts are points of interest as states utilize standardized testing to measure graduation rates and achievement results.

The next wave of reform spurred by *A Nation at Risk* was characterized by having more state involvement in the educational system, which involved standardization. During the 1990s the emphasis of standardized testing increased throughout the United States and began as a key component for schools to measure effectiveness. Early in the presidency of George H. Bush, the administration's plan, entitled America 2000, had been jointly adopted by the nation's governors (Thompson & Barnes, 2007). The America 2000 program called for national standards to be established for student learning in basic subjects (Thompson & Barnes, 2007).

On January 8, 2002, President George W. Bush signed into law P.L. 107-110, the No Child Left Behind Act of 2001 (NCLB, 2001). NCLB stressed accountability, flexibility, research-based reforms, and parental options such as school choice (USDOE, 2007). A goal of NCLB included academic gains in mathematics and reading until all students could read and perform mathematics at their grade-level. Another goal of NCLB was to close the achievement gap between minority and disadvantaged students with other student groups (USDOE, 2007). "The premises of NCLB are clear and essential. All children can learn. Not just children from homes of privilege, children from suburbia or children from certain ethnic backgrounds" (Owens as cited in USDOE, 2007, p. 1). The funds of NCLB caused a large increase in federal funds including the funding of Title I programs that were designed to assist and educate low socio-economic students (Echevarria, Short, & Powers, 2006).

Reeves's (2003) research in high poverty schools has created the term 90/90/90 from observation in Milwaukee, Wisconsin. The bases behind the 90/90/90 identifies schools with the following: 90% or more student eligible for free and reduced lunch, 90% or more of the students are of an ethnic minority group, and 90% or more of the students meet the school's standards in mathematics and reading. According to Reeves (2003), the results of these high achieving

schools resulted in "a focus on academic achievement, clear curriculum choices, frequent assessment of student progress and multiple opportunities for improvement, an emphasis on nonfiction writing, and collaborative scoring of student work" (p. 3). To measure the achievement gains and the success of the 90/90/90 schools, a combination of state, district, and school-based assessments were utilized to evaluate the accountability systems put into place (Reeves, 2003).

The Federal legislation, NCLB, and Indiana's P.L. 221, aimed to close the achievement gap by mandating stronger accountability for schools and students (IDOE, 2011b). Indiana's P.L. 221 was established in 1999 to create an accountability system for K-12 education in Indiana. The P.L. 221 accountability system measures progress by placing Indiana schools into one of five categories (A-F) based on how well the student performed as well as how the student has improved on the state's ISTEP+ and ECA (IDOE, 2011b). The following three factors calculate the category:

- Performance: Percentage of all students who pass the state's ISTEP+ in mathematics and English (grades 3-8) and the ECAs in English 10 and Algebra I.
- Improvement: Improvement over a three-year period in the passing percentage of students passing ISTEP+ and ECAs.
- Adequate Yearly Progress status: Schools not meeting Adequate Yearly Progress (AYP) for two consecutive years in the same subject area cannot be placed in a category higher than C. (IDOE, 2011b, p. 1)

The P.L. 221 accountability system in Indiana has been under scrutiny since its passing in the Indiana General Assembly in 1999 (IDOE, 2011b). Validity of the accountability system is a focal point with educators, politicians, and citizens in Indiana. In 2012, the Indiana State Board

of Education made major changes to the P.L. 221 accountability system which included framework significantly influenced by improvement and growth in student achievement (Hiller, DiTommaso, & Plucker, 2012). Another change included criteria for high school students to improve in their performance of college and career readiness (Hiller et al., 2012). With the changes to the Indiana accountability system, standardized testing is a component to both measure the growth and improvement of student achievement as well as the college and career readiness of high school students.

Utilizing standardized testing for accountability in schools incorporates the use of various assessments to monitor and evaluate student performance. In 1967, Michael Scriven utilized the term formative assessment as a means of continuous evaluation of the curriculum (Wiliam, 2011). Scriven also utilized the term summative assessment to describe the overall assessment of the finished curriculum (Wiliam, 2011).

Standardized tests are norm-referenced assessments that compare individual scores to others at the same grade level and usually only a small portion of the content area is assessed (IDOE, 2013a). Each state in the United States assesses high school students in some format by utilizing standardized testing for English 10 and Algebra I (Thompson & Barnes, 2007). In 2002, only two states reported using ECA tests as part of a state assessment system (Domaleski, 2011). In 2011, this number increased to 19 with another nine states developing ECA assessments for future implementation (Domaleski, 2011).

In addition to ECAs, some states utilize the SAT and the ACT which are the most popular standardized tests, and the Advanced Placement (AP) examinations have become increasingly popular at the high school level as an opt-out college-level entry course (Fletcher, 2009). However, the shift from aptitude testing towards achievement testing has been the focus

for states and their accountability systems (Haertel & Herman, 2005). As Haertal and Herman (2005) found in their study, achievement can be improved through effort unlike aptitude.

Each state may select its own standardized test instrument to measure academic performance. In Indiana, the ECA has become a large part of the focus of the high school (IDOE, 2013b). The purpose of the ISTEP+ is to measure student achievement in the subject areas of English/language arts, science, and mathematics (IDOE, 2014b). In particular, ISTEP+ reports student achievement levels based on the Indiana Academic Standards adopted in November 2000 (IDOE, 2014b). The ISTEP+ ECA is a criterion-referenced assessment developed specifically for students completing their instruction in Algebra 1, English 10, and Biology 1 (IDOE, 2014b).

Marzano (2003a) identified 11 factors that are primary components of student achievement. The 11 factors include the school, the teacher, and the student. The 11 factors are listed below:

- A guaranteed and viable curriculum which allows a teacher ample time to teach the material and no matter who teaches the material, specific content knowledge will be addressed.
- Challenging goals and effective feedback refers to the assessment system a school has established to evaluate specific learning goals and data on a regular basis.
- Parent and community involvement allows both of these groups to have input on decisions.
- A safe and orderly environment involves established rules and processes for learning to occur.

- Staff collegiality and professionalism involves a system of encouragement for collaboration and professional development for teachers.
- Instructional strategies involve highly effective teaching techniques that enhance learning.
- Classroom management refers to established procedures for teaching and learning to occur.
- Classroom curriculum design involves strategies of sequencing and pacing to build on prior knowledge.
- Home atmosphere refers to the support that a student receives from their home environment.
- Learning intelligence and background knowledge refers to the foundation of learning a student has been exposed and provided.
- Student motivation involves the interest of the student to learn the content presented. (Marzano, 2003a, p. 58)

Although testing is thought by many to benefit education in a variety of ways, the validity and value of traditional standardized tests are subjects of increasing debates (Herman & Golan, 1991). Recent studies have raised questions about whether improvements in test score performance actually signal improvements in learning (Herman & Golan, 1991). Other studies point to standardized tests' narrowness, the lack of match to the curriculum and content, their neglect of higher order thinking skills, and the limited relevance of their multiple choice formats (Herman & Golan, 1991). Studies have emerged which have suggested standardized tests have little or no relationship to the improvement of reading skills and a very low relationship regarding the improvement of mathematic skills (Nichols, Glass, & Berliner, 2012). The

negativity towards standardized testing, state accountability systems, and NCLB has more to do with how schools and states measure and identify student achievement and less to do with the goals of the accountability systems that are in place in each state (Siebert, Plowman, & Willich, 2011).

Marzano (2003a) emphasized schools must use assessments that measure the content being presented. According to Marzano, schools make the mistake by utilizing indirect measures of learning that are not directly related to the learning occurring in the classroom. Examples include off-the-shelf standardized tests and state-level standards tests (Marzano, 2003a). Schools should create school-made assessments to measure the content taught in a particular discipline. Schools can also create report cards that measure student performance based on specific standards, skills, and knowledge (Marzano, 2000). Another mistake involving assessment by schools according to Marzano (2003a) is schools have no systematic plan or process to interpreting and using the data that the school collects. According to Marzano (2003b), schools need to interpret the data and to provide a systematic plan to improve the student achievement and the achievement gap.

Standardized testing can produce controversy as to whether the test reflects classroom instruction and student learning. As Popham (2005) concluded, these tests are one size fits all. Haertel and Herman (2005) expressed concerns of the use of standardized tests to acquire factual knowledge versus "higher order thinking" (p. 28) concepts. Haertel and Herman (2005) also voiced a concern focusing on testing rather than standards stating:

> Rather than being exposed to the full breadth of knowledge and skills that society has determined are important for future success, students have the opportunity to learn only a relatively narrow, test-based curriculum. Traditionally, low-performing students – the

> economically disadvantaged, language minority, students of color, and students with disabilities – are most likely to be negatively affected, since their instruction is most likely focused intensely on reaching proficiency based on state assessment results. (p. 24)

Socioeconomic Status

Rumberger and Palardy (2005) found one factor contributes to the success of a student's academic performance—the school's SES. The school's SES, according to Rumberger and Palardy, is the combination of the individual student's SES and the average SES of the students in the school is the critical component of a student's academic success. Rumberger and Palardy stated, "School SES may indirectly affect achievement growth in high school by influencing what is available in certain schools in terms of process and opportunities" (p. 216). In their study, regardless of the academic background, race, or social class students learned more, on the average, if they were in a school with students with high social class backgrounds than students with low social class backgrounds (Rumberger & Palardy, 2005). In another study by Rumberger and Palardy, the SES of a school had a small, yet significant, effect on student learning and also had a significantly large effect on dropouts.

According to Fowler and Walberg (1991), the most consistent variable associated with negative student achievement results is low district SES. The low SES, therefore, can have a negative impact on schools. Perry and McConney (2010) utilized data from the Australian 2003 Programme for International Student Assessment and concluded an increase in student achievement was associated with the SES of a school.

Schools with low-SES students can be penalized due to low test scores and low achievement growth (Toutkoushian & Curtis, 2005). Toutkoushian and Curtis (2005) concluded

schools do not have control of economic conditions in the school's community, yet the school is still held responsible for student growth as measured by standardized tests.

Students from lower income, less educated families are less likely to succeed academically in high school (Noble, Roberts, & Sawyer, 2006). Walberg and Fowler (1987) concluded that children from families of higher SES generally do better on achievement tests than children of lower SES. Israel and Beaulieu (2002) found students who qualified as low SES had a negative effect on test results. A study by Caro, McDonald and Willms (2009) concluded there was evidence that the SES gap from the age of seven to 11 years remained the same, which is roughly from Grade 2 to Grade 6. The study found the achievement gap widened as the age of the student increased (Caro et al., 2009). Caro et al. also indicated there is a widening achievement gap in mathematics between students of high SES versus students of low SES status.

Adams (1994) explored the relationship between Indiana school corporation SAT mean scores and per capita income. Adams concluded low per capita income is associated with a decline in SAT scores and vice versa. Eddy (2011) determined economically disadvantaged students exhibited lower scores in language arts and mathematics than their classmates who were not economically disadvantaged. Dawson (2013) determined there is a significant difference between students with low SES compared to their fellow classmates on the Algebra I ECA results for schools. This indicates students with a low SES tend to have a lower gain of achievement than students with a high SES (Dawson, 2013). Dills (2006) found trends in the achievement gap in standardized test scores, specifically citing the gap increased largely in the 1970s and 1980s. Blevins (2009) found that as the percentage of students on free and reduced lunch increased, the lower students performed on standardized tests.

