

A Comparison Prior to and After Implementation of a
Ninth Grade Academy in East Tennessee High Schools

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ABSTRACT

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The purpose of this study was to identify student progress during the 9th grade year by evaluating student data prior to and after the implementation of a 9th grade academy in 2 east Tennessee high schools. The testing variables included the number of core credits earned, the number of elective credits earned, number of absences, and grade point average. Grouping variables included all 9th grade students and 9th grade students by gender prior to and after implementation of the 9th grade academy. Data were collected over 5 years (2005-2010). Paired-samples t-tests were used to make comparisons prior to and after the implementation of the 9th grade academy for each variable for the high schools. Independent-samples t-tests were used to make additional comparisons between gender on each variable prior to and after implementation of the 9th grade academy. An additional analysis was conducted to determine how many 9th grade students were enrolled in basic math or Algebra I prior to and after the implementation of the 9th grade academy. Based on the findings of this study, more core and elective credits were earned after the implementation of the 9th grade academy, but there was very little difference in GPA. Number of absences improved in 1 school after the implementation of the 9th grade academy and not in the other school. Additionally, there was little positive impact in Algebra I credits earned after the implementation of the 9th grade academy.

DEDICATION

This dissertation is dedicated to my parents Bob and Jureta Coppenger and my husband Mike Teffeteller. I am thankful to have parents who have always been there for me. Thank you mother and daddy for being role models that have molded me to be the person I am today. You taught me to have a strong work ethic, have self-discipline, set my goals high, and believe that all things are possible. Thank you for your love, continued encouragement, and support. I love you both very much.

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CHAPTER 1

INTRODUCTION

Congress and the Obama Administration have challenged states and school districts to set clearer, higher standards and assess student progress in more creative ways in order to prepare students for the rigors of a global economy (Quaid, 2009). The purpose of this study was to compare student data prior to and after implementation of a ninth grade academy in East Tennessee high schools. According to Stewart (2007) high school students in the United States were not prepared adequately for the challenges of the global society in the 21st century. Sloan (2009) indicated skills learned by successful high school students were (a) working collaboratively with people of diverse cultures, (b) thinking critically, (c) having the ability to problem solve, and (d) using technological skills.

Friedman (2006) outlined societal changes that impacted educational changes necessary to better prepare high school students. He noted that high school students in the United States have been challenged to compete for future jobs with students from China, India, and Brazil. Lips (2008) agreed that American graduates competed for jobs against workers from around the world. Schargel (2010) also agreed that American graduates were forced to compete for jobs against the best high school graduates from other countries; Singapore, China, and Israel were named as the job competitors. Research from Jackson (2008) indicates that more than one in five jobs was tied to international trade.

Friedman (2006) reported that the understanding of globalization increased with students when they adapted to the challenges of advanced technologies. Friedman identified blue-collar manufacturing and white-collar service jobs as occupations that would become interchangeable in the global economy. Friedman identified specialized jobs and localized blue-

collar service jobs as occupations that have not become interchangeable jobs within the global economy. Jackson (2008) confirmed that more jobs required individuals to have (a) strong technology skills, (b) ability to analyze and solve problems, (c) skill to recognize patterns and similarities, (d) ability to communicate, and (e) skill to interact with other people extremely well. Jackson referred to students in the United States “as unprepared for the demands and opportunities of a global economy” (p. 59).

According to Schargel (2010) competitiveness of the global economy forced educational change. Schargel indicated that the United States can only thrive in the 21st century if high school students graduate from high school and are prepared for the global economy. Houle (2010) agreed with Schargel that high school graduates were challenged to be prepared for the realities of the 21st century. Additionally, Houle pointed out that educators have used integration activities to provide global connectivity into the educational experience of every student. Wise (2008a) agreed with Schargel and Houle that too many high school students were not being prepared for their future while in high school and also indicated the importance of a high school diploma as a prerequisite for the majority of jobs.

Studies on the high school dropout rate across the United States indicated a legitimate reason for concern (Barton, 2006b; Berkson, 2009; Stillwell & Hoffman, 2008; Swanson, 2009; Wise, 2008a). The dropout problem has been referenced as far back as the *Nation at Risk* (1983) report, warning the United States that the educational system was in jeopardy (Pascopella, 2007). “Every nine seconds, a student drops out of school” (Pascopella, 2007, p. 32). According to Stanley and Plucker (2008) 6,829 students drop out of high schools in the United States daily. Statistics have shown more than 1.2 million high school students drop out of school every year in our nation (Wise, 2008a). Research by Wise indicated that high school dropouts are far more

likely to be tax consumers than taxpayers, get welfare, and use public health services, costing the taxpayers more. “Keeping all students in high school and graduating more young people with better skills will save millions of taxpayers’ dollars, greatly expand tax revenues, reduce crime, and improve citizenship” (Jerald 2006, p. 2). Researchers estimate that each high school dropout costs society approximately \$209,100 over the course of his or her lifetime (Levin, Belfield, Muenning, & Rouse, 2007). According to Kristen (2005) and Quint (2008) dropout prevention strategies provide students educational opportunities that better prepared them for high-tech, high-demand, high-skilled jobs.

Donegan (2008) determined that more students fail ninth grade than any other, and dropout rates peak between 9th and 10th grades. Too often many ninth grade students fail to meet the demands of high school and never graduate. A study recently conducted in a large, southeastern school district in the United States targeted 17,735 ninth grade students. Data for the study were collected over 2 years and results revealed that 6% of the students dropped out of high school (Sparks, Johnson, & Akos, 2010). Nationally only 68% of ninth grade students graduate on time (Toch, Jerald, & Dillon, 2007). According to Gewertz (2009) many ninth grade students failed to meet the academic requirements to progress to the next grade level. The ninth grade year was when more students failed courses, repeated the same grade level, and dropped out of school. Many school districts explore ways to prevent high school dropouts (Cook, Fowler, & Harris, 2008).

Balfanz (2009) concluded that middle schools impact the successful transition to high school. Transitioning from middle school to high school has been identified as a difficult process and many students have faced academic trouble. According to Donegan (2008) a successful transition to high school required a fundamental reshaping of the culture in secondary schools

and classrooms. One form of reshaping schools would be the school within a school concept (Reese, 2007). The National Association of Secondary School Principals and The Education Alliance (2004) illustrated that the concept of schools within schools can mean many different approaches. It could mean a ninth grade academy, career academies, or small learning communities, which can be an interchangeable term for academies. Research found that many school districts developed the small learning community concept of a ninth grade academy to ensure a smooth transition into high school. According to Black (2004) the ninth grade year is when students physically or psychologically withdraw from school. Therefore, Black noted a successful ninth grade year has shown to be when schools personalize the educational experience for the ninth grader.

Vail (2006) found the creation of a ninth grade academy was an educational approach to alleviate pressures of meeting federal mandates of the No Child Left Behind Act (NCLB, 2001). Important components of this legislation that have impacted high schools are adequate yearly progress in mathematics, reading and language arts, and graduation rates. By the 2013-2014 school year benchmarks to meet adequate yearly progress in mathematics and reading and language arts for high schools have been set at 100%, and the graduation rate for high schools has been set at 90% (NCLB, 2001). Research shows that students who have scored at an advanced level on academic assessments mandated under No Child Left Behind are better prepared for college and an intellectually demanding career in our global economy (Bottoms, 2008).

Even though ninth grade academies may differ in design, researchers (Cushman, 2006; Herlihy, 2007; The National Association of Secondary School Principals and the Education Alliance, 2004) have found the following similarities in the design of a ninth grade academy:

1. All ninth grade classrooms were moved to one section of the building.
2. Teachers were placed in teams.
3. The class time for English and mathematics courses was doubled.
4. All students were provided a learning strategy class.

According to Allenworth and Easton (2008) ninth grade students on-track were those who earned required numbers of course credits during their ninth grade year. These students were 3.5 times more likely to graduate from high school in 4 years than were students who were not on-track.

Statement of the Problem

Congress and the Obama administration have challenged states and school districts to set clearer, higher standards and assess student progress in more creative ways in order to prepare students for the rigors of a global economy (Quaid, 2009). To accomplish these expectations the academic success of all students, especially those in the ninth grade, would be addressed. The purpose of this study was to compare student data prior to and after implementation of a ninth grade academy in East Tennessee high schools. Data retrieved for this study included core credits earned, elective credits earned, absences, and grade point average.

Research Questions

This quantitative study was guided by the following research questions:

1. Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between ninth grade students prior to implementation of the ninth grade academy (2005-2007) and after implementation of the ninth grade academy (2007-2010) for School A?

2. Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between ninth grade students prior to implementation of the ninth grade academy (2005-2008) and after implementation of the ninth grade academy (2008-2010) for School B?
3. Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A?
4. Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students after implementation of the ninth grade academy (2007-2010) for School A?
5. Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B?
6. Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B?

Definition of Terms

For the purpose of this study, the following definitions were used:

Adequate Yearly Progress – A measure of a school’s or school system’s ability to meet required federal benchmarks with specific performance standards from year to year (Tennessee Department of Education, 2009c).

American Diploma Project – A national initiative created to ensure that all students graduate from high school prepared to face the challenges of work and college (Achieve, 2010).

Dropout Rate - The percentage of those students entering the ninth grade who have dropped out by the end of 12th grade (Tennessee Department of Education, 2009c).

Graduation Rate - A federally required benchmark that calculates the percent of on-time graduates with a regular high school diploma, General Educational Development and Special Education diplomas are not allowed to count as a regular high school diploma under regulations from the U.S. Department of Education (Tennessee Department of Education, 2009c).

Ninth Grade Academy – A separate transitional program provided for students in their first year of high school that places them with small interdisciplinary teams of teachers (National Association of Secondary Principals and The Education Alliance, 2004).

No Child Left Behind - No Child Left Behind was implemented during the 2002-2003 school year. It requires schools to have 100% proficiency among students in math and reading and language arts by 2014. They must also meet graduation and number of absences standards (Tennessee Department of Education, 2009c).

Significance of the Study

This study analyzed the implementation of a ninth grade academy in high school as a strategy to prevent dropouts. Recent studies have been conducted in Illinois, North Carolina, and

Massachusetts (Cook et al., 2008; Gewertz, 2009; Rennie Center for Education Research and Policy, 2009) on strategies to prevent potential high school dropouts. Research indicated that high school students who drop out of school are identified as being a potential high school dropout during their ninth grade year (Donegan, 2008 & Sparks et al., 2010). According to Black (2004) the ninth grade year is when students physically or psychologically withdraw from school. Therefore, a successful ninth grade year was when schools personalized the educational experience for the ninth grader. Black also indicated that student's success in middle school impacts the successful transition to high school. This study is significant in that it will add to this body of literature and bring attention to East Tennessee schools that have used preventive measures to decrease dropout rates by implementing a ninth grade academy.

Under the No Child Left Behind Act high schools have been challenged to meet federal benchmarks in reading and language arts, mathematics, and graduation rates. Tennessee's plan to meet the federal benchmarks were for high schools to meet 100% accountability in mathematics and reading and language arts and a 90% graduation rate by the 2013-2014 school year (Tennessee Department of Education, 2009a). Tennessee high schools and school districts that did not meet the federal benchmarks for 1 year were identified as target schools. These schools received additional support and assistance from the Tennessee Department of Education if they did not meet the benchmarks 2 consecutive years. If schools and districts did not meet adequate yearly progress for 2 or more consecutive years they were assigned the status of high priority (Tennessee Department of Education, 2009b). When schools were identified as high priority, they were given 2 years to improve their accountability in mathematics, reading and language arts, and graduation rate.

Limitations of the Study

One limitation of this study would be that the findings are restricted to only one school system. However, the data could provide information to school systems that are researching a ninth grade academy.

The second limitation of this study would be variations of acceptable number of absences. There could be policy changes in number of absences that took place over the 5 years of this study; however, the total number of absences prior to and after implementation of a ninth grade academy could be reviewed by other school systems of similar size if they needed research data as a comparison to their school system.

Delimitations of the Study

Creswell (2009) defined delimitation as “how the study will be narrowed in scope” (p. 106). The findings of this study were limited to two high schools located in East Tennessee. The population decreased the broadness of the study.

Overview of the Study

This quantitative study is organized into five chapters. Chapter 1 includes an introduction, statement of the problem, research questions, definitions of terms used in the study, significance of the study, limitations of the study, and delimitations of the study. Chapter 2 presents the review of literature including: (a) to provide a historical perspective of secondary education, (b) to establish the need for school reform, (c) to show the occupational outlook of high school dropouts, (d) to distinguish the impact of transitioning from middle school to high school, (e) to review factors that affect high school students, and (f) to describe the structure of a ninth grade academy. Chapter 3 outlines the methods that will be used to conduct this study including the research design, population, data collection procedures, null hypotheses, and data

analysis used in completing the study. Chapter 4 contains the presentation and analysis of data. Chapter 5 is composed of the summary of findings, conclusions, recommendations for practice, and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

The purpose of this study was to compare student data prior to and after implementation of a ninth grade academy in East Tennessee high schools. A review of the literature provided a comprehensive examination of six major areas. The rationale for reviewing these research areas was (a) to provide a historical perspective of secondary education, (b) to establish the need for school reform, (c) to show the occupational outlook of high school dropouts, (d) to distinguish the impact of transitioning from middle school to high school, (e) to review factors that affect high school students, and (f) to describe the structure of a ninth grade academy.

This literature review summarized a timeline for secondary education from the 17th century to the 21st century. Through the centuries various school reforms affecting secondary education were explored. To determine accountability measures involved in school reform the researcher examined high school dropouts and their link to the workforce. In order to effectively understand dropout rates the impact of junior high schools and middle schools on high schools was researched. Lastly, the factors that affect high school students and a strategy to assist high school students known as a ninth grade academy were reviewed.

Historical Perspective of Secondary Education

Secondary education in the United States began in the 17th century with private academies for boys who were from wealthy families. The first academy and oldest school in America was Boston Latin School founded in 1635. Academies, known as boarding schools, provided an environment renowned for maintaining high moral standards (Pulliam & Van Patten, 2007). These academies were to prepare the boys for college and trades. The curriculum consisted of English, mathematics, science, and history and was intended to assist students in

being prepared to take over the family business. Also, secondary schools were designed to address personal, intellectual, vocational, and social needs of adolescents (Encyclopedia of Education, 2002).

In 1647 a law was passed in Massachusetts that required towns with a minimum of 100 families to start a secondary school to prepare boys for college. However, the law was not always obeyed. According to Good and Teller (1973) the larger and richer towns maintained the schools more continuously.

Girls in the 18th century received a different form of education. Girls were expected to grow up, marry, have children, and take care of the home. Therefore, when girls from middle and upper class families attended school, “they were taught skills in music, painting, manners, and sewing” (University of Pennsylvania, 2010, para. 8). Additionally, girls in upper class families in Philadelphia read widely in the arts and sciences, engaged in scientific experiments, conducted historical research, and took part in intellectual conversations (Nash, 2005).

In the middle of the 18th century the need for skilled workers grew and the development of a specialized, secondary academy for boys was developed by Benjamin Franklin (Thattai, n.d.). Boys who attended the academy were from a variety of economic backgrounds. Trustees of the academy stressed the classical curriculum of basic English and accounting to better prepare them for employment. Overall, Franklin stressed the specialized academy as one that prepared boys who did not plan to go to college but rather planned to be a skilled labor worker.

A charity school for boys and girls with very poor economic backgrounds was opened by Reverend George Whitefield on the same campus as the academy.

“The charity school served boys and girls ages eight to eighteen years old. Curriculum for the boys focused on reading, writing and arithmetic, which prepared the boys for

employment in business and the mechanical arts. Curriculum for the girls was designed to teach reading, sewing, and knitting” (University of Pennsylvania, 2010, para. 4, 8).

In 1821 the first public high school in America opened in Boston, Massachusetts. The school became known as English High School and was attended by boys 12 through 18 years of age. Admission to the school was by examination. Boys who passed the entrance examination participated in a 3-year English curriculum (Encyclopedia of Education, 2002).

As public secondary schools became more common a secondary school for girls opened in 1826 in Boston, Massachusetts. However, the school closed after 2 years and another girls’ school did not open until 1857. The school’s curriculum was to train young women to teach in elementary schools (Encyclopedia of Education, 2002). In *The New American High School*, Marsh and Coddling (1999) stated, “Let the doors of the school-house, the brain factory, be open to all children; and the child once started on the career of learning, let him not find those doors ever closed against him” (p. 20).

During the latter half of the 19th century the public high school gradually replaced the private academy as the dominant form of secondary education in America (Angus & Mirel, 1999). Angus and Mirel established that the doors of opportunity opened for all those who were willing to learn and study. Therefore, the number of public high schools grew. Prior to the Civil War there were 300 high schools in America. There were no specific curriculum standards and no curricular correlation between the high schools and colleges. According to Ravitch (2000) by 1890, 95% of children in America ages 5-13 were enrolled in school and attended a few months out of the year. Less than 5% of those adolescents moved on to high school. Most children completed their formal education by age 14 in order to work full time.