Ma (2000) cited SES is the most widely used contextual variable in educational research. Research in education confirms SES factors do impact student achievement and will result in the determination of the success levels for students (Toutkoushian & Michael, 2006). Jacob and Ludwig (2008) concluded students in a low SES school have several factors that affect the student's academic performance:

- Schools with low SES students have few resources to enhance learning.
- Schools with low SES students have the impact of the family, neighborhood, and the peer/social environment.
- Schools with low SES students lack the ability to maintain a learning environment over due to the demographics of the environment. (pp. 3-4)

If SES is correlated with standardized state tests, the validity of the tests is in jeopardy (Blevins, 2009). Siebert et al. (2011) concluded high-stakes testing is a reflection of a student's demographics, especially SES. Rotberg (2006) stated, "Schools solve the problem of poverty, but NCLB legislation assumes standardized testing solves the problem of poverty" (p. 59).

Instructional Expenditures per Student

A substantial amount of literature shows a lack of consistency between spending on education, including total per-student expenditures as well as specific spending on such things as reductions in class sizes, buildings and grounds, teacher salaries, and student performance (Walberg & Fowler, 1987). The results from Woessmann's (2001) study found school spending is consistent with other research as there is no positive relationship between expenditure per pupil and student performance. Hanushek (1986) concluded that there appears to be no strong relationship between school expenditures per student and student performance. Hanushek (1989) reinforced his 1986 study by stating, "Variations in school expenditures are not systematically

related to variations in student performance" (p. 45). Pennington (n.d.) stated that there was no correlation between district achievement scores and expenditures per pupil.

Adams (1994) concluded increased performance on the SAT is not dependent upon the amount spent in total general fund expenditures per pupil. A study utilizing ACT data from Tennessee schools found expenditures per pupil did not have a significant relationship to the student's results (Bibb & McNeal, 2012). Merlino, Baker, and Seltzer (2010) found in their study there was no relationship between expenditures per pupil and the student achievement of 11th-grade students.

When other factors are taken into account, higher spending and smaller class sizes seem to have a minimal effect on student performance (Woessmann, 2001). However, providing schools with the proper instructional materials and resources seems to have a positive effect on academic performance (Woessmann, 2001). According to Woessmann (2001), when principals reported their students did not suffer from inadequate instructional materials, the students scored seven points higher in mathematics and science relative to students in schools that reported they were somewhat limited by inadequate materials. Woessman also noted that students in schools with a large shortage of materials scored six points worse in mathematics and 12 points in science. Both of these findings suggest inadequate supplies may have an effect on poor achievement (Woessman, 2001).

Wenglinsky (1997a) found mathematics achievement is positively associated with expenditures on instruction; however, increased expenditures in conventional areas do not have an effect in increasing student achievement. Wenglinsky (1997b) also reported how money is spent on students does make a difference since not all spending leads to increased student

achievement. This spending, when allocated in a positive manner, can have an impact on the school social environment (Wenglinsky, 1997b).

In a study by Israel and Beaulieu (2002), expenditures per student did increase test scores but at a cost showing resources can effect student achievement. Israel and Beaulieu noted in their study an increase of $4,000 per student was required to increase a test score by one point. Hanushek, Perterson, and Woessman (2012) concluded, on average, an additional $1,000 expenditure per pupil has an annual gain in student achievement of one-tenth of 1% of a standard deviation.

Archibald (2006) conducted a study to examine the effects of expenditures on student achievement. At the school level, expenditures were positively related to achievement in both math and reading and the result was statistically significant for reading. Archibald concluded that expenditures at the school level do have an impact on student achievement.

A study by Gibson (2009) examined the relationship between resource allocations and student achievement in reading and math found that there was little of no correlation between expenditures and student achievement (reading and math). However, the low SES students performed lower in reading and math versus those students in higher SES households (Gibson, 2009).

A key element associated with the expenditure per pupil is the amount of taxable wealth that varies from district to district (Wenglinsky, 1997a). Throughout the years, the variation of spending was large depending on the wealth of the district; however in recent years due to litigation, the gap in spending between wealthy and poor has decreased. Also over the years, the percentage of expenditures per pupil in the United States has fluctuated. Hanushek and Rivkin

(1997) found in the United States over the period of 1890-1990, the expenditure per pupil increased from $2 billion to over $187 billion or an increase of 4%.

Attendance Rate

Chronic absenteeism can have defining effects on student performance. Chronic absence is defined as missing 10% of a school year for any reason (Balfanz & Byrnes, 2012). A national rate of 10% chronic absences is equivalent to 5 to 7.5 million students chronically absent per school year (Balfanz & Byrnes, 2012). Research by Balfanz et al. (2013) concluded chronic absences are an indicator for potential dropout as well as affecting a student's success in academic performance. A study in Baltimore suggested a strong relationship between sixth-grade absences and the graduation rate of those students (Balfanz & Byrnes, 2012).

In a study using data from New York City, the researchers concluded that although increases and decreases in students' test scores are predictive of the student's progress toward graduation, changes in the attendance during the middle school years are also equally, if not more, predictive of the students likelihood to be on track to graduate from high school within four years (Kieffer, Marinell, & Stephenson, 2011). Foy (2005) analyzed the connection to school performance and absenteeism. Foy stated the long-term effect of attendance is one of the factors that influence the success of a young adult in their schooling or their work place. Foy concluded that there is a relationship between high absenteeism and at-risk students that suggest schools need to intervene as early as possible when absenteeism begins at an early age. Allensworth and Easton (2007) found students with high tests scores who missed two or more weeks of school per semester were more likely to fail than students with low test scores who missed a week or less. Researchers with the Minneapolis public schools discovered students who were absent 20% of the time scored 20 points lower than students who attended school

nearly every day (Hinz, Kapp, & Snapp, 2003). Roby (2004) conducted a study in Ohio involving Grades 4, 6, 9, and 12 attendance and found a statistically significant relationship existed between student attendance and student achievement. Ninth-grade attendance and student achievement showed the strongest positive relationship. The study also found students with higher rates of attendance had higher test scores. In studying excused and unexcused absences, Gottfried (2009b) found a relationship between student attendance and student achievement. Gottfried (2009a) also found a positive relationship existed between higher proportions of excused absences and higher reading and mathematics test scores. In another study by Gottfried (2013), findings support missing school does have a negative effect on student performance.

Bracht (2010) utilized the Pearson product moment correlation coefficient of the student attendance and student achievement to conclude there was a significant negative correlation between student absences to school and student achievement. However, the relationship between the two variables was weak. Ward and Chavis (1997) found low attendance rate contributed to lower test scores. Caviglia-Harris (2006) concluded the number of absences did not impact a student's performance on tests grades.

Siebert et al. (2011) concluded student attendance should be incorporated into each state's accountability system to improve attendance. Schooley (2007) concluded a student's attendance has a positive correlation with student achievement and the more the student attends school, the results of the student's standardized test scores would increase. Gottfried (2009a) reported standardized test scores decrease when urban elementary students miss a high quantity of school. Also, those students' academic performance decrease as the student progresses to

later grades. Gottfried confirmed students who have a high attendance rate have higher academic success.

School Size

Various opinions exist as to whether the size of a school affects academic performance. Weiss, Carolan, and Baker-Smith (2010) found school size was highly related to student engagement, which indicated student success. The study concluded a school with 400 or more students experienced potentially harmful changes (Weiss et al., 2010). A study by the North Carolina Department of Public Instruction (2000) showed what appeared to be academic and behavioral advantages connected to smaller schools.

Kennedy and Tolbert (2012) found an increase in size in a school district has a negative effect on student performance. They determined an increase in a school district caused a significant decrease in a student's performance on the mathematics portion of the Ohio achievement tests (Kennedy & Tolbert, 2012). Trani (2009) concluded increased student achievement is not associated with larger district size. The study found larger school districts had results associated with lower achievement versus smaller districts (Trani, 2009).

Cotton (1996) made the following conclusions from gathering information from researchers on school size:

- Between 1940 and 1990, the total number of public schools declined from approximately 200,000 to 62,037, which is a decline of 69 percent.
- Between 1940 and 1990, the average school size increased from 127 students to 653 students, which is an increase of almost five times.
- There was no evidence that supported a relationship between school size and the quality of the curriculum.

- Student achievement was equal in smaller schools versus larger schools.
- The student achievement of minority students and low socio-economic status students was higher in smaller schools.
- Most researchers concluded the most effective school size at the elementary level was 300-400 students and 400-800 students at the secondary level. (pp. 1-3)

Pennington (n.d.) investigated the relationship between district size and student achievement for the Iowa Department of Education. Results concluded there was more to student achievement than the number of students in a school district. A follow-up study concluded there was no relationship between average district achievement scores and the amount spent per pupil expenditure (Pennington, n.d.).

Small high schools did not experience greater effects than larger high schools related to student achievement or dropout rates (Rumberger & Palardy, 2005). Rumberger and Palardy (2005) also concluded larger high schools had higher levels of student achievement success than mid-size high schools, but had a higher dropout rate. The North Carolina Department of Public Instruction (2000) reported, based on ECA scores in five courses, there was no significant difference in the size of the high school. According to Walberg and Fowler (1987), "Research on district size, however, is at best equivocal; and much of it suggests bigger districts yield low achievement and poor student, parent, and staff morale" (p. 8).

Abbott, Joireman, and Stroh (2002) found districts with high enrollments have negative effects on student achievement especially when related to poverty. When poverty is high, student achievement is better in smaller schools and districts (Abbott et al., 2002). In an Arkansas study, Johnson, Howley, and Aimee (2002) concluded school size is a large factor when the poverty level of the students is included in evaluating the student achievement. The

relationship between school size and student achievement was a direct reflection of impoverished Arkansas communities (Johnson et al., 2002). In Georgia as the enrollment increases, the average achievement score from schools with low SES decreased on 27 of 29 tests administered and in Texas, the results were similar as average achievement score from schools with low SES decreased on eight of ten tests administered (Howley & Bickel, 2000). Howley and Bickel (2000) found the lower the income of a school, the increase of student achievement will occur in a smaller school versus a larger school. Howley and Bickel concluded that there is a relationship between low achievement and low SES as the school size is a major factor.

Arnold (2004) reported small enrollment size does not automatically result in increased student achievement. Arnold's report stated small schools should focus on how to better use their resources to increase student achievement, since many factors influence student achievement in addition to school size. Overbay (2003) reported the positive relationship between smaller schools and higher student achievement indicate smaller schools appear to influence student groups who were at risk of failing in school. The Mathew Project, a study involving Georgia, Montana, Ohio, and Texas, found the relationship between school size and the academic success of students varied across communities and especially the low socio-economic community (Overbay, 2003). Indicators to be considered when exploring a school or district size are the percentage of minority students and the percentage of the low SES students (Bickel, 1999). Bickel, Howley, Williams, and Glascock (2001) found across seven different states that when school size increases, the achievement scores of low SES students decreases.

Lee and Smith (1997) also investigated the relationship between high school size and student achievement and concluded high school enrollments of 600-900 students benefited student performance the most. Arnold, Newman, Gaddy, and Dean's (2004) findings supported

Lee and Smith's findings, noting small schools with student enrollment below 600 students show lower overall student achievement. Thus, the two major arguments for larger schools—cost savings and curriculum enhancement—does not compare to the positives from a smaller school and the outcomes from a smaller school (Fowler & Walberg, 1991). Increased school size has negative effects upon student participation, satisfaction, and attendance (Fowler & Walberg, 1991). However, there were indications larger schools benefit students of low SES (Overbay, 2003).