With America changing after the Civil War from an agrarian society to a more industrial society, more young people were required to be educated (Kirsh, Braun, Yamamoto, & Sum, 2007). Kirsh et al. found that the high schools grew so rapidly by the late 1800s that the purpose of American high schools became uncertain among educators. Therefore, educators were divided into two groups. Traditional educators considered high school a place for college preparation and divided students into those seeking academics and those considered terminal based on their ethnicity and family background. Another group of educators considered high school a place to offer practical courses for everyone. According to Reese (1995) these new schools existed in every variety and quality and usually offered both classical and modern studies.

In 1892 the National Education Association appointed The Committee of Ten. Ten influential educators in the roles of high school principals or college professors were selected to determine the standardized structure of American high schools. The committee recommended a rigorous academic curriculum for all students and to extend the years of schooling past age 13 (Daggett, 2005). The standardized curriculum was developed as 4 years of high school with a preparatory curriculum for college. Many public secondary schools expanded course offerings to art, music, physical education, mechanical drawing, and teacher training.

After The Committee of Ten developed the standardized structure of American high schools in 1893, the Carnegie Foundation for the Advancement of Teaching established a standardized unit system for college entry based on the amount of time a student had studied a specific subject during high school. The minimum expectation for eligibility to enter college was the completion of 14 units of academic course offerings over a 4-year time period (Carnegie Foundation for the Advancement of Teaching, 2007).

Conant, a 20th century advocate of secondary education, described the comprehensive high school in the United States as “a great engine of democracy,” (Conant, 1959, p. 11).

Conant’s concept of a comprehensive high school was to provide a curriculum full of mathematics, science, languages, and vocational training. Therefore, the early comprehensive high school resembled the common school of the early 19th century, which offered academic and practical studies. In 1918 the Commission on the Reorganization of Secondary Education issued *The Cardinal Principles of Secondary Education*. The commission focused on the objectives of secondary education and defined the comprehensive high school as having diverse programs for a heterogeneous student population and the unifying function of developing common understandings among the diverse population. The *Cardinal Principles* report identified the high school curriculum as the means for achieving both the unifying and specialized curriculum requirements (Wraga, 1998).

The *Cardinal Principles* developed objectives to aid in reorganization of secondary education, which shifted from college preparation to comprehensive studies for students 12 to 18 years of age for a period of 6 years. Research indicated the Commission on the Reorganization of Secondary Education identified three reasons to shift the curriculum from college preparation to a comprehensive high school curriculum:

1. High schools had to respond to social and economic trends, particularly industrial education.
2. The high school enrollment had become larger and more diverse.
3. The high school curriculum had become outdated (Ravitch, 2000).

The committee’s objectives were on health; basic academic subjects of writing, reading, oral and written expression, and math; careers; community; freedom to enrich the body, mind, spirit, and

personality; and personal responsibility. In summary The Cardinal Principles identified a standardized high school curriculum and emphasized that a comprehensive high school would remain the standard type of secondary school in the United States. According to Ornstein and Levine (2008) American education institutions should be a set of articulated institutions that function together, not in isolation.

Early wars influenced the country's secondary educational system. World War I influenced the comprehensive high school by the introduction of tracking (Marsh & Coddling, 1999). The tracking system divided students into those capable of going to college and those who were not interested in going to college. Marsh and Coddling indicated those not going to college would take the general track of required courses. Marsh and Coddling described the tracking system as corrosive and destructive in *The New American High School*.

After World War I ended and our nation became involved in a second war, Perdeu (1952) noted that World War II caused a decline in school enrollment as many boys quit school to enlist in the armed services. School employees also quit to enlist in the armed services or left the educational occupation to work in defense factories to build planes, ships, and weapons (Jensen, 2010). Perdeu investigated the effects of World War II and found that 70% of the remaining schools had increased an emphasis in science, mathematics, physical education, and first aid and safety.

Toward the end of World War II the Educational Policies Commission released a highly practical curriculum similar to the Cardinal Principles (Encyclopedia of Education, 2002). After World War II, in 1945, enrollment in public schools was 25.1 million students and the number of students who graduated from public high schools was 12.8 million (Reese, 2005). By the 1960s ideology held that poor schooling was not the main problem of education but rather the problems

that children brought to the schools for which the educational system had to compensate were the primary difficulties (Morton, 2002). Therefore, in 1965 President Johnson signed the Elementary and Secondary Education Act (ESEA), which was the first federal education law to provide funding for public education. The purpose of the act was to improve academic achievement among disadvantaged students by allocating funds for instructional materials and supplies to support educational programs, promote parental involvement programs, and provide resources for professional development for educators. President Johnson succeeded in the effort to provide federal aid for elementary and secondary schools by awarding federal money to the states based on the number of children from low socioeconomic homes. However, most of the federal aid went to preschools and elementary schools rather than high schools. If a student was labeled disadvantaged in elementary school, the resultant label of being disadvantaged followed the student into high school along with the federal compensation (Marsh & Coddling, 1999).

On August 26, 1981, Terrell Bell, Secretary of Education under President Reagan created the National Commission on Excellence in Education to scrutinize the quality of education in the United States. The National Commission on Excellence in Education (1983) was developed because of Secretary Bell's deep concern of the perception that something was inconsistent in our nation's educational system. Secretary Bell informed the commission that a specific focus of the study would be on teenage youth. He assigned the commission responsibilities to (a) assess the quality of teaching and learning in public and private schools; (b) compare and contrast the curricula, standards, and expectations of the educational systems of the United States with other countries; (c) study college admission standards and course requirements; (d) describe educational programs that prepare students for the college entrance examination; (e) review the major changes in American society that significantly affected educational achievement;

(f) receive advice on efforts to raise levels of quality and academic excellence; (g) define the problems and barriers in attaining greater levels of excellence in American education; and (h) develop a report and make recommendations for action to be taken (National Commission on Excellence in Education, 1983).

The report developed by the commission became known as *A Nation at Risk*. The National Commission on Excellence in Education began the report with the following:

All, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided can hope to attain the mature and informed judgement needed to secure gainful employment, and to manage their own lives, thereby serving not only their own interests but also the progress of society itself. (p. 8)

The commission identified the United States as being at risk. They wrote:

The educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people. What was unimaginable a generation ago has begun to occur--others are matching and surpassing our educational attainments. If an unfriendly foreign power had attempted to impose on America the Mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. (p. 8)

In their report, the commission noted that high school students who do not possess the levels of skill, literacy, and training essential to this new era will be ineffective participants in the global economy. For our country to have a thriving workforce our students must be able to reach

some common understanding on complex issues and be well-educated. The report described four aspects of the educational process that needed to be changed: content, expectations, time, and teaching. First, the content was referred to as curriculum and in secondary schools it had become regarded as a mixture of courses with no cohesive guidelines. Twenty-five percent of credits earned by students were in lower level classes such as physical education, remedial English, and remedial mathematics. Second, expectations were defined by the commission as the level of knowledge, abilities, and skills the high school graduate should possess. The commission found expectation deficiencies with the decline of nightly homework, few mathematics and science requirements, a large number of elective credits accepted for graduation, minimal numbers of assessments required, limited college entrance requirements, and poorly written textbooks. Third, the report revealed time at school was less when compared to other nations, time was spent ineffectively at school and on homework, and teaching study skills on how to use time was minimal. Fourth, the Commission reported that teacher preparation programs needed substantial improvement and that there was a shortage of teachers in key academic fields (National Commission on Excellence in Education, 1983).

The high school recommendations that resulted from *A Nation at Risk* were for high schools to increase the number of credits required for a high school diploma, offer more academic courses and higher standards, offer some type of technology course, and spend more time in school. Ravitch (2000) agreed with the *A Nation at Risk* report that America was at risk and schools were in need of educational reform. She identified specific academic improvements in high school such as English increased to 4 years; 3 years for mathematics, science, and social studies; and a half year of computer science. If students were college-bound, they were to take 2 years of foreign language (Ravitch, 2000).

In September 1989 the first National Education Summit between President George W. Bush and the nation's governors was held to focus on how to improve the nation's educational performance. Increasingly competitive global economies make education more essential now than at any time in our past. *A Nation at Risk* warned that the skills and knowledge of the United States workforce would have to improve dramatically in order for the nation to remain internationally competitive (National Commission on Excellence in Education, 1983).

Historically education has been a state and local function, but with the decline of the quality of our nation's educational system the time had come for federal involvement. President Bush, Democrat and Republican governors, Cabinet members, and a few high-level administrative officials divided into six working groups during the summit. The groups developed a national agreement on educational reform.

Following the National Education Summit, six national education goals were adopted and became known as Goals 2000: Educate America Act, which was voted into law on March 31, 1994. The six goals were for (a) all children to start school ready to learn; (b) high school graduation rate will increase to at least 90%; (c) all students will become competent in challenging subject matter; (d) all students will be first in the world in mathematics and science; (e) schools will be safe, disciplined, and free of drugs and alcohol; and (f) every adult will be literate by the year 2000 (Vinovskis, 1999). Congress later adopted two additional education goals to be accomplished by the year 2000, which were for schools to promote parental involvement and participation and for teachers to have the knowledge and skills they need to be successful in the classroom (National Education Goals, 1994).

Shortly after the announcement of the national goals to the public, The National Education Goals Panel (1999) was developed. Responsibilities of the panel were to report

national and state progress toward the goals. Kagan and Rubin (1998) announced in a report for the National Education Goals Panel that 12 states had reduced their high school dropout rate and 50 states had increased a proportion of scores on Advanced Placement examinations that were high enough for students to qualify for college credit. Additionally, they reported that 39 states had increased the percentage of high school graduates who immediately enrolled in college after high school. Although the panel found there had been educational progress in some states, there was still much that needed to be accomplished (Kagan & Rubin, 1998).

By the end of the 20th century the general curriculum track for high school students became less demanding with weaker expectations for students across the nation (Morton, 2002). Although the traditional model of 9-12 education still existed in some form in most states, students in the 21st century need to be prepared in high school for increasing demands of higher education institutions and the changing workplace (Daggett, 2009). Therefore, a reauthorization of the Elementary and Secondary Education Act of 1965 became known as the *No Child Left Behind Act* signed by President George W. Bush on January 8, 2002. According to Ginsburg and de Kanter (2002) in the publication *No Child Left Behind: A Desktop Reference* the act was to reform education and change the culture of schools. The act contained four key factors. First, the act was designed to increase student performance by implementing annual assessments in grades three through eight. The assessment data would be disaggregated for students by poverty levels, race, ethnicities, disabilities, and limited English proficiencies to ensure that no child was left behind. Second, the act provided flexible decision-making for local and state levels on federal spending within school districts. Third, parents would have the choice to transfer their child from a school that was low-performing 2 consecutive years to a higher-performing school. Fourth,

federal funding was targeted to be used for improved teaching methods and programs to increase student learning and achievement.

President Obama proposed an overhaul of the current No Child Left Behind Act. Congress passed the American Recovery and Reinvestment Act, which provided \$77 billion for educational reform in elementary and secondary education and \$30 billion to address college affordability and higher education improvement. President Obama said the nation's competitiveness and the path to the American Dream would be based on providing every child with an education that would enable them to succeed in the global economy that is predicated on knowledge and innovation. Schools were highly encouraged to offer higher academic standards and curriculum to foster critical thinking, problem solving, and innovative research-based strategies that include state-of-the-art technology. Furthermore, students have been challenged to be prepared to graduate from high school and attend at least 1 year at a job training school or a higher education institution to be better equipped for the 21st century economy (White House, 2010).

High School Reform

Over 25 years ago Edmonds, a leading researcher in school reform, developed an effective schools model. Edmonds (1982) was convinced that schools could be changed to become effective schools for all students. He and his research colleagues found that all children can be taught the intended curriculum and held to high academic standards that enable them to achieve successfully at the next grade level if schools are effective.

Edmonds's effective schools model contained the following five characteristics: (a) strong administrative leadership, (b) all school personnel know the school's mission, (c) safe and orderly climate conducive to teaching and learning, (d) all students expected to obtain at least

minimum mastery, and (e) student achievement used as basis for program evaluation. The fifth characteristic was extremely important in the model as administrators compared their schools effectiveness using mid-level students against high and low level students. Although research of Edmonds' effective schools model was originally conducted in elementary schools, Rutter (1982) conducted research in secondary schools and developed the same conclusions as Edmonds on effective schools.

Visher, Emanuel, and Teitelbaum (1999) reviewed research and literature for the U. S. Department of Education on reform strategies to promote student achievement and curricular alignment. Derived from the research, 10 key improvement strategies for high schools were identified:

1. Raise academic standards and expectations;
2. Create small learning environments enabling students and teachers to work together;
3. Structure learning around careers and students' interests;
4. Promote student achievement by enhancing educators' professional development;
5. Link students' out-of-school learning experiences to classroom learning;
6. Provide counseling to encourage in-depth college and career awareness;
7. Recognize the school day into flexible, relevant segment;
8. Assess students' progress by what they are capable of doing;
9. Forge partnerships with 2 and 4-year postsecondary institutions; and
10. Forge active student support alliances involving educators, employers, parents, and community (Visher et al., pp. 1-2).

Marzano (2003) reviewed research on school reform and found that a student's achievement was influenced by the school, the teacher, and the student's actions. Marzano

identified highly successful schools as those that had “(a) a standard and viable curriculum, (b) challenging goals and effective feedback, (c) parent and community involvement, (d) a safe and orderly environment, and (e) a staff that portrayed professionalism and willing to be a team player” (p. 1).

In 2000 the Bill and Melinda Gates Foundation began a major commitment to high school reform. The foundation advocated improving education was the best way to create equal opportunity for all. The foundation gathered information from high schools across the United States that had demonstrated academic improvement on annual assessments and found highly successful high schools share common elements. Common elements found within successful high schools included (a) a common focus on research-based goals; (b) high student expectations; (c) a small, personalized learning environment; (d) respect for all; (e) parent and community involvement; and (f) technology was used in the classroom (Bill and Melinda Gates Foundation, 2005).

High schools have been challenged, and reform studies have continued. Goodwin (2000) reported findings from the College Board that found students who do not believe their schoolwork is relevant and who are not engaged are at much higher risk of dropping out of high school. Engaged students not only attend school more but also are likely to get more out of their time in school because they are more eager to learn, seek greater opportunities, and persist in the face of difficulty (Voke, 2002).

Several national studies attempted to diagnose problems with high schools in our nation (Noguera, 2004). A few studies Noguera reviewed on transforming high schools were from the work of the Annenberg Foundation, Michael Cohen, and William Ayers and Michael Klonsky. Noguera found many of the high schools were too large, there was a lack of personalization

toward students, students were bored in school, and students were not given support and encouragement by teachers. Noguera concluded that lasting improvements in teaching and learning rarely occurred because of teacher turnover.

Henry, Supovitz, and Perda (2004) conducted a longitudinal study on the America's Choice program with schools in Rochester, New York. The America's Choice program was a reform model that focused on stringent standards. The components of the model were for teachers to be proficient in standards-based instruction; all schools be reorganized to engage all students; and for all students to be able to read at or above grade level, write logically, and reason mathematically. The ultimate goal of the America's Choice program was to prepare students to graduate from high school and be ready for rigorous college coursework. Results of the study showed that implementation of the America's Choice program lowered the achievement gap and had a powerful effect on student performance.

Daggett (2004) conducted research with 30 high schools across the country on how they achieved high academic performance with all their students. He concluded there were three consecutive stages of change a school would go through in order to achieve high academic performance. The first stage was to convince the educators, parents, and community why there was a need to change:

“Schools in the study found a general consensus that they were in need of fostering intellectual development in their students; had a need to prepare students to be informed, caring, and productive citizens; and needed to prepare students for higher education and the workplace” (Daggett, 2004, p. 2).

The second stage would be to determine what to change through the support of data. This stage would incorporate the vision of the school, what would be taught, and the strategic plan on how

to deliver the instruction. Third stage would be how to go about making the change. Daggett found that these educational changes were in direct relationship with societal needs.

A survey of 1,487 recent high school graduates, 400 employers, and 300 college instructors was given by Kristen (2005) to determine the performance of high school students following graduation. Kristen determined that a large number of high school graduates were not adequately prepared while in high school and were not ready for postsecondary education or the workplace. Her research revealed that reform at the state level and mandated to the local level ensured that all high school students were well-prepared for postsecondary education or work. She indicated the key focus at the state level was to reduce high school dropout rates and improve the transition from high school to postsecondary school. In order to meet these transitional demands rigorous academic coursework related to high expectations for high school students was necessary (Kristen, 2005).

Wise, a leading expert on high school reform, wrote a book that informed the nation that the American high school was in a crisis. Wise (2008b) explained that every year more than one million students drop out of high school and do not receive a high school diploma. They were unprepared for postsecondary education and only had the opportunity for unskilled work. Further, he explained that 70% of high school students graduated in 4 years. Wise (2008b) identified seven key factors that were needed to expand high school reform:

- (a) implement a rigorous curriculum;
- (b) increase personal attention toward students;
- (c) tailor specific programs for students that need the help;
- (d) create alignment of national standards to college and work readiness;
- (e) promote innovation, research, and data use;
- (f) establish meaningful high school accountability; and
- (g) ensure highly effective teachers and principals (p. 95).