Research findings on class size indicated the positive effects of smaller classes will not be present until the size is below 30 students in a class. In a study of 400 students in 10th grade from both rural and urban areas, small class size was found to play an important role in supporting and enhancing student performance at the secondary school level (Atta, Jamil, Ayaz, Shah, & Shah, 2011). Best practice in language arts defines a class size of 15 as the most desirable class size for learning (Shoemaker, 2007). In a Tennessee study during the late 1980s, students and teachers were randomly assigned to a small class, with an average of 15 students, or in a regular classroom, with an average of 22 students. This large reduction in class size was found to increase student achievement by an amount equivalent to about three additional months of schooling four years later (Chingos & Whitehurst, 2011).

The advantages to smaller class size include better classroom atmosphere, greater flexibility to use different instructional approaches and assignments, fewer student distractions, reduced noise level, and greater educational resources (Pritchard, 1999). The significant effects of class size reduction on student achievement appears when class size is reduced to a point somewhere between 15 and 20 students and continues to increase as class size approaches the situation of a one-to-one tutorial. The research also indicated if class size is reduced from more

than 20 students per class to below 20 students, student achievement increases from the 50th percentile to the 60th percentile (Pritchard, 1999). The average U.S. pupil/teacher ratio in the public schools is currently 15.3 (Chingos & Whitehurst, 2011).

Other researchers found class size does influence reading achievement in the elementary grades but found no evidence to suggest classmates matter in middle or high schools. The overall size of the grade level peer effects is much larger in middle and high school (Betts, Zau & Rice, 2003). Finn et al. (2005) concluded a class size of less than 20 students in grade K-3 has a positive impact on student achievement. Finn and Achelles (1990) noted that the benefits of class-size disappear across grades in later years. A Tennessee study of class size concluded students in the early grades benefited the most by smaller class sizes (Mosteller, 1995). Specifically, the study demonstrated during the first two years of the study, minority groups gained more than other groups due to the smaller class sizes.

Hanushek (1998) established there appears to be little systematic gains from general reductions in class size. Using 277 estimates from 59 studies that predicted the effects of student-teacher ratios on student outcomes, Hanushek found only 15% resulted in a positive and statistically significant relationship between student-teacher ratios and student performance. However, 85% of the studies show class size is not a factor. Ultimately, Hanusheck (1998) found that class size reduction is ineffective when it comes to student performance. Additionally, class size reduction is not the most cost-effective solution for increasing student performance.

Krueger (2002) found by using Hanushek's (1997) study that class size is systematically related to student performance. Krueger suggested an extra dollar spent to reduce class size raises students' future earnings by two dollars in present values. Mitchell and Mitchell (2009)

found class size reduction had a small positive impact on student achievement with larger effects found in mathematics than in either reading or language achievement. Funkhouser (2009) concluded any increase in spending for class size reduction yielded a very small improvement in student achievement.

Kornfeld (2010) concluded if class size was a critical influence on students' academic achievement, one would conclude there would be a major difference between the sizes of classes. The study concluded there was statistical significance between the sizes of classes. Students in larger classes performed the same or better than students in smaller classes. Students in larger classes had slightly higher graduation rates and a larger portion planned to attend two or four year colleges. In general, large classes are just as effective as small classes in the delivery of information. Smaller classes are more effective when the goals are problem solving, critical thinking, and long-term retention (Kornfeld, 2010). Collins (2009) found there was no significant correlation between class size and student achievement in communication arts and mathematics. The study specifically found that for student achievement to reach a maximum, the class size needed to remain below 17 students.

In recent decades, at least 24 states have mandated or incentivized class-size reduction. Increasing the pupil/teacher ratio in the United States by one student would save at least $12 billion per year in teacher salary costs alone, which is roughly equivalent to the outlays of the Title I of the Elementary and Secondary Education Act, the federal government's largest single K-12 education program (Chingos & Whitehurst, 2011). Prior to the implementation of the federal Class Size Program and similar initiatives in several states, more than 85% of our students were in classes with over 18 children and about 33% were in classes of 25 or more students (G. Cohen, Miller, Stonehill, & Geddes, 2000).

Beginning with the 2010-2011 school year in Florida, the state constitution set limits on core classes (mathematics, English, science). The maximum number of students in each core class would be 18 students through Grade 3, 22 students in Grades 4 through 8, and 25 in Grades 9 through 12 (Chingos & Whitehurst, 2011). It appears the research supported large class-size reductions, on the order of seven to 10 students per class, can have meaningful, long-term effects on student achievement. The effects, academically, seem to be more significant when introduced in the earlier grades, and for students with higher SES backgrounds (Chingos & Whitehurst, 2011).

Reduction in class size is a means to increase student achievement but research does not support smaller class sizes alone will improve academic performance (Robinson, 1990). Robinson (1990) stated, "To enhance the possibility of increasing student learning by reducing class size, research indicates that class size reduction should be targeted to specific groups of students" (p. 90).

English Limited Learner

The 1968 Bilingual Education Act was a critical component to fund bilingual education programs and to assist ELL students (Stewner-Manzabares, 1988). Six years later, Congress amended the act so it supported only transitional programs for ELL students (Stewner-Manzanares, 1988). Prior to NCLB, ELL students were not included in high-stakes standardized tests (Lara & August, 1996). Although NCLB mandated the inclusion of ELL students in standardized tests, in the past most states typically exempted students who have been in the United States or who have not attained a certain level of English proficiency (Thompson & Barnes, 2007). Student performance on state tests showed ELL students perform far below that of other students, by 20 to 30 percentage points (Abedi & Dietel, 2004). In 1998, the results of a

standards-based assessment administered in Massachusetts, only seven percent of ELL students in the Boston Public Schools and eight percent of all ELL students in Massachusetts attained a proficient score on the 10th grade English language arts tests compared to the state level of 38% (Abedi & Dietel, 2004). In 2003, the similar standards-based test was administered to 10th grades student in Massachusetts and 12% of ELL students were proficient, and 61% of all students were proficient (Abedi & Dietel, 2004). In Massachusetts, ELL students on average are nine times more likely to drop out of high school compared to their peers (Massachusetts Professors & Researchers, 2013).

ELL student's academic performances have been significantly lower than their peers (Echevarria et al., 2006). The same authors, Echevarria et al. (2006), also noted over 1.5 million California ELL students who were not proficient in the English language perform below those students who are proficient in the English language on standardized tests.

Fry (2007) reported in his findings based on national standardized test scores from the 2005 NAEP which were that 51% of eighth-grade ELL students were achieving below their peers in mathematics and reading. The 2005 NAEP results also reported that 71% of eighth-grade non-ELL students' academic performances were below the basic level of achievement, based on the criteria for the NAEP assessment. Fry (2007) also reported according to the 2005 NAEP report, the achievement gap for ELL students widens from the fourth to eighth grades, which suggested the achievement gap continues to widen in the high school level for ELL students. The results from the NAEP do compare across different states and indicated degrees of differences between ELL students and other subgroup of students.

In 2008, Fry (2008) examined standardized test data from five states and concluded the following:

- ELL students tend to go to public schools with low standardized test results.
- ELL students who do not attend a low-achieving school have standardized test results higher than those ELL students attending a low-achieving school.
- The educational isolation of ELL students is correlated with the mathematic proficiency achievement gap between ELL students and other students. (pp. i-ii)

A very large majority of high-stake tests and ECAs are written and administered in English leaving ELL students at a disadvantage (Coltrane, 2002). Menken (2000) found when ELL student took standardized tests, the results reflected the ELL student's lack of the English language and the results may not accurately assess their mastery of the content being tested, therefore the validity of the results may be questioned. Abedi and Dietel (2004) concluded ELL student's performance on tests is negatively influenced by the language demands of the tests. Coltrane (2002) noted the items on a standardized test may reference ideas, concepts, and events an ELL student may not be familiar or been exposed to due to the language barrier.

The largest amount of ELL students in American schools are of the Hispanic decent (Echevarria et al., 2006). According to the 2002 NAEP tests, many more Hispanics performed below the basic level in three grades (Grades 4, 8, 12) than did White students and Asian/Pacific Islander students (National Center for Educational Statistics, 2002).

Ensuring an accurate portrayal of what ELL students know is critical to academic success. In Massachusetts, ELL students, on average, are nine times more likely to drop out of high school compared to their peers (Massachusetts Professors & Researchers, 2013). Standardized tests need to be aligned to measure standards to meet all students' backgrounds so all students have an increased chance to demonstrate their mastery of the area being tested (Coltrane, 2002).

Mobility Rate

Research indicates students who move three or more times during their school career have a greater tendency to drop out of high school (Reynolds, Chen, & Herbers, 2009). Reynolds et al. (2009) also reported significantly lower achievement in reading and mathematics occurred with an increase in the mobility rate of students. Specifically, every additional move by a student was correlated with a decrease in reading and mathematics achievement of about one-tenth of a standard deviation. Rhodes (2005) reported mobility is a significant indicator on a student's academic success as well as a predictor on a school's success under the accountability system of NCLB.

Significant findings by Knox (2011) showed at the classroom and school levels that high percentages of students who changed schools within the school year were associated with lower reading achievement. Researchers with the Minneapolis public schools found, on average, reading scores for students who moved three or more times were 50% lower than students who did not move (Hinz et al., 2003). Data from the 1989 NAEP reported students with two or more changes in schools within the previous two years of the report were deficient by almost half in reading versus students with no school changes (Rumberger, 2003).

Howell's (2011) findings concluded a student's mobility does have an impact on the student's reading and math achievement scores. Significant differences in reading, mathematics, language, and achievement scores were found in a study involving schools with little or no student mobility (Audette & Algozzine, 2000). A study in Nebraska found high mobility students demonstrated lower achievement scores on assessments than their non-mobility classmates (Isernhagen & Bulkin, 2011).

Engec (2006) conducted a study demonstrating as the mobility of a student increased within the school year, the students test results on criteria-referenced test and norm-referenced test decreased. Students who moved two or more times within the school year performed lower than students who moved only once within the school year. Another study indicated mobility had a negative and significant impact on student achievement (Eddy, 2011). The study showed criteria-referenced test scores decreased due to the mobility of a student (Eddy, 2011).

Mobility in the early years of a student's education is critical since the student attains foundations and skills to be successful in high school (Heinlein & Shinn, 2000). There is strong evidence during the elementary and high school years, the frequency of mobility decreases the opportunity for a student to graduate (Rumberger, 2002). Rumberger (2002) believed factors such as the number of times a student changes schools, the reason for the changes, and the student's family situation is critical when exploring the academic success of a student. With the characteristics of students, mobility consistently is a factor for students with lower achievement versus non-mobile students (Rumberger, 2002). Rumberger (2003) also concluded the school has a direct impact on a student's mobility due to such factors as overcrowding and class size, suspensions, and the climate of the school. Isernhagen and Bulkin (2011) concluded mobility is a problem in rural as well as urban communities.

Rumberger (2003) found the non-mobile student and a school can also suffer from a high rate of mobility in a school. Test scores of non-mobile students in schools with high mobility rates are significantly lower than non-mobile students in schools with low mobility rates (Rumberger, 2003). In a study in California, Rumberger (2003) noted a school with a high mobility rate impacts classroom learning, teacher moral, and administrative issues.

Dalton's (2013) study examined four high poverty high schools in rural Tennessee and concluded there was no significant difference between mobile and non-mobile students. The study specifically noted that mobility did not affect student performance in the areas of reading and mathematics (Dalton, 2013). A key component to this study was the SES of the students.