Mariotti (2009) noted that redesigning the high school experience has shown that students were taught 21st century skills. These skills, known as soft skills, encompass problem solving, decision making, and independent thinking. A teacher's best teaching strategy incorporated soft skills with academics. Students prepared with the 21st century skills would be prepared for college as well as employment. Therefore, it is necessary to have meaningful graduation requirements that address the skills necessary for young people to earn a living and build a better world (Mariotti, 2009).

Some of the findings from *A Nation at Risk* contained similar academic expectations as No Child Left Behind. An important part of No Child Left Behind was the adequate yearly progress accountability component with an academic focus on mathematics and reading and language arts. Provisions in the act required states to develop adequate yearly progress performance goals for all students including those in specific groups such as economically disadvantaged students, students with disabilities, English Language Learners, and students from various ethnicity groups (Hoy & Hoy, 2006). By 2013-2014 all students in high school, including the specific subgroups, are expected to achieve 100% proficiency or above on mathematics and reading and language arts assessments. Additionally, by 2013-2014 all high schools are to have a 90% graduation rate to meet adequate yearly progress (Tennessee Department of Education, 2009c).

No Child Left Behind advocated that high schools and school districts that failed to meet adequate yearly progress proficiency goals for mathematics and reading and language arts for 2 consecutive years would be identified as needing school improvement, and parents would have the option to transfer their child to another school in the district. A high school not meeting adequate yearly progress for 3 consecutive years remains in school improvement. Parents would

be offered the option to transfer their child to another school in the district, and the district would provide extra educational services to students outside the normal day if requested by parents. High schools that remain in improvement for additional years are subject to corrective action and complete restructuring of the school (No Child Left Behind, 2001).

Roderick challenged the assessment accountability of No Child Left Behind in her high school reform report. Roderick (2006) stated in her report,

There has been significantly less research on the effects of school-based accountability initiatives such as No Child Left Behind. So, in the end, it is unclear whether test-based accountability will lead to higher graduation rates and test scores in high school and whether these will actually translate into other measures of performance. Therefore, test-based accountability will not, in fact, lead high schools in the right direction and will most likely take our eyes off the ball. (p. 47)

Researchers Mariotti (2009), Marzano (2003), and Noguera (2004) have attempted to identify goals of high school reform that did not relate to academic achievement or assessment accountability like No Child Left Behind. They focused on successful schools, the organizational structure of schools, and the interpersonal skills required for the global economy. Vail (2006) proposed high school reform and technology together played an important role in the lives of many students. She showed technology was a powerful instructional tool to enhance communication skills and serve as a motivator for high school students who were at-risk to drop out. Therefore to impact a student's educational experience, technology is a clear tool to use in high school reform (Vail, 2006).

Achieve (2010), an education reform organization, researched high school alignment needs for the nation's high schools through a research project known as the American Diploma

Project. The American Diploma Project described an effective high school with standards aligned to postsecondary and workplace expectations, a required college and work ready curriculum, revised assessments to serve as readiness tests for college and 21st century jobs, and accountability for student success. Achieve's research found that high schools have not adequately prepared students for college and 21st century jobs and aggressive state action would need to address the expectations gap.

Lewis (2010) explained that students in the United States did not compare favorably with students from other countries. He noted that the United States faced a dropout crisis and too many students were not graduating from high school. Lewis reported that President Obama and his administration had proposed a reauthorization of No Child Left Behind. President Obama's proposed reauthorization revised the 2014 adequate yearly progress benchmarks with a goal to better prepare students to be college and career ready.

High School Drop Outs Occupational Outlook

The challenges faced by our nation's high schools are complicated and complex and expectations have never been greater. Society expects high schools to prepare all students for success in college or a workplace that requires high level skills (Quint, 2008). Skills students are prepared with for college or the workplace may change with societal changes. Therefore, was it enough to have just closed achievement gaps?

A report by Barton examined the abilities and qualities needed to enter the work force after high school graduation. He found there had been a need for high school students to complete a rigorous academic curriculum to be prepared for postsecondary school and to secure those higher paying jobs. Barton (2006a) confirmed that more than two thirds of new jobs required some form of postsecondary education, and the percentage was growing rapidly.

Bridgeland, DiLulio, and Morison (2006) conducted research with 467 young people who identified themselves as high school dropouts. The authors found that students dropped out of high school because of boredom, failing grades, high absenteeism, too much freedom in school, lack of parental involvement, and the need to get a job to help the family.

Additionally, the authors found that dropouts were more likely to be unemployed, live in poverty, receive public assistance, become incarcerated, maintain an unhealthy lifestyle, and have children who become high school dropouts. They discovered on average high school dropouts earned \$9,200 less per year than high school graduates and about \$1 million less over a lifetime than college graduates (Bridgeland et al., 2006).

Musgrove (2007) conducted research on the significant challenges of high school students. She found that educational leaders had been concerned with high school students not being adequately prepared for higher education or the work place. Other high school challenges Musgrove described were the following:

(a) America had a steady high school dropout rate of nearly 30% and the rate was significantly higher for Hispanic and African Americans; (b) dropouts were far more likely to become incarcerated, suffered poor health, and had shorter life spans than high school graduates; and (c) more than two thirds of new jobs required some form of postsecondary education (p. 3).

The Education Commission of the United States (2007) gathered information on dropout prevention from high schools. The commission indicated students who do not graduate from high school are unlikely to attend a postsecondary institution. According to research data supplied by the U. S. Chamber of Commerce, 90% of the fastest-growing jobs will require postsecondary education. Reviewing economic opportunities, the United States Chamber of Commerce found

that students who drop out of high school are an increased cost to society. The chamber also indicated dropouts were more prone to be jobless or have low paying jobs, which led them to seek Medicaid, food stamps, and housing assistance (Levin et al., 2007). Included in the report was research from the Alliance for Excellent Education (2006) which indicated that three out of four inmates in state prisons, nearly 59% of federal prisoners, and 69% of jail inmates were high school dropouts. Research concluded that the lifetime economic benefit per expected high school graduate provides on average approximately \$209,000 economic benefits to the public.

Swanson (2007) conducted research regarding high school dropouts and how they affected the economy. His general findings on how the economy was affected was similar to those of Bridgeland et al. (2006), Levin et al. (2007), and Musgrove (2007), but the statistics differed. Swanson determined through his research that students who drop out of high school earn annually approximately \$19,400 which is below the poverty level at \$19,971 for a family of four based on federal government standards. He explained that students who graduate from high school with no further educational training earn approximately \$27,500 annually. Swanson found that students who lack further education after high school do not find those steady, successful white-collar jobs but rather find those blue-collar jobs. Construction work was considered blue-collar along with positions in the service industry.

Olson (2007) compiled data from Achieve and the Educational Research Center on high school students and the workplace. Achieve (2010) maintained that there are jobs for students after graduation that do not require high skills or additional education beyond high school. However, Olson identified students who drop out of school as having difficulty getting a job.

In contrast she found research that required students to complete high school and take additional education or training following high school to acquire employment. Furthermore, the

analysis identified students receiving a high school diploma as having the advantage of finding a good job with a reasonable salary. She found high school students who completed advanced levels of mathematics secured high-demand, high-wage jobs following graduation. Olson (2007) identified the following skills for employment success after high school (a) read with comprehension, (b) write persuasively, (c) perform oral presentations, and (d) exercise teamwork.

Wagner (2008) researched several hundred businesses to learn whether U. S. high school students had been taught the skills necessary for 21st century careers because the workplace had changed profoundly with global competitiveness. Wagner found seven survival skills students mastered in order for them to be able to thrive in the workplace following graduation:

1. Ability to perform critical thinking and problem solving.
2. Collaboratively work with others.
3. Flexible and the ability to adapt.
4. Ability to take initiative and create entrepreneurialism.
5. Perform effective oral and written communication.
6. Skills to access and analyze information.
7. Be inquisitive and creative.

Bottoms conducted research in 2008 on high school graduates. Bottoms (2008) stated that, “One in four American students does not graduate from high school on time, if at all. Many students are not challenged and cannot relate their coursework to their lives” (p. 16). He indicated there were large numbers of students who graduated from high school and entered college but did not receive a degree. According to findings employers seek entry-level employees with adequate reading, writing, and mathematics skills. Additionally, Bottoms’ found

that high school graduates seeking employment should have the ability to solve problems, ability to think critically, have the capability to work in a team, and exhibit a strong work ethic.

In 2008 The American Society for Training and Development, The Conference Board, Corporate Voices for Working Families, and the Society for Human Resources Management surveyed 217 employers on workforce readiness. According to the survey sizable gaps were found in the lack of reading comprehension, writing, and math. In order for high school graduates to find employment during the recession and when the economy improved, they must have been prepared with basic and applied skills during high school. Also, the results of the survey found that high school students need to be prepared for postsecondary education and have the ability to transition into the career pathway (Conference Board, 2009).

When compared with other countries, the United States ranks 13th in the number of high school dropouts (Wise, 2008a). Wise found that 90% of high paying jobs required additional education following high school. He also found that nationally more than one million high school students drop out of school yearly. According to Wise high school dropouts are more likely to pay fewer taxes, use government assistance, and commit crimes. Ultimately, over a high school dropout's lifetime the cost to society would rise over \$200,000.

Research published by the National Center for Education Statistics (2009) for the United States Department of Education calculated the nation's dropout rate for 2007 at 9%. The report indicated there was a lower dropout rate for Whites and Blacks when compared to Hispanics. Other factors included in the report were the percentage of high school dropouts based on the last grade attended, dropouts compared to their families' income level, and dropouts' employment status. The National Center for Education Statistics found 21% of dropouts occur before the ninth grade, 17% between the 9th and 10th grades, 23% between the 10th and 11th grades, and

39% between the 11th and 12th grades. The research indicated that 56% of high school dropouts were employed, 11% were unemployed, and 33% had never been in the workforce. The National Center for Education Statistics compared dropouts to the level of income of their family and found those with the lowest family income ranked the highest.

In 2009 Lewis reviewed research that had been completed at the Brookings Institution on middle-skill jobs. Skilled construction trades, health care, computer specialist, and transportation jobs are examples of middle-skill jobs. Results in the report indicated that middle-skill jobs required some form of education following high school graduation. Middle-skill jobs were reported as 48% of our nation's employment. The average American who graduated from high school and was employed in middle-skill jobs from 1997 to 2005 received an increase from 10% to 23% earnings (Lewis, 2009).

Carnevale, Strohl, and Smith (2009) determined that the current job markets required employees with a high school diploma and some postsecondary education or occupational training. The researchers found the number of workers with some postsecondary exposure would increase by 3% between 2000 and 2020. They also found more than two thirds of the nation's students go to postsecondary institutions, and more than half a million students never earned a postsecondary degree within 8 years of high school graduation.

Researchers for the United States Department of Education in the division of the National Center for Education Statistics (2009) found that every 29 seconds a student dropped out of high school, resulting more than one million students a year. Additionally, the researchers found these students had lower occupational aspirations. However, for dropouts who obtained employment their work was in unskilled jobs at lower pay rates with little opportunity for advancement. Research indicated with the demand for highly skilled workers even the entry level jobs required

a minimum requirement of a high school diploma. Lastly, research showed dropouts were more likely to have poor health, live in poverty, receive government assistance, and become a single parent.

Impact of Middle Schools on High Schools

The typical high school follows a 4-year sequence that spans grades 9, 10, 11, and 12. However, as early as the 1920s and the 1930s the junior high school concept emerged with grades seven, eight, and nine. Junior high schools were still in existence across the United States until the middle school concept began to replace the junior high school concept in the 1960s. The middle school concept focused on grades six, seven, and eight.

According to Forte and Schurr (1993), the junior high school and the middle school were both student-centered. Another similarity the authors found in junior high school and middle school was for students to have the academic ability to be successes in high school. However, the authors found several differences in the junior high school and middle school concepts.

“Junior high schools were characterized by having (a) competition among students, (b) cognitive development, (c) mastery of concepts and skills in separate disciplines, (d) subjects offered 1 semester or 1 year, (e) after school programs, (f) study hall time for counseling, and (g) athletics around the interscholastic concept” (Forte & Schurr, 1993, p. 31).

“The middle school concept was characterized by having (a) collaboration among students, (b) affective and cognitive growth, (c) creative explorations and experimentation of subject matter, (d) varied length of time in courses, (e) offers high interest coursework, (f) utilize teacher-oriented counseling, and (g) athletics around the interscholastic concept” (Forte & Schurr, 1993, p. 31).

Qualitative data on the challenges of student teaching in junior high schools or middle schools versus high schools were collected by Maloy and Seidman (1999) from prospective educators enrolled at the University of Massachusetts Amherst. The authors found that junior high schools or middle schools were considered less challenging intellectually through not teaching subjects at advanced levels than were high schools. Sadly, Maloy and Seidman noted that “Many junior high schools or middle schools had students move from class to class, but the courses often created a fragmented learning experience for the students” (p. 36). Additionally, the authors found that most students in junior high schools or middle schools were in a smaller building with fewer classmates in a class, while most students in high schools were in a larger building with larger class sizes. Moreover, the junior high school concept was defined as a scaled-down version of high school and the middle school concept was defined as a concept of teams for the purpose of bonding and developing relationships. A seamless transition from the middle years to the high school years was not evident in the research.

Researchers Juvonen, Le, Kaganoff, Augustine, and Constant (2004) concluded that the transition from a junior high school concept of grades seven, eight, and nine to a middle school concept of grades six, seven, and eight was inconclusive. They concluded that society created pressure on school districts to separate the adolescent age student from students who are elementary age and students who are high school age. Scientific evidence did not support the adolescent student being separated from the elementary student because of the transition problems that can affect development and academic progress (Juvonen et al., 2004). Their findings also showed cooperation between all grade levels better prepared students for graduation. They agreed that with high school, higher student expectations, effective discipline,

student encouragement, and promotion rather than retention for middle school students impacted their high school years.

Mizelle (2005) agreed with Juvonen et al. (2004) that the transition from middle school to high school was crucial and impacted a student's high school years. According to Mizelle when middle school and high school teachers worked together the transition became much easier for students. When eighth grade teachers vertically teamed with the ninth grade teachers the middle school teachers reinforced a challenging and supportive instructional program to ensure a smooth transition to high school. Another teaching strategy used to ease the students' anxiety from middle school to high school was to bridge activities between the two schools as one. Additionally, Mizell identified detailed information to middle school students about high school course offerings and the involvement of parents as important factors that impacted the successful transition from middle school to high school.

In 2006 the National Association of Secondary School Principals (NASSP) along with The Education Alliance emphasized that successful middle schools created academic excellence goals, developed developmentally appropriate curriculum, and were socially equitable. The main focus of middle schools strived for a student-centered environment by personalizing programs, providing support services, and intellectually challenging students. NASSP (2006) indicated the task of middle school reform would be difficult because middle schools were pulled between the philosophy of elementary schools and the demands of high schools. The association noted that when middle schools used rigorous courses aligned with high schools the student transition was much easier.

Horn (2006) found that junior high schools and middle schools had the same characteristics of time constraints, philosophical issues, and financial demands. Furthermore,

Horn found distinctions between the junior high concept and the middle school concept as Forte and Schurr did in 1993. Whether the school was a junior high that served grades seven, eight, and nine or a middle school that served grades six, seven, and eight, the schools' administration determined the configuration of the school to best fit their student body needs that would lead to high school success.

In 2007 a scientific polling system was used with 1,814 students in grades seven and eight by the National Association of Secondary School Principals (NASSP), Phi Delta Kappa (PDK) International, and the Lumina Foundation for Education. The goal of the survey was to establish an understanding of how well middle school students felt they were prepared to transition to high school. The survey results indicated 84% of the middle school students felt they were prepared to succeed in high school academically, but only 32% of the middle school students felt they had enough information to select the appropriate high school classes that would prepare them for their future (Bushaw, 2007).

Balfanz (2007), researcher for the Center for Social Organization of Schools at Johns Hopkins University, collected over a decade of work based on results from research in middle schools. The research was completed with low-income students in grades six, seven, and eight in more than 30 communities. Balfanz concluded that students in middle school faced developmental changes associated with early adolescence along with new educational experiences. He found that middle school students lacked strong reading comprehension and mathematical skills needed to be successful in high school. He also found that when middle school students were engaged in their coursework and intellectually challenged through eighth grade, they were more prone to be successful in high school. His research showed that for every 100 sixth grade students who failed math or English only 11% of the students graduated from

high school on time and only 27% graduated within 2 extra years. The research showed that content taught in the middle school provided an effective bridge to high school.

Additional research was conducted by Balfanz in 2009. He compiled field experience data collected in more than 30 community middle schools housing grades six, seven, and eight. Research indicated a consensus in all the middle schools regarding the importance of their role in helping develop potential high school graduates. Balfanz (2009) identified four common factors found in middle school students that lead them to become high school dropouts: (a) high absenteeism, (b) multiple discipline referrals, (d) failing math or English in the sixth grade, and (e) failing multiple courses throughout middle school.