Heinlein and Shinn (2000) determined in two longitudinal studies there was no relationship between mobility and student achievement when student achievement is controlled. Their study concluded students who move frequently may have difficulty in schools versus peers who do not do not move (Heinlein & Shinn, 2000). Blazer (2007) stated,

> Although some studies have found that mobility leads to decreased academic performance, regardless of the students' background characteristics, other research indicates that mobility in itself is not a cause of lower levels of academic achievement, but is instead a complicating factor for children with other at-risk characteristics. (p. 12)

Minority Rate

Minority students typically fail at a higher rate than other students. In the 1970s, 20% of Black students failed Florida's graduation test compared to 2% of White students (Heubert, 2009). Black students have scored lower than White students in vocabulary, reading, and mathematics for the past 30 years (Kao & Thompson, 2003). In a study to examine the impact of mandating standardized testing with minority students, there was a negative impact of standardized testing with student achievement in mathematics and science (Lomax, West, Harmon, Viator, & Madaus, 1995). The study also found the tests failed to adequately sample for higher order thinking, higher level conceptual or higher level knowledge in both mathematics and science (Lomax et al., 1995).

Columbia University (2005) reported,

- By the end of the 4th grade, Black, Latino, and poor students of all races are two years behind their wealthier, predominately White peers in mathematics and reading. By 8th grade, they are three years behind, and by the 12th grade, they are four years behind.
- Only 1 in 50 Hispanic and Black 17-year-olds can read and gain information from specialized text.
- By the end of high school, Hispanic and Black students' reading and math skills are about the same as an 8th grade White student. (p. 1)

Researchers agree schools with a large amount of minority students are affected by standardized testing (Lattimore as cited in Kok-DeVries, 2011). Research suggested student achievement gaps may exist due to stereotypes of minority populations (Good, Aronson, & Inzlict, 2003). These authors also concluded the stereotypes of females being poor in mathematic abilities and the intellectual abilities of Black, Hispanic, and low-SES students do affect the results of high-stakes testing. In a study involving minority seventh grade students, mentored by college students who encouraged the minority students to be successful, results showed females earned higher scores as well as scores increased for students of minority and SES students. The USDOE released a report in July 2009 addressing the achievement gaps between Black students and White students in public schools based on the NAEP in mathematics and reading (Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009). The study reported trends for Black students and White students at age nine in mathematics from 1978-2004. The mathematic gap score trends showed a gap equal to 31 in 1978 and reported a decrease in the score gap equal to 23 in 2004. The trends for Black students and White students at age 13 in mathematics showed a score gap in 1978 equal to 41 and decreasing to a gap score equal to 26 in

2004 (Vanneman et al., 2009). Score gaps in reading for Black students and White students at age nine were equal to 32 in 1980 and decreasing reporting a gap equal to 26 in 2004. The trends for Black students and White students at age 13 in reading showed a score gap in 1980 equal to 32 and decreasing to a gap score equal to 21 in 2004 (Vanneman et al., 2009). The trends show an achievement gap between Black students and White students still remains.

The NCES released another report in July 2011 addressing the achievement gaps between Hispanic students and White students in public schools based on the NAEP in mathematics and reading (Hemphill, Vanneman, & Rahman, 2011). The study reported trends for Hispanic students and White students at Grade 4 in mathematics from 1990 to 2009. The mathematic gap score trends showed a gap equal to 19 in 1990, increasing to 26 in 2000, and then decreased to 21 in 2009. At Grade 8, the gap score in 1990 equaled 24, increased to 31 in 2000, and then decreased to 26 in 2009. Score gaps in reading for Hispanic students and White students at Grade 4 were equal to 33 in 1998 and decreasing reporting a gap equal to 29 in 2009. The trends for Hispanic students and White students at Grade 8 in reading showed a score gap in 1998 equal to 32 and increasing to a gap score equal to 39 in 2009 (Hemphill et al., 2011). The trends show an achievement gap between Hispanic students and White students still remains. Abbott and Joireman (2001) concluded ethnicity was not unimportant or not unrelated to student achievement, but rather low income appeared to be a greater factor of influence. These findings suggested schools with predominately White, low income populations have student achievement levels more in common with schools with non-White, low income populations than they do with schools having White, high income populations (Abbott & Joireman, 2001).

Special Education

In 1997, an amendment to the Individuals with Disabilities Education Act (IDEA) created accountability for students with disabilities by requiring states to include these students in district assessments as well as report the students' performance on assessments (Harr-Robins et al., 2012). The accountability expanded in 2001 with the Elementary and Secondary Education Act (ESEA) whicht established students with disabilities as a student subgroup for the purpose of determining the AYP of a school (Harr-Robins et al., 2012).

With the establishment of NCLB in 2001, additional concerns have risen regarding the subgroup of the students with disabilities. The Center on Educational Policy reported in 2009 based upon the NCLB regulations for all students, nearly 14% of all public students would qualify for special education services.

NCLB also set a goal that by 2014, 100% of students with disabilities are expected to be at a proficient level on state standardized assessments (Center on Education Policy, 2009). Although under NCLB all students with disabilities fall into one category, educational researchers have argued many differences exist within this subgroup (Wei, Blackorby, & Schiller, 2011). Wei et al. (2011) argued placing all students with disabilities under one subgroup in NCLB does not fairly evaluate student improvement because the students across different disabilities reach targeted proficiencies at different rates. With 14 different types of subgroups identified by IDEA, students with disabilities are a broad group with considerable gaps compares to their non-disabled peers (Harr-Robins et al., 2012).

Chiu and Pearson (1999) conducted a meta-analysis of 30 research studies and found supporting evidence, with appropriate accommodations, a student with special needs can increase their scores on standardized achievement tests. The Center on Educational Policy

(2009) conducted a study that concluded the differences between students with disabilities and non-disabled students often exceeded 30 to 40 percentage points in reading and mathematics on standardized tests. In the 1970s, students with disabilities failed at rates over 50% in Florida's graduation tests (McLaughlin as cited in Heubert, 2009).

Several studies have explored the impact of a student's disability as it relates to the students' academic success. J. S. Harrington's (2011) research focused on the mathematics and reading achievement of secondary students with mild disabilities as measured by state assessments. The focus of the study was to determine if a student placed in an inclusionary setting had better assessment scores than a student placed in a non-inclusionary setting. The results of the study concluded the instructional teaching techniques significantly affected the academic performance in mathematics of the student but did not significantly effect on the academic performance in reading (J. S. Harrington, 2011).

In a study involving six Indiana school corporations, the effects of students in an inclusive setting were investigated (Cole, Waldron, Majd, & Hasazi, 2004). Results from the study showed students with no learning disabilities educated in an inclusive setting improved their academic performance in mathematics and reading. Those students with learning disabilities demonstrated no significant differences in their mathematic and reading achievements while in an inclusionary setting (Cole et al., 2004).

A Texas study concluded special education students educated in general education classrooms more than 80% of the school day improved in their Texas state mandated test results (Roden, Borgemenke, & Holt, 2013). The study also found that as the number increased with the number of special education students in a general education classroom, so did the number of

students who demonstrated passing results in the reading and mathematics portions of the Texas state mandated test.

Black (2010) examined the amount of time a special education student spends in an inclusion class compared to their achievement tests results in mathematics and reading. The results of the study found students with special needs performed better on their achievement tests when they spent more time, specifically greater than half of their school day, in a general education setting in both mathematics and reading (Black, 2010). Baker, Wang, and Walberg (1995) supported a special education student's academic performance increases in a regular classroom versus in a separate classroom. These findings support educational legislation and court cases challenging schools to demonstrate how segregation of a special education student will improve student's academic performance.

Other research does not support full inclusion for students with a learning disability (S. A. Harrington, 1997). S. A. Harrington (1997) further concluded schools do not have the resources to meet the needs of learning disability students to increase their academic performance. An Australian study by Elkins (2007) further supported the need for additional assistance with learning disability students to improve academic performance. Elkins suggested a three-wave approach that combines high-quality teaching, early interventions, and on-going support.

CHAPTER 3

METHODOLOGY

Purpose of the Study

The purpose of this study was to determine whether a relationship exists between Indiana ECAs in English 10 and Algebra I and the following indicators at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education students. This study will assist educational leaders in schools to make data-informed decisions that can enhance the student achievement outcomes.

Research Questions

The research questions for the study were as follows:

1. Is there a significant relationship between SES of the building and the instructional expenditures per student?
2. Do the following indicators serve as predictors of English 10 ECA scores in Indiana at the high school level: a) SES, b) instructional expenditures per student, c) attendance rate, d) school size, e) percentage of ELLs, f) mobility rate, g) minority rate, and h) percentage of special education?
3. Do the following indicators serve as predictors of Algebra I ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c)

attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?

Null Hypotheses

The following null hypotheses were generated through the research questions:

1. There is not a significant relationship between SES of the building and the instructional expenditures per student.
2. The following indicators do not serve as significant predictors of English 10 ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, (h) and percentage of special education.
3. The following indicators do not serve as significant predictors of Algebra I ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education.

Description of the Sample

The study consisted of all public, non-charter high schools in Indiana. Data were collected from a total of 426 public, non-charter high schools. In order to participate in this study, the high school needed to have been in existence at least five years in Indiana (2008 – 2013). The study explored the passing rate percentage for the Algebra I ECA at the end of Grade 10 and the passing rate percentage for the English 10 ECA at the end of Grade 10. Data collected on the ECA results was obtained from A-F reports from the IDOE. Data collected on the instructional expenditures per student was collected from the Department of Local Government and Finance. This data were per corporation and not per individual high schools.

The following data were collected from each public, non-charter high school in Indiana: SES, instructional expenditure per student, percentage of the attendance rate, school size, percentage of ELLs, percentage of the mobility rate, percentage of the minority rate, and percentage of special education. All data was used from a span of five school years (2008-2013).

Data Sources

For this study, data were acquired from the IDOE and the Department of Local Government and Finance for each public, non-charter high school on SES, the instructional expenditures per student, the attendance rate, the school size, the percentage of ELLs, the mobility rate, the minority rate, and the percentage of special education. ECA results for English 10 and Algebra I were collected for each Indiana public, non-charter high school for the past five years (2008 – 2013). The data were collected from the IDOE, the Department of Local Government and Finance, IDOE school corporation data reports, and the IDOE data center.

Data Collection Procedures

After the defense proposal, material was sent to the Institutional Review Board (IRB) to request for an exemption from review. After approval from IRB, data was collected from the IDOE, specifically the School and Corporation Data Reports and the Department of Local Government and Finance. The data was entered into SPSS for analysis. No schools in this study was identified and no populations was surveyed.

Method of Analysis

The first null hypothesis examined whether there is a significant relationship between SES of the building and the instructional expenditures per student. The null was tested using a linear regression analysis that allows one to predict the value of a criterion variable based on the value of the predictor variable.

The second null hypothesis examined whether there is a relationship between the Indiana English 10 ECA results at the high school level and the following indicators: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education.

The third null hypotheses examined whether there is a relationship between the Indiana Algebra I ECA results at the high school level and the following indicators: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education.

Stepwise multiple regression tests were used for the second and third hypotheses to determine if any of the variables could be used to predict success in the ECAs in English 10 or the ECAs in Algebra I in Indiana. Stepwise multiple regression was chosen because each variable was added one at a time in order of the amount of explained variance to determine which variable has the strongest relationship with ECA performance and if the relationship was significant. Variables were added until the ability to explain a significant amount of variance in the criterion variable no longer occurred by adding these variables to the model. Stepwise multiple regression tests also produced data that showed if a correlation existed and the strength of the correlation. Stepwise multiple regression tests also explained the amount of explained variance in the criterion variable by linear combination of predictor variables. The stepwise multiple regression showed the adjusted amount of variance which could be explained in the criterion variable by the set of predictor variables when sample size and number of predictors are controlled, thus, producing a more conservative estimate. Unstandardized partial regression coefficient indicated how much expected change in the criterion variable each significant predictor variable was expected to make while holding all other variables constant. The

standardized partial regression coefficient provided the information needed in order to rank order all significant predictors (J. Cohen, Cohen, West, & Aiken, (2013).