In conclusion, Balfanz wrote:

A student's middle school experience is critical to his or her life's chances. It is during the middle grades that students either launch toward achievement or slide off track toward a path of frustration, failure, and, ultimately early exit from the only secure path to adult success. (p. 13)

Factors That Affect High School Students

The high school student of the 21st century faces higher standards and the expectation that all students will graduate from high school. What does not change is the factor that a specific number of credits have to be earned before a student is eligible to graduate. Following high school graduation a student's high school grade point average was used as a criterion for college acceptance. Factors that more specifically affected the high school years were mathematics courses and number of absences.

Mathematics

As the United States strived to improve student performance in mathematics, it looked at the highly regarded mathematics program of Singapore. Singapore's students scored the highest in the world in mathematics proficiency on the past three Trends in International Mathematics and Science Studies assessments that are given annually (Leinwand & Ginsburg, 2007). One of the most significant differences between Singapore and the United States was curriculum alignment (Leinwand & Ginsburg, 2007). Leinwand and Ginsburg found that the United States, unlike Singapore, had mathematical textbooks, local curriculum, state curriculum, and state tests that are not parallel. These findings created a disconnect in the classroom and frustration for students with weak mathematical skills.

Basic math fractions and Algebra represented the most subtle, powerful, and mind-twisting elements of high school mathematics (Steen, 2007). Steen explained that for mathematics to have made sense to students, teachers focused on the interplay of numbers and words. She stated, "Algebra was the threshold for high-paying jobs and the prerequisite for postsecondary education" (p. 10).

The study *Closing the Achievement Gap in Silicon Valley* by the Noyce Foundation (n.d.) gathered information on student placement in Algebra I from nine school districts in the Bay Area of California over 5 years. The foundation found that slightly more than half of the 2,000 students studied took Algebra I during their eighth grade year, but repeated Algebra in ninth grade. Even 35 % of the eighth grade students who passed Algebra I repeated the course during their ninth grade year. According to the foundation the students repeated Algebra in the ninth grade because of (a) counselor recommendations, (b) standardized test scores, (c) poor

self-esteem of student as a failure, (d) parental pressure for greater success, and (e) ethnic and gender bias.

Michigan had thousands of high school ninth graders failing Algebra I. The failure rate for the 113,000 ninth grade students is estimated between 20% to 30% (Higgins, 2008). Higgins reviewed research of Shakrani that found ninth grade students can learn Algebra. She also reviewed the Michigan assessment scores and found that Fraser Public Schools had an 84% passing rate, which coincided with Shakrani's research. Higgins also researched strategies that were being implemented with ninth grade students in Michigan and found Roseville School District hired Algebra I coaches. She discovered at the end of the school year Roseville only had 22 ninth grade students who failed Algebra I.

Ullman (2010) researched the gender gap in high school mathematics between boys and girls. She reviewed the National Association of Educational Progress (NAEP) in 2004 and found a small difference in scores between males and females in mathematics (males = 308 and females = 307). The Standardized Aptitude Test (SAT) in 2004 showed a difference in mathematic scores at 518 for males and 497 for females. Ullman (2010) found that there was less than 1% difference between boys and girls on mathematics performance in NAEP for 2007. Murphree and Wilder (2007) agreed with Ullman that there was little difference in the academic gender gaps in mathematics. Murphree and Wilder found that females made gains in the area of mathematics at the beginning of the 21st century, but societal acceptance was still dominantly male.

Number of Absences

Thorton (2009) conducted comparative research on two schools with a ninth grade academy and two schools without a ninth grade academy. She found that the two schools that

had a ninth grade academy showed little improvement in student absences. The two schools that did not have a ninth grade academy had very little difference in student absence rates compared to the two schools that had a ninth grade academy.

Sigler reviewed the research on ninth graders from several researchers and found that smaller settings had better student attendance. She found that the researchers all agreed that a ninth grade academy has less absenteeism than larger school climates. The school size is a factor that made students have a greater sense of belonging (Sigler, 2008).

The Ninth Grade Academy

Cushman (2006) described the configuration of a ninth grade academy as one where all ninth grade students occupy the same physical space in the school building. She explained that having all ninth grade classrooms in one location allowed students to find their classrooms easier and encouraged closer student bonding. Also, she explained there were four teams with a teacher from each of the four main academic subjects who were responsible for the well-being of an assigned group of ninth grade students. The team concept provided more structure and support to students on a daily basis along with more encouragement and nurturing. Cushman concluded that a ninth grade academy helped students develop a solid foundation for high school success.

The sense of belonging is important for all high school students especially ninth grade students who feel isolated from the rest of the student population. It is even more difficult to detect early warning signs of academic failure and attendance problems for ninth graders in larger high schools (Morton, 2002). Based on research from Morton, these are reasons for high schools to create a ninth grade academy to ease the transition of ninth grade students into the high school setting. According to Morton the ninth grade academy would have a team of teachers scheduled to have shared planning time. The ninth grade team consisted of a representative from

the four core subject areas of English, mathematics, physical science, and world geography. As the team planned together they developed interdisciplinary units and project-based assignments.

A report developed by the Center for Comprehensive School Reform and Improvement (2009) found the transition from middle school to high school as a difficult process for students. According to Amato et al. (2005) the American high school used several strategies to organize and restructure the high school environment. They found one high school restructuring strategy focused on the creation of a ninth grade academy. The authors described how the ninth grade academy concentrated on mathematics, English, science, and social studies. The faculty was divided into teams which collaborated to develop team activities, make policy and procedures, and create teaching strategies.

Researchers from the Progress Through the Education Pipeline Project at Boston College found the transition between grades 8 and 10 extremely difficult for many students. Data indicated that our nation's enrollments were higher in ninth grade than in other high school grades because of the high failure rate of ninth grade students and the number of students who repeated ninth grade. Wheelock and Miao (2005) suggested the following strategies helped reduce the ninth grade influx and improve high school graduation rates:

1. Evaluate the ninth grade data and develop a school improvement plan.
2. Improve student-teacher relationships by personalizing the classroom environment.
3. Offer extra academic support early and often during the school year before students fail.
4. Revise district and school policies and practices that trigger mandatory grade failure after a stated number of absences.

5. Develop small learning communities organized around interdisciplinary teacher teams that share the same students and have common planning time.

The National Association of Secondary School Principals (2004) focused on the improved academic performance of students in high school to better prepare them and decrease the high school dropout rate. According to the NASSP there were seven national goals developed to improve student performance with one strategy focusing specifically on ninth grade students. The association revealed that teachers worked to reach the ninth grade students' academic potential the first day of school and throughout the year. The association found a large high school reduced into a smaller unit called a ninth grade academy was a strategic move for academic improvement for ninth grade students and a step that decreased dropouts. The ninth grade academy consisted of team teaching and reduced class sizes, which aimed at a more personalized environment. However, the principals' association found reduced class sizes did not automatically improve student performance.

According to Cook et al. (2008) the ninth grade academy promoted the fundamental change necessary to ease the ninth grade transition to high school from middle school. The authors gathered qualitative data from a survey completed by school districts in North Carolina on ninth grade academies. Sixty-three counties participated in the survey, with 134 ninth grade academies in operation across the state of North Carolina. The survey results gathered from 2001-2007 found nonpromotion rates decreased in schools with ninth grade academies plus a significant change in the dropout rates. The researchers identified four themes that fostered the success of the ninth grade academies: (a) authentic learning experiences, (b) personalization, (c) rigorous and relevant instruction, and (d) professional learning and collaboration (Cook et al., 2008, p. 2). Additionally, they found no significant difference in end of course scores in English

between schools with a ninth grade academy and schools that do not have a ninth grade academy.

Ninth grade is a critical time when students cope with new academic opportunities and learn important social hierarchy. According to Quint (2008) ninth graders from economically disadvantaged backgrounds started high school feeling unknown by teachers and peers and lacked the essential literacy and mathematical skills. Quint found that students who fall behind academically and fail courses in ninth grade are at high risk of dropping out of high school. Based on research data from Johns Hopkins University Center for Research, Quint reviewed the impact of a small learning community on ninth grade students in the high school environment. She found the Talent Development program supported the struggling student in the ninth grade academy. The program focused doubling class time in math and language arts skills in order to prepare students for college-level work. Data showed that only 1 semester of intensive coursework is unlikely to compensate for years of inadequate academic preparation (Quint, 2008). However, Quint found all students thrived in the ninth grade academy environment and found that the students felt a sense of identity and the special status led to academic success.