Research in Chapter 2 from Rumberger and Palardy (2005) suggested the school's SES was the one factor that contributes to a student academic performance. Perry and McConney (2010) utilized PISA data and concluded a student achievement outcomes are directly correlated with the student's SES. Dawson (2013) determined that there was a significant correlation between a student's SES and the students ECA results. If a large amount of variance in standardized tests performance was explained by the SES, then the regression test was conducted without SES included in the model. This allowed me to determine other impacts on standardized tests performance.

Summary

The importance of educating all students within schools is a pressing concern for educators today as school accountability is at the forefront in education due to federal initiatives such as NCLB and Race to the Top. The need to analyze data is critical. This study assumed the task of analyzing the relationship between eight indicators and the ECA in English 10 and Algebra I in Indiana. This study provides quantitative data that will assist leaders in education and schools to make data-driven decision that can enhance and improve student achievement.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

Presentation of Study Sample

The purpose of this study was to determine whether a relationship exists between Indiana ECAs in English 10 and Algebra I and the following indicators at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education students. To expand the purpose of the study to a specific variable, the study also examined if there was a relationship between SES of a building and the instructional expenditures. Data for this study were collected from the IDOE and the Department of Local Government and Finance for the 2007-2012 school years. The data consisted of 426 public, non-charter high schools in the state of Indiana. The data acquired were for each high school's SES, the instructional expenditure per student, the attendance rate, the school size, the percentage of ELLs, the mobility rate, the minority rate, and the percentage of special education. ECA results for English 10 and Algebra I were collected for each Indiana public, non-charter high school for the past five years (2008-2013). Instructional expenditures per student for each corporation were collected from the Department of Local Government and Finance. Various public, non-charter high schools and corporations did not report data to the IDOE or the Department of Local Government and Finance pertaining to various years.

Descriptive Analysis

Data were collected from a total of 426 public, non-charter high schools. In order to participate in this study, the high school needed to have been in existence at least five years in Indiana (2008-2013). When examining the descriptive data for the whole sample, various results occurred. All high schools and corporations did not report all factors to either the IDOE or the Department of Local Government and Finance for various years.

The whole sample size (1,036) schools was divided into 10 descriptive areas: SES, instructional expenditure per student, attendance rate, school size, percentage of ELLs, mobility rate, minority rate, percentage of special education, passing rate percentage for English 10 ECA at the end of Grade 10 and passing rate percentage for Algebra I ECA at the end of Grade 10. The average free/reduced lunch percentage representation within the buildings was 39.85% (*SD* = 17.30). The average amount of funds utilized for instructional expenditures per student within the buildings was $11,636.88 (*SD* = 6010.57). The average percentage of attendance representation within the buildings was 95.19% (*SD* = 2.22). The average total enrollment representation within these buildings was 948.23 students (*SD* = 701.70). The average percentage of ELL representation within the buildings was 2.14% (*SD* = 3.96). The average percentage of mobility representation within these buildings was 1.26% (*SD* = 2.02). The average percentage of minority representation within these buildings was 18.15% (*SD* = 22.99). The average percentage of special education representation within the buildings was 14.29% (*SD* = 5.99). The average passing rate percentage for the English 10 ECA at the end of Grade 10 within the buildings was 71.18 (*SD* = 14.07). The average passing rate percentage for the Algebra I ECA at the end of Grade 10 within the buildings was 41.12 (*SD* = 22.26). The average passing rate percentage for the Algebra I ECA only included high school students. Students who

took the Algebra I ECA as a middle school student were not included in the sample.

In order to get a better understanding of the sample of the of SES percentages of students in a high school, the percentages were divided into four quartiles (25%). The SES for the study had a sample size of 1,027 (99.1%). There were 52 (5.0%) schools with a SES of 75% or more. There were 176 (17.0 %) schools with a SES between 50% and 75%. There were 606 (58.5%) schools with a SES between 25% and 50%. There were 193 (18.6%) schools a SES 25% or below.

In order to get a better understanding of the sample of the passing rate percentage for the English 10 ECA at the end of Grade 10, the percentages were divided into three groups (80% or higher, 60% to 79.9 %, and below 60%). There were 288 (27.8 %) schools with a passing rate percentage at 80% or higher. There were 573 (55.3%) schools with a passing rate percentage between 60% and 79/9%. There were 175 (16.9%) schools with a passing rate percentage below 60%.

School Poverty/Socioeconomic Status

In order to get a better understanding of the sample of the of SES percentages of students in a high school, the percentages were divided into four quartiles (25 %). The four quartiles analyzed the poverty levels (SES) and divided descriptive areas into the following categories: expenditures, attendance, enrollment, ELL, mobility, minority, special education, Algebra I ECA, and English 10 ECA (Tables 1, 2, 3, and 4). The number of schools in each category reflects the number of schools that reported data in that specific category. The average of the passing rate percentage for the Algebra I ECA only included high school students. Students who took the Algebra I ECA as a middle school student were not included in the sample.

Examining the school poverty level above 75% data (Table 1) shows that expenditures,

ELL, mobility, minority, and special education results were higher than the whole sample mean results. Specifically, the minority rate average was 78.03 % for the school poverty level above 75% compared to the 18.15 % minority rate for the whole sample average. Attendance rate, the passing rate for Algebra I ECA, and the passing rate for English 10 ECA fell below the whole sample mean results with a mean difference of 1.69%, 12.48%, and 24.31% respectively. The enrollment for the school poverty level above 75% was very near the whole sample mean results.

Table 1

Descriptive Statistics by School Poverty Level (Above 75%)

Category	*N*	Mean	*SD*
Expenditures	38	14740.69	2441.97
Attendance	50	93.54	2.76
Enrollment	52	947.77	563.80
ELL	52	8.05	7.37
Mobility	46	3.09	2.87
Minority	45	78.03	20.30
Special Education	52	19.47	13.09
Algebra I ECA	52	28.64	19.54
English 10 ECA	52	46.87	15.29

Examining the school poverty level between 50% to 75% data (Table 2) shows that expenditures per student, enrollment, ELL, and minority results were higher than the whole sample mean results. Specifically, the minority rate average was 39.20% for the school poverty level, between 50% and 75%, compared to the 18.15% minority rate for the whole sample

average. Attendance rate, the passing rate for Algebra I ECA, and the passing rate for English 10 ECA was below the whole sample mean results with a mean difference of 1.11%, 7.53%, and 8.81% respectively. The mobility and special education for the school poverty level, between 50% and 75%, was very near the whole sample mean results.

Table 2

Descriptive Statistics by School Poverty Level (Above 50% to 75%)

Category	*N*	Mean	*SD*
Expenditure	161	12802.17	1854.42
Attendance	174	94.08	3.91
Enrollment	176	1102.12	773.60
ELL	176	4.63	5.43
Mobility	141	1.96	2.85
Minority	170	39.20	26.65
Special Education	176	16.53	8.17
Algebra I ECA	176	33.77	19.97
English 10 ECA	176	62.37	15.07

Examining the school poverty level between 25% to 50% data (Table 3) shows that expenditures per student, attendance, mobility, special education, the passing rate for Algebra I ECA, and the passing rate for English 10 ECA results were very close to the whole sample mean. Enrollment, minority, and ELL fell below the whole sample mean results with a mean difference of 123.79 students, 7.93%, and .82% respectively.

Table 3

Descriptive Statistics by School Poverty Level (Above 25% to 50%)

Category	*N*	Mean	*SD*
Expenditures	579	11384.97	7543.21
Attendance	605	95.35	1.44
Enrollment	606	824.44	573.52
ELL	606	1.32	2.67
Mobility	481	1.00	1.41
Minority	604	10.22	12.59
Special Education	606	14.14	4.13
Algebra I ECA	606	40.59	21.69
English 10 ECA	606	72.86	10.12

Examining the school poverty level 25% and below data (Table 4) shows that attendance rate, enrollment, the passing rate for Algebra I ECA, and the passing rate for English 10 ECA were higher than the whole sample means. Expenditures, ELL, mobility, minority, and special education were below the whole sample mean with a mean difference of $892.91, 1.28%, .40%, 9.18%, and 2.96% respectively.

Table 4

Descriptive Statistics by School Poverty Level (25% to Below)

Category	*N*	Mean	*SD*
Expenditures	180	10743.98	1269.56
Attendance	193	96.17	.95
Enrollment	193	1196.71	912.52
ELL	193	.86	.96
Mobility	153	.86	2.01
Minority	193	10.44	8.63
Special Education	193	11.33	3.34
Algebra I ECA	193	52.73	21.45
English 10 ECA	193	81.40	8.93

English 10 End of Course Assessment

In order to get a better understanding of the sample of the passing percentage rate for the English 10 ECA at the end of Grade 10, the percentages were divided into three groups (80% or higher, 60% to 79.9%, and below 60%). The three groups analyzed the passing percentage rate for the English ECA and divided descriptive areas into the following categories: SES, expenditures, attendance, enrollment, ELL, mobility, minority, and special education. The number of schools in each category reflects the number of schools that reported data in that specific category. The passing percentage rate for the English 10 ECA included all 10th grade students. The data within this section is presented in Tables 5 through 7.

Examining the passing percentage rate for the English ECA 80% or higher data (Table 5)

shows that enrollment was higher than the whole sample mean. Attendance and mobility fell near the whole sample means. SES, expenditures, ELL, minority, and special education fell below the whole sample mean results with a mean difference of 10.44%, $657.42, .79%, 7.05%, and 1.87% respectively.

Table 5

Descriptive Statistics by English 10 ECA Passing Rate (80% or Above)

Category	*N*	Mean	*SD*
SES	287	29.41	13.06
Expenditures	269	10979.47	1354.56
Attendance	288	95.80	1.54
Enrollment	287	1020.74	840.90
ELL	287	1.35	3.13
Mobility	226	1.15	2.07
Minority	286	11.10	10.83
Special Education	287	12.42	4.17

Examining the passing percentage rate for the English ECA 60% to 79.9% data (Table 6) shows that SES, expenditures per student, attendance rate, enrollment, mobility rate, and special education were near the whole sample means. ELL and minority fell below the whole sample means with a mean difference of .19% and 3.52% respectively.

Table 6

Descriptive Statistics by English 10 ECA Passing Rate (60% to 79.9%)

Category	*N*	Mean	*SD*
SES	570	39.53	13.85
Expenditures	549	11655.00	7773.47
Attendance	572	95.37	1.56
Enrollment	570	901.48	624.57
ELL	570	1.95	3.50
Mobility	455	1.07	1.35
Minority	566	14.63	18.09
Special Education	570	14.03	3.57

Examining the passing rate percentage for the English ECA below 60% data (Table 7) shows that SES, percentage of ELL, expenditures per student, mobility rate, minority rate, and percentage special education were higher than the whole sample means. Specifically, the minority rate average was 43.16% for the passing rate percentage for the English ECA below 60% compared to the 18.15% minority rate for the whole sample mean. The enrollment was near the whole sample mean results. Attendance fell below the whole sample mean results with a mean difference of 1.63%.

Table 7

Descriptive Statistics by English 10 ECA Passing Rate (Below 60%)

Category	*N*	Mean	*SD*
SES	170	58.53	18.63
Expenditures	144	12795.84	2368.94
Attendance	171	93.56	3.77
Enrollment	170	982.58	679.53
ELL	170	4.13	5.66
Mobility	141	2.04	3.22
Minority	160	43.16	34.98
Special Education	170	18.32	11.10

Hypotheses Testing

The following null hypotheses were tested.

$H_0$1. There is not a significant relationship between SES of the building and the instructional expenditures per student.

$H_0$2. The following indicators do not serve as significant predictors of English 10 ECA scores at the end of Grade 10 in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education.

$H_0$3. The following indicators do not serve as significant predictors of Algebra I ECA scores at the end of Grade 10 in Indiana at the high school level: (a) SES, (b) instructional expenditure per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility

rate, (g) minority rate, and (h) percentage of special education.

Inferential Data

Instructional Expenditures Per Student

The first null hypothesis examined if there was a significant relationship between SES of the building and the instructional expenditure per student. The null was tested using a linear regression analysis that tests whether a significant linear relationship exists to predict the value of a criterion variable based on the value of the predictor variable.

The assumptions for the linear regression tests were examined to ensure the validity of the findings. The assumption of normality was met with a non-significant Shapiro-Wilk's test as the significant value (*p* value) was greater than .05. The assumption of linearity was met as there was a linear relationship between the predictor variable SES and the criterion variable expenditures as evident through examination of the scatterplot. The assumption of independence of the residuals was met as the Durbin-Watson score was approximately 2.0. The assumption of hetroscedasticity was met as the plot of standardized residuals vs. standardized predicted values did not show evidence of residual spreading as the predictor variable scores increased. No outliers were present in the model as all residuals fell within 1.5 standard deviations of standardized residuals. The assumption of normality of the residuals was met as the residuals on the normal p-p plot of standardized residuals were aligned with the diagonal line. All assumptions of this linear regression test were met.

Examination of the model summary statistics provided some insight into the strength of the relationship and the explained variance in the criterion variable. For expenditures, *R* was the correlation coefficient (.148) that examined the strength of the relationship between the predictable variable SES and the criterion variable expenditures. This was a small relationship

(Field, 2009). R^2 was the coefficient of determination (.022) that examined the amount of variance within the criterion variable that could be explained by the predictable variable. This showed that 2.2% of the variance within expenditures could be explained by the predictor variable SES. Adjusted R^2 was the adjusted coefficient of determination (.021) that was a more conservative explanation of the explained variance as it took into account sample size. After adjusting for sample size, the amount of variance that could be explained in the expenditures was reduced to 2.1 %. The shrinkage in the model (.001) was the amount of explained variance lost within the adjustment (R^2 – adjusted R^2). The standard error of the estimate (5959.826) demonstrated the average residual distance for each data point from the line of best fit.

An ANOVA was completed to test the significance of R^2 within the model. The ANOVA was significant, $F(1, 956) = 21.281$, $p < .001$, thus showing a linear relationship between predictor variable (SES) and the criterion variable (expenditures).

Examination of the coefficients identified SES was a significant predictor of expenditures (Table 8). The unstandardized partial regression coefficient explained the predicted amount of change in the criterion variable. The unstandardized partial regression coefficients for free/reduced lunch percentage students would indicate the predicted value for expenditures would increase by $54.30 for every 1% increase in the school's free/reduced lunch percentage.

Table 8

Coefficient for Dependent Variable Expenditures

Variable	Unstandardized (B)	Standardized (Beta)	Sig.
SES	54.303	.148	.000

English 10 End of Course Assessment

The second null hypothesis examined if the following indicators serve as significant predictors of English 10 ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education. The null was tested using a multiple regression analysis that tested whether a significant linear relationship existed to predict the value of a criterion variable based on the value of the predictor variables.

All assumptions for this multiple regression were met. The assumption of no multicollinearity was met due to having tolerance levels for all of the predictors (SES, expenditures, attendance, enrollment, ELL, mobility, minority, and special education) above the .2 minimum that is needed for this assumption. The tolerance levels for SES, expenditures, attendance, enrollment, ELL, mobility, minority, and special education were .33, .95, .83, .73, .62, .86, .34, and .70 respectively. For the assumption of independence of residuals, the criterion variable (passing rate percentage for the English 10 ECA) showed no evidence of a correlation between the residuals within the model as the Durbin-Watson score was approximately 2.0. The assumption of linearity was met as the predictor variables and the criterion variable demonstrated a linear pattern on the partial regression plot. There was no need to examine the categorical variables for this assumption. The assumption of homoscedasticity was met as no evidence of residual spreading occurred in the plot of standardized residuals vs. unstandardized predicted values when the predicted value of the criterion variable increased. There was no evidence of an outlier within the model as all standardized residuals were within 1.5 standard deviations. The assumption of normality of residuals was met as the residuals on the normal p-p plot of standardized residuals were close to the diagonal line.

Examination of the model summary statistics provided some insight into the strength of the relationship and the explained variance in the criterion variable. For passing rate percentage of English 10 ECA, *R* was the multiple correlation coefficient (.687) that examined the strength of the relationship between the predictable variables and criterion variable (English 10 ECA). This was a strong relationship (Field, 2009). R^2 was the multiple coefficient of determination (.472) that examined the amount of variance within the criterion variable that could be explained by the predictor variables. This showed that 47.2% of the variance in the passing rate percentage of English 10 ECA could be explained by the predictor variables. Adjusted R^2 was the adjusted multiple coefficient of determination (.466) which was a more conservative explanation of the explained variance as it took into account sample size and the number of predictor variables. After adjusting for sample size and the number of predictor variables, the amount of variance that could be explained in the passing percentage rate of English 10 ECA was reduced to 46.6%. The shrinkage in the model (.006) was the amount of explained variance lost within the adjustment (R^2 – adjusted R^2). The standard error of the estimate (9.89) demonstrated the average residual distance for each data point from the line of best fit.

An ANOVA was completed to test the significance of R^2 within the model. The ANOVA was significant, $F(8, 775) = 86.47$, $p < .001$, thus showing a linear relationship between at least one predictor variable and the criterion variable (English 10 ECA).

Examination of the coefficients in the stepwise multiple regression identified which variable predictors were significant predictors of the passing rate percentage of English 10 ECA. According to Field (2009), a stepwise multiple regression model is a method in which each time a predictor variable is added to the equation, a removal test is made of the least useful variable predictor. As a result, the equation is constantly being reassessed to determine whether any

redundant variable predictor can be removed. The significant predictor variables for the passing rate percentage of English 10 ECA were SES, attendance rate, enrollment, minority rate, and percentage of special education.

The unstandardized partial regression coefficient explained the predicted amount of change in the criterion variable and holds all other predicting variables constant. As presented in Table 13, the unstandardized partial regression coefficients for free/reduced lunch percentage of the building, holding all other predictors constant, would indicate the predicted value for the passing rate percentage for English 10 ECA would decrease by .223. This value indicates that for every percentage increase in free/reduced lunch percentage, the passing rate percentage for English 10 ECA decreases by .223 percent. The unstandardized partial regression coefficients for the attendance percentage, holding all other predictors constant, would indicate the predicted value for the passing rate percentage for English 10 ECA would increase by .800. This value indicates that for every 1% increase in attendance percentage the passing rate percentage for English 10 ECA increases by .800%. The unstandardized partial regression coefficients for enrollment, holding all other predictors constant, would indicate the predicted value for the passing rate percentage for English 10 ECA would increase by .003. This value indicates that for every one-student increase in enrollment, the passing rate percentage for English 10 ECA increases by .003%. The unstandardized partial regression coefficients for the percentage of minority students, holding all other predictors constant, would indicate the predicted value for the passing rate percentage for English 10 ECA would decrease by .220. This value indicates that for every 1% increase in minority rate, the passing rate percentage for English 10 ECA increases by .220%. The unstandardized partial regression coefficients for the percentage of special education students, holding all other predictors constant, would indicate the predicted

value for the passing rate percentage for English 10 ECA would decrease by .533. This value indicates that for every 1% increase in special education, the passing rate percentage for English 10 ECA increases by .533%.

Through the use of *z* scores, the standardized partial regression coefficient (β weight) for each of the predictor variables demonstrated the impact of each variable on the passing rate percentage of English 10 ECA. The standardized partial regression coefficient puts all variables into a *z* score or the same metric by using the absolute value. The values explain the number of standard deviations that the outcome will change as a result of one standard deviation change in the predictor variable (Field, 2009). The *z* score allows for the significant predictors to be ranked of importance. With standardized partial regression coefficients for the free/reduced lunch percentage students (-.277), for the attendance rate (.118), for the enrollment (.140), for the minority rate (-.375), and for the percentage of special education students (-.161), the impact and importance of predictors can be ranked as follows to having the largest impact on the passing rate percentage of English 10 ECA: minority rate, SES, special education, enrollment, and attendance rate.

Table 9

Coefficients for Dependent Variable English 10 ECA

Dependent Variable	Unstandardized (B)	Standardized (Beta)	Sig.
SES	-.223	-.277	.000
Attendance	.800	.118	.000
Enrollment	.003	.140	.000
Minority	-.220	-.357	.000
Special Education	-.533	-.161	.000

Algebra I End of Course Assessment

The third null hypothesis examined if the following indicators serve as significant predictors of Algebra I ECA scores in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education. The null was tested using a multiple regression analysis that tests whether a significant linear relationship existed to predict the value of a criterion variable based on the value of the predictor variables.

All assumptions for this multiple regression were met. The assumption of no multicollinearity was met due to having tolerance levels for all of the predictors (SES, expenditures, attendance, enrollment, ELL, mobility, minority, and special education) above the .2 minimum that was needed for this assumption. The tolerance levels for SES, expenditures, attendance, enrollment, ELL, mobility, minority, and special education were .33, .95, .83, .73, .62, .86, .34, and .70 respectively. For the assumption of independence of residuals, the criterion variable (percentage passing for the English 10 ECA) showed no evidence of a correlation between the residuals within the model as the Durbin-Watson score was approximately 2.0. The assumption of linearity was met as the predictor variables and the criterion variable demonstrated a linear pattern on the partial regression plot. There was no need to examine the categorical variables for this assumption. The assumption of homoscedasticity was met as no evidence of residual spreading occurred in the plot of standardized residuals vs. unstandardized predicted values when the predicted value of the criterion variable increased. There was no evidence of an outlier within the model as all standardized residuals were within 1.5 standard deviations. The assumption of normality of residuals was met as the residuals on the normal p-p plot of standardized residuals were close to the diagonal line.

Examination of the model summary statistics provided some insight into the strength of the relationship and the explained variance in the criterion variable. For passing rate percentage of Algebra I ECA, *R* was the multiple correlation coefficient (.349) that examined the strength of the relationship between predictor variables and criterion variable (Algebra I ECA). This was a medium relationship (Field, 2009). R^2 was the multiple coefficient of determination (.122) that examined the amount of variance within the criterion variable that can be explained by the predictor variables. This showed that 12.2% of the variance in the passing rate percentage of Algebra I ECA can be explained by the predictors. The adjusted R^2 was the adjusted multiple coefficient of determination (.113) which is a more conservative explanation of the explained variance as it took into account sample size and the number of predictors. After adjusting for sample size and the number of predictors, the amount of variance that could be explained in the passing rate percentage of Algebra I ECA was reduced to 11.3%. The shrinkage in the model (.009) was the amount of explained variance lost within the adjustment (R^2 – adjusted R^2). The standard error of the estimate (20.56) demonstrated the average residual distance for each data point from the line of best fit.

An ANOVA was completed to test the significance of R^2 within the model. The ANOVA was significant, $F(8, 775) = 13.46$, $p < .001$, thus showing a linear relationship between at least the predictor variable and the criterion variable (Algebra I ECA).

Examination of the coefficients in the stepwise multiple regressions identified which variables were significant predictors of the passing rate percentage of Algebra I ECA. According to Field (2009), a stepwise multiple regression model is a method in which each time a predictor variable is added to the equation, a removal test is made of the least useful variable predictor. As a result, the equation is constantly being reassessed to determine whether any

redundant variable predictor can be removed. Two significant predictors of the passing rate percentage of Algebra I ECA were SES and attendance rate.

The unstandardized partial regression coefficients explains the predicted amount of change in the criterion variable while holding all other predictor variables constant. As presented in Table 10, the unstandardized partial regression coefficients for free/reduced lunch percentage of the building, holding all other predictors constant, would indicate the predicted value for the passing rate percentage for Algebra I ECA would decrease by .316. This value indicates that for every 1% increase in the free/reduced lunch percentage of the building, the passing rate percentage for Algebra I ECA decreases by .316%. The unstandardized partial regression coefficients for the attendance percentage, holding all other predictors constant, would indicate the predicted value for the passing rate percentage for Algebra I ECA would increase by 1.102. This value indicates that for every 1% increase in attendance rate, the passing rate percentage for Algebra I ECA increases by 1.102 units.

Through the use of *z* scores, the standardized partial regression coefficient (β weight) for each of the predictor variables demonstrated the impact of each variable on the passing rate percentage of Algebra I ECA. The standard partial regression coefficient puts all variables into a *z* score or the same metric by using the absolute value. The values explain the number of standard deviations that the outcome will change as a result of one standard deviation change in the predictor variable (Field, 2009). The *z* score allows for the significant predictors to be ranked. With standardized partial regression coefficients for the free/reduced lunch percentage students (-.244) and for the attendance rate (.101), the impact of the predictors can be ranked as follows to having the largest impact on the passing rate percentage of Algebra I ECA: SES and attendance rate (Table 10).

Table 10

Coefficients for Dependent Variable Algebra I ECA

Dependent Variable	Unstandardized (B)	Standardized (Beta)	Sig.
SES	-.316	-.244	.000
Attendance	1.102	.101	.006

Summary

Quantitative data were utilized throughout this chapter to examine the three research questions in this study. To predict the value of a criterion variable based on the value of the predictor variables, regression was used for all three questions in this study. Research Question 1 demonstrated that there was a significant relationship between SES of the building and the instructional expenditures. The relationship between SES of the building and the instructional expenditures was positive. As the free/reduced lunch percentage increased, the instructional expenditures were predicted to increase. Research Question 2 demonstrated that the predictors, SES, attendance rate, enrollment, minority rate, and the percentage of special students, were significant predictors of the passing rate percentage for the English 10 ECA. Research Question 3 demonstrated that the predictor SES and the attendance rate were significant predictors of the percentage passing for the Algebra I ECA.

CHAPTER 5

SUMMARY, RESULTS, IMPLICATIONS, AND RECOMMENDATIONS

The final chapter of this study is organized into four sections that include the summary, results, implications, and recommendations for future studies. The summary section shares an overview of what this study discovered. The results section shares the specific results of the study as it relates to each research question. The implication section shares what impact this study may have on current and future educational leadership practices as it relates to student achievement and high-stakes testing. The recommendations for future research section looks at the possibility of future research in the area of student achievement and high-stakes testing.

Summary

The purpose of this quantitative study was to determine whether a relationship exists between Indiana ECA in English 10 and Algebra I and the following indicators at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education students. This study examined which indicators had the greatest effect on English 10 ECA scores and Algebra I ECA scores in Indiana. To expand the purpose of this study to a specific variable, the study also examined if there was a relationship between SES of a building and the instructional expenditures. The study used quantitative research data collected from all public, non-charter high schools in Indiana over five years (2008-2013). The need to examine specific

indicators for this study allowed me to focus on eight predictor variables that may impact ECA scores in English 10 and Algebra I in Indiana.

The focus of this study was to investigate three research questions:

1. Is there a significant relationship between SES of the building and the instructional expenditures?
2. Do the following indicators serve as predictors of English 10 ECA scores at the end of Grade 10 in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) enrollment, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?
3. Do the following indicators serve as predictors of Algebra I ECA scores at the end of Grade 10 in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) enrollment, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?

The study consisted of all public, non-charter high schools in Indiana. Data were collected from a total of 426 public, non-charter high schools. In order to participate in this study, the high school needed to have been in existence at least five years in Indiana (2008 – 2013). The study explored the passing rate percentage for the Algebra I ECA at the end of Grade 10 and the passing rate percentage for the English 10 ECA at the end of Grade 10. Data collected on the ECA results was obtained from A-F reports from the IDOE. Data collected on the instructional expenditure per student was collected from the Department of Local Government and Finance. This data were per corporation and not per individual high school. The following data were collected from each public, non-charter high school in Indiana: SES, instructional expenditure per student, percentage of the attendance rate, school size, percentage

of ELLs, percentage of the mobility rate, percentage of the minority rate, and percentage of special education. All data were used from a span of five school years (2008-2013).

This study will contribute to the field of education by examining factors outside of the individual teacher and the classroom instruction that occurs in the classroom. By examining which factors have the greatest relationship when compared to academic performance on the English 10 ECAs and Algebra I ECAs, the results could bring a school's awareness of a particular factor within its control. Additionally, if a particular factor cannot be controlled, then the school's awareness of other factors may be addressed.

In Indiana, passing the English 10 ECA and the Algebra I ECA is required to receive the basic high school diploma, which is the CORE 40 diploma (IDOE, 2011a). The success of a student passing the ECA in English 10 and the ECA in Algebra I has a direct effect on a high school's graduation rate in Indiana. Although much research has been conducted on student achievement and its effects on academic success, this study is important as it explored indicators that may impact the academic success of high school students passing the English 10 ECA and Algebra I ECA.

In Indiana, the results of the ECAs impact graduation rates as well as the school's letter grade based on the NCLB Act. Since the passing of the NCLB Act, Indiana and the rest of the country has focused on student achievement based on standardized assessments. Therefore, schools are continuously exploring factors that impact their school and specifically to this study—ECAs in Algebra I and English 10.

Research substantiates the need to examine factors outside of the classroom instruction and the individual teacher (Carter, 2000; Hattie, 2013; Marzano et al., 2014, Payne, 2009; Reeves, 2003). This study attempted to provide insight on factors that have an impact on a

student's academic success that was measured by the English 10 ECA and Algebra I ECA. By examining which factors have the greatest relationship when compared to academic performance on the English 10 ECA and the Algebra I ECA, the results could bring a school's awareness of a particular factor within its control. The school's awareness can allow a school to focus on sets of related factors and have the opportunity to address those factors to improve student achievement (Marzano et al., 2014). Additionally, if a particular factor cannot be controlled, then the school's awareness of other factors may be addressed.

Summary of Findings

The findings for this study were presented in Chapter 4. The study centered on the following questions related to student achievement at the high school level:

1. Is there a significant relationship between SES of the building and the instructional expenditures?
2. Do the following indicators serve as predictors of English 10 ECA scores at the end of Grade 10 in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?
3. Do the following indicators serve as predictors of Algebra I ECA scores at the end of Grade 10 in Indiana at the high school level: (a) SES, (b) instructional expenditures per student, (c) attendance rate, (d) school size, (e) percentage of ELLs, (f) mobility rate, (g) minority rate, and (h) percentage of special education?

Research Question 1 was answered by investigating the relationship between SES of the building and the instructional expenditure per student through a linear regression analysis and an ANOVA. This investigation revealed a significant relationship between SES and expenditures

per student. The research concluded that for every 1% increase in the school's free/reduced lunch percentage, the predicted value of expenditures per student would increase by $54.30.

Research Question 2 was answered through the use of a stepwise multiple regression analysis and ANOVA. Five of the eight factors investigated had a significant impact on the passing rate percentage of English 10 ECA. The investigation revealed that the significant factors for the passing rate percentage of English 10 ECA were SES, attendance rate, enrollment, minority rate, and percentage of special education. The null hypothesis was rejected for these five indicators. The impact and importance of the factors can be ranked as follows to have the largest impact on the passing rate percentage of English 10 ECA: minority rate, SES, special education, enrollment, and attendance rate.

Specifically, for every percentage increase in SES percentage, the passing rate percentage for English 10 ECA decreases by .223 percent. For the attendance percentage, every 1% increase in attendance percentage the passing rate percentage for English 10 ECA increases by .8%. For enrollment, every one-student increase in enrollment, the passing rate percentage for English 10 ECA increases by .003%. For the percentage of minority students, every 1% increase in minority rate, the passing rate percentage for English 10 ECA increases by .22%. For the percentage of special education students, every 1% increase in special education, the passing rate percentage for English 10 ECA increases by .533T. The study concluded that the minority rate had the largest impact on the passing rate percentage of English 10 ECA. The null hypothesis was retained for the indicators expenditure per student, percentage of ELLs, and mobility rate.

Research Question 3 was answered through the use of a stepwise multiple regression analysis and ANOVA. Two of the eight factors had a significant impact on the passing rate percentage of Algebra I ECA. **The investigation revealed that SES and attendance rate had**

a significant impact on the passing rate percentage of Algebra I ECA. The null hypothesis was rejected for these two indicators.

Specifically, for SES percentage of the building, every 1% increase in the SES percentage of the building, the passing rate percentage for Algebra I ECA decreased by .316%. For the attendance rate, every 1% increase in attendance rate, the passing rate percentage for Algebra I ECA increased by 1.102%. The study concluded that SES had the largest impact on the passing rate percentage of Algebra I ECA. The null hypothesis was retained for the indicators expenditure per student, enrollments, percentage of ELL students, mobility rates, minority rates, and percentage of special education.

Several findings in the study are noteworthy to mention further. As SES increases in a building, the instructional expenditures were predicted to increase. However, SES had a negative effect on English 10 ECA and Algebra I ECA passing rate percentages. Specifically, for every 1% increase in the SES of a building, the passing rate percentage for English 10 ECA decreased by .22% and the passing rate percentage for Algebra I decreased by .315%. A possible explanation for this result may be a combination of other factors that impact the results for the ECA and the academic success of students.

This study found SES of a school negatively impacts the results of ECA is supported by research. Throughout this study, SES was a significant factor for student achievement. Kaiser (2009) found a school's free and reduced lunch percent does make a significant difference on ISTEP+ language arts and math scores on the 10th grade assessment. Toutkoushian and Michael (2007) found there was a relationship between the SES of a community and the success of the ISTEP+ scores for the state of Indiana. Toutkoushian and Michael (2007) also revealed as free and reduced percentages increased, the success of ISTEP+ decreased.

Education of the parents and the community could increase the awareness of the impact of SES on the school and the community. Reeves (2003) found schools with large gains on student achievement at the secondary level provided double periods of English and mathematics. Reeves (2003) found five characteristics that were common in high poverty schools that demonstrated high academic performance:

- Focus on academic achievement,
- Clear curriculum choices,
- Frequent assessment of student progress and multiple opportunities for improvement,
- Emphasis on nonfictional writing, and
- Collaborative scoring of student work.

The 90/90/90 schools displayed student academic achievements throughout the school, more time was spent reading, writing, and mathematics than other subjects, and assessments were frequent with multiple opportunities for improvement. Written responses were expected in all courses so teachers could determine whether the challenges faced by a student are the results of the vocabulary, misunderstanding the directions, or reasoning errors (Reeves, 2003).

In 90/90/90 schools, the greatest improvement in student achievement involved the use of common assessments (Reeves, 2003). The use of common assessments allows a school-wide commitment of equality and consistency. Wayne Township in Indianapolis, Indiana, utilized common assessments on a monthly or quarterly basis and had great growth in student achievement (Reeves, 2003).

Minority rate was the strongest indicator for the passing rate percentage for English 10 ECA, stronger than SES. Minority rate was not the strongest indicator for the passing rate percentage for Algebra I ECA as SES was the strongest indicator. One potential reason for this

result may be cultural bias as well as the reading level that occurs with the assessment.

The indicators—enrollments, minority rates, and percentage of special education— did not impact the passing rate percentage for Algebra I ECA but did impact the passing rate percentage for English 10 ECA. One potential reason for this result may be the cultural bias that may be present in the assessment.

Delimitations, such as motivation of the students and the instructional practices of the teachers, may have impacted the findings. Limitations, such as cultural biases of the assessments as well as the difficulty of the assessment, may have also impacted the findings.

Implications and Recommendations

A school's success is greatly influenced by the student's SES (Sirin, 2005). It is difficult for educational leaders and schools to change the SES of the school. However, strategizing and implementing methods to minimize the effects of the SES of the school may minimize the impact. Since many students cannot learn when they are sick, hungry, cold, and afraid, effective schools must attempt to limit these problems for learning to occur (Barr & Parrett, 2007). Educational leaders and schools can create programs to educate and assist students, parents, and the community of high SES. This could allow a student to have the potential to be successful in their academics in the school as well as have the potential to be successful outside of the school environment. Hattie (2013) identified factors that were outside of the school's control, such as prior knowledge, the home environment, and SES. Schools can be much more effective if the schools know the resources of their students (Payne, 2009). To significantly reduce the gap in student achievement in schools, educational leaders need to create policies and procedures at the local, state, and federal level to allow all students to have equal opportunities.

In this study, a significant relationship was found between SES and instructional

expenditure per student. The impact of an increase on the percentage of a school's SES significantly impacts a school's instructional expenditures per student. Higher SES also correlates with lower achievement. Schools need to address how to best use expenditures to improve student achievement. High performing schools with student academic success budget their funds in an effort to improve student performance (Carter, 2000). The instructional expenditures are an increasing concern for educational leaders as federal, state, and local revenues are decreasing. As revenues decrease, expenditures are being evaluated and analyzed so that educational leaders may be fiscally responsible for school funds. Schools need to focus on how expenditures are spent and not the amount of expenditures that are spent (Hattie, 2013).

The utilization of expenditures could impact several areas of a school: students, parents, staff, and community. This could include providing additional teachers or tutors, training teachers with best practices for working with students of poverty, adult education programs, alternative programs, credit recovery programs, and summer programs. Educational leaders can explore ways to enhance the curriculum, enhance best practices, enhance teaching methods and strategies, and enhance the school environment as well as the school climate, to limit the impact of a school's SES.

SES is an indicator of student achievement but other factors could be addressed to improve a student's academic success. Hattie (2013) identified many factors that represented activities and initiatives that schools can implement. Educating parents so they can assist their children has improved student achievement in schools of high SES (Carter, 2000). School leaders can establish work sessions for parents to understand how to help their children with homework. Cascade Elementary School in Atlanta, Georgia, send a contract home to parents to go over their children's homework and to have their children in bed by 9:00 p.m. (Carter, 2000).

Work sessions could also educate parents on how to communicate with their children's teachers. The school leaders could utilize newsletters and social media, but the school leaders must understand their audience and the reading level as well as language barriers of the parents.

Educating parents regarding early childhood reading can benefit the development of a child and the potential of dropping out of school before earning a high school diploma. Hernandez's (2011) research concluded one in six children who are not reading at a proficient level in third grade do not graduate high school. The research further concluded that this rate was four times greater than that for students who are reading at a proficient levels at the third grade. School leaders need to encourage parents to read to their children prior to entering school. Schools could offer free children's books to parents as well as have extended hours for the school's library and/or media center. Schools can establish standards and baselines for their kindergarteners to know all of the letter sounds and to be able to blend three letters to words. (Carter, 2000).

Creating a safe and positive culture in a building and classroom can create positive behavior. Schools can utilize positive behavior intervention strategies (PBIS) to promote positive reinforcement. Students in classrooms that have poor classroom management receive less academic instruction (Weinstein, 2007). Schools that incorporate the PBIS concept align classroom rules with school-wide expectations that consist of a common language (Fallon, O'Keefe, & Sugai, 2012). An example would be a motto such as Be Kind, Be Safe, Be Responsible (Fallon et al., 2012). Reinforcing positive behavior is a key to PBIS school success. At the secondary level, incentive programs, such as Do the Right Thing, promote no discipline referral, no tardies, no failing grades, and encourages not only academic success but also positive behavior.

Educational leaders can explore means to create and establish alternative settings for students. A Freshman Center could allow freshmen students to transition into the high school setting. A Freshmen Center could allow students to concentrate on academics as the freshman year and not receive credits by the end of their freshman year. The Freshmen Center can allow for more structure as well as more possibility for a freshmen-mentoring program. Educational leaders can also offer an Alternative Center to allow a non-traditional school setting to offer alternative schedules and opportunities for students. The Alternative Center could be staffed with behavioral specialists, social workers, special education teachers, general education teachers, and counselors. The Alternative Center could operate on non-traditional hours such as 12:00 p.m. to 9:00 p.m. to allow a student to work or take care of a child.

In several communities, the need for adult education programs would enhance individuals to further their education with the completion of the General Education Development (GED) test, a high school diploma, or a post-secondary degree. The Alternative Center could allow those community members who do not have their high school diploma to secure their high school degree to better themselves for employment and possibly post-high school degrees. Earning a high school diploma is extremely important versus a GED. Heckman, Humphries, and Kautz (2014) found little evidence for the economic and hourly wage increase for an individual securing a GED compared to a dropout; however, a high school diploma does impact the individual's earnings.

The impact of the minority rate in a school was significant in this study, especially as it relates to the passing rate percentage of the English 10 ECA. Professional development for the entire staff of a school could allow education to occur so that staff members understand diversity and culture of the school's students. Utilization of staff members with a diverse background or

experience with diversity could be beneficial for education leaders to educate other staff members. Diversity education for the staff, parents, and community could be a possible strategy to enhance the culture of a building and the social justice for the school and community. Utilizing resources such as *The Framework for Understanding Poverty* by Payne (2005) can assist in educating staff, parents, and community members to aid for them to understand the students so that they may connect with them. Educational leaders can also hire a diversity coordinator to provide training and assistance to the school's staff and parents. The diversity coordinator could also organize school-wide activities to involve students, staff, parents, and the community.

Schools can establish after-school programs to allow students to be connected to the school. An excellent indicator of health, wealth, and happiness in an adult life is not academic success but the number of years an individual is in school (Hattie, 2013). The extra-curricular activities and program have a profound effect on identity formation and peer self-esteem, which can be especially important to adolescents (Hattie, 2013). Extra-curricular and after-school programs can allow students to be connected to their school and want to spend more time at the school for academics. Additionally, schools can offer extended hours for the media center to allow students to complete homework, have access to technology, and have a structured study environment. After-school programs could include service and hobby clubs, drama programs, and sports teams.

Educational leaders can also establish summer school programs for students. Students of high SES lose more ground in reading than their peers (Augustine & Schwartz, 2011). The programs could be for remediation to re-gain and/or enhance subjects such as reading and mathematics. Programs at the high school level may consist of credit recovery courses that can

be taught with traditional settings with teachers or by the use of on-line technology. Enrichment courses could also be offered to allow students to be involved with subjects and programs that they may not be afforded during the normal academic year. Securing partnerships with school vendors could fund the enrichment programs as well as the vendors and the vendors may be able to supply materials and other resources.

The attendance rate was found to impact the passing rate percentage of the English 10 ECA and Algebra I ECA. Utilizing incentive programs to encourage students to attend school is possible strategy to improve a school's attendance rate. Educating parents on the importance of school attendance is a possible strategy. The utilization of outside resources to improve attendance may be a strategy to assist a school. The use of local law enforcement, Child Protection Services, school/home liaisons, and other wrap-around services could improve a student's attendance.

A finding in this study included the significance that the percentage of special education students in a building had on the passing rate percentage on the English 10 ECA. Professional development for all staff concerning special education could impact the school. The proper methods and instructional practices in co-taught courses could impact student achievement. The special education teacher and the general education teacher should both be involved with the planning, instruction, assessment, and culture of the co-taught course. Educational leaders can oversee special education departments to ensure Individual Education Plans are correct and impact the specific students. Educational leaders can also explore means to secure additional technology such as auto response programs to assist special education students.

Teacher quality is the single most accurate indicator of a student's educational success (Carter, 2000). Schools need to devote time for teacher collaboration to allow teachers to

examine student work and provide timely feedback to their students. Time allotted to collaborate on student data and to review the school's action plans is vital. Professional learning communities can enhance the effectiveness of teachers to address issues regarding curriculum, assessment, instruction, and the achievement of students (Marzano et al., 2014).

Future Studies

Further recommended studies include a follow-up qualitative study that would investigate schools with high SES but successful passing percentage rates in English 10 ECA and/or Algebra I ECA, but low instructional expenditure per students. This would allow educational leaders to study the strategies these particular schools perform. The study could investigate the various resources that the schools have available.

A study could investigate the ISTEP+ results for all schools for a period of five years to determine if the factors of this study had the same significance. This study could investigate the existence other factors that affect ISTEP+ results versus the ECA results. Strategies that affect high-stake testing at the elementary grace levels and the middle grade levels versus the high school levels could also be explored. This study could assist educational leaders in making K-12 decisions rather than just building-level decisions.

A further study could investigate specific SES factors such as parent location, the parent's level of education, the parent's occupation, and the parent's reading level. The magnitude of the relationship between SES and a student's academic achievement is relevant to the parent (Sirin, 2005). The study could reveal strategies that educational leaders and community leaders could collaborate to eliminate specific parent factors that hinder the academic success of their children.

Further studies should investigate new assessments that the state of Indiana is exploring

at the time of this study such as the new ISTEP+ and ECA is 2015-2016. Such studies will be valuable to determine the value of these instruments in identifying student achievement and providing solutions for improvement of student performance in comparison to the assessments currently used by the state.

A study could investigate the expenditures per student by exploring the percentage of the total expenditure related to special education funds and the relationship to SES and student achievement. Schools support many programs with special education funds. A study investigating various expenditures could assist educational leaders in allocating funds throughout their school(s) and programs.

Further investigation into factors that impacts student achievement is critical in the school systems. Educational leaders must create effect strategies to utilize all available resources for all students. By furthering additional studies, educational leaders may be able to minimize factors outside of the individual teacher and the classroom instruction, therefore, maximizing resources to increase the effectiveness of the individual teacher and the classroom instruction that occurs each and every day in the schools.

Summary

It is critical that further research into factors that impact student achievement continue if schools have expectations to improve student achievement. Educational leaders need to create effective strategies to utilize all available resources for all students. High performing schools have several characteristics in common, according to Marzano et al. (2014), which include high, clear, shared goals; understandable and comprehensive data systems; collaborative environments; flexibility; formalized operating procedures, a focus on best practices and expertise over seniority; rigorous teacher performance evaluations; and clean well-functioning

campuses. Schools should monitor critical factors and take action to address the factors that have a negative effect on student achievement. By additional studies, educational leaders may be able to minimize factors outside of the individual teacher and the classroom instruction. Carter (2000) found that parent involvement, training teachers, assessing students, teaching basic skills to student, and spend money wisely is needed to impact schools. Reeves (2003) stated, "There is no magic potion to deliver improved student achievement. The best researchers and policymakers can do is to examine the preponderance of the evidence and draw appropriate conclusions" (p. 19).

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