In recent years restructuring the design of large traditional high schools has gone to the development of small learning communities within large high schools. Shakrani (2008) defined school conversion as closing large high schools and replacing them with a smaller school or an academy. According to Shakrani most conversions began with the focus of ninth graders in an academy setting. The academy focused on specific themes and personalization. Recent studies suggested students in small learning communities or academies perform better academically, have improved number of absences, and feel safer and schools have fewer behavior problems.

Furthermore, studies indicated the conversion to smaller school environments help ensure that students graduate from high school prepared for postsecondary education (Shakrani, 2008).

Gewertz (2009) based her report on the research completed by The Consortium of Chicago School Research. There were 116 Chicago public high schools that participated in the research with a representation of 30,000 ninth grade students. The term “on track” ninth graders was defined in the research as a ninth grader who earns five credits by the end of the school year and has not failed more than 1 semester of math, English, science, and social studies (Gewertz, 2009). The research found the ninth graders became successful when they were divided into small learning communities. As indicated by Quint (2008) and Shakrani (2008) there are reform models to restructure the academic environment of high schools through small learning communities. Small learning community models used in high schools were schools-within-schools, career academies, and ninth grade academies. Teachers teamed together and tailored instruction to the individual students.

In February 2008 the Chicago school district began Chicago’s Graduation Pathways Academy Program which improved the outcomes of at-risk ninth graders. The focus of improvement for ninth graders started with prevention (Gewertz, 2009). All ninth grade students were placed on a watch list to alert the high school teachers of the grades, number of absences, and test scores for each student. Additionally, periodic reports were provided to the students as an indicator for current failure and success data. Overall, the success of the ninth grade students in the academies across the Chicago school district were based on teachers and their use of the students detailed data (Gewertz, 2009).

The Rennie Center for Education Research and Policy (2009) recently published a study on Massachusetts dropouts and the methods for dealing with at-risk teens. The study was based

on qualitative data collected from 11 high schools in nine Massachusetts school districts. All the schools included in the study used multiple strategies for identifying the potential dropout. Research recognized that all the schools with potential dropouts had targeted intervention techniques to engage the student back on track for graduation. The most common interventions included in the study were personalization, academic support, wrap-around services, advisory programs for special populations, and support for the transition to ninth grade (Rennie Center for Education Research and Policy, 2009).

Eleven schools in the research designed some variation of a ninth grade academy because of their high dropout rate in ninth grade. According to the Rennie Center for Education Research and Policy report collectively school districts that developed a ninth grade academy provided academic support, counseling, and guidance with social skills. Additionally, the research found one high school that created a career exploratory program for their ninth grade students that provided career awareness and postsecondary education information.

Bloom, Thompson, and Unterman (2010) researched New York City's high school reform approach known as small schools of choice or a small learning community. One hundred five small schools of choice with 45,000 highly disadvantaged students were a part of this study. Schools were organized with a small student population in a personalized environment where students had a better chance of being known and where teachers knew enough about their students to provide appropriate academic and emotional support. Results of the study found there were substantial positive impacts on the small schools of choice especially for ninth graders. Ninth grade students were 73.1% likely to earn 10 or more credits the first year, 39% less likely to fail more than one subject (core), and 58% more likely to be on-track for graduation based on one cohort (Bloom et al., 2010). These positive effects on the transition into high school during

ninth grade were seen among nearly all subgroups as defined by students' academic proficiency, socioeconomic status, ethnicity, and gender. While this study provides compelling evidence in support of a small school model, these results are still early because only one cohort has been followed through 4 years of high school up to graduation.

According to Wolk (2010) the United States has been engaged in educational reform for years. He found that student learning had improved only slightly if at all. Wolk discovered that one third of high school students drop out of high school and one third of the students who earn a high school diploma are not prepared for college or the workplace. Moreover, he found that high schools that created ninth grade academies in an effort to improve student success have generally not succeeded.

Conclusion

Academic demands facing students in the 21st century are different from those encountered by high school students in past decades. Research indicated students in the 21st century need to be prepared in high school for the greater demands of postsecondary institutions and the employment requirements in the changing work environment. According to the research the middle school concept impacted the smooth transition from eighth grade to ninth grade. When students enter the ninth grade in high school, schools are facing challenges to decrease dropouts and increase the number of high school graduates. A strategy used by many schools to address these challenges is to redesign the high school setting with a small learning community such as a ninth grade academy.

CHAPTER 3

METHODOLOGY

This chapter describes the methodology and procedures used in this quantitative study to compare student data during the ninth grade year in high school. Specifically, this chapter provides a description of the research design, selection of the population, the data collection procedures, research questions and null hypotheses, data analysis procedures, and a summary of the chapter.

Research Design

According to McMillan and Schumacher (2006) the purpose of a research design is to provide the most valid, credible conclusions drawn from the answers to the research questions. A quantitative research design was chosen for this study. A quantitative research design can be divided into the subclassification of experimental or nonexperimental. For the purpose of this study the quantitative research design was characterized into the subclassification of nonexperimental. Nonexperimental research designs describe things that have occurred and examine relationships between things without any direct manipulation of conditions that are experienced. The researcher retrieved existing student data that had been collected over 5 years and there was no direct manipulation of conditions, nor was there any direct control over the participants' data (McMillan & Schumacher, 2006).

Creswell (2009) defined quantitative research as a means for testing objective theories by examining the relationships among variables. The variables for this study consisted of existing numerical data collected over 5 years. Specifically, the retrieved data for this study were core credits earned, elective credits earned, absences, and grade point average (GPA) which are known as dependent variables. Two student data management systems were used to retrieve the data for this study: PowerSchool and Star Student. The identity of each ninth grade student was

not available during the data collection process and was not known during reporting of the results.

Data were used to determine results prior to and after implementation of the ninth grade academy and to find the mean of each dependent variable. Also, the comparison between genders on the dependent variables mean was calculated. When recording the findings, the researcher used descriptive and comparative designs through reporting in a narrative format and in chart format.

Population

The population involved in this study was all reported ninth grade students as recorded by the Tennessee Department of Education for two East Tennessee high schools. The participating high schools for this study served grades 9-12 and were identified as School A and School B. School A is located in a nonfarm, rural setting. School A had an approximate total of 1,700 students with the number of ninth grade students ranging from 367 to 422 per year for the 5-year period. Overall, the ethnicity of the students in School A was 95% White, 3% Hispanic, and 2% African American. School B is also located in a nonfarm, rural setting. School B had an approximate total of 1,900 students with the number of ninth grade students ranging from 360 to 502 per year for the 5-year period. The ethnicity of the students in School B was 97% White, 1% Hispanic, 1% African American, and 1% other nationalities.

Data were collected from two participating high schools over 5 years (2005-2010). School A during 2005-2007 and School B during 2005-2008 were structured as a traditional high school with grades 9-12, which did not include a ninth grade academy. School A had a ninth grade academy in its high school during 2007-2010, while School B had a ninth grade academy during 2008-2010. School A housed the ninth grade academy in one wing of the main building

separate from the rest of the student population. The academy operated a separate building on the campus of School B.

Data Collection Procedures

Prior to the beginning of this research project permission to conduct the research was obtained from the Institutional Review Board (IRB) at East Tennessee State University. Following the authorization from IRB to conduct the research, permission was obtained from the Director of Schools of the participating school system to collect data for this research study.

To ensure up-to-date, accurate information the data in this study for School A and School B were obtained from two different student data management systems that were used in the school system. PowerSchool was the student data management system that was used during 2005-2006 to retrieve data for School A and School B. Beginning the 2006-2007 school year the school system replaced PowerSchool with the student data management system, Star Student. Therefore, Star Student was used to retrieve the data for School A and School B during 2006-2010. Because both student data management systems were directly connected to the statewide student management system (SSMS) at the Tennessee Department of Education, all the data had been previously accepted and approved as correct by the Tennessee Department of Education.

The ninth grade data retrieved from the archives of PowerSchool and Star Student were individual courses and credits earned. The number of core credits and elective credits were collected prior to implementation of the ninth grade academy and after implementation of the ninth grade academy to evaluate the students' academic success. The total core credits consisted of courses in math, English, science, and social studies. Elective credits were derived from courses that did not fall into the core course categories. An additional analysis of credits earned was calculated from the core course of math by separating the credits earned in basic math

compared to credits earned in Algebra I. Other data gathered prior to implementation of the ninth grade academy and after implementation of the ninth grade academy were the dependent variables of absences and GPA. The dependent variables were gathered from PowerSchool and Star Student in an accumulated report prior to implementation and after implementation of the ninth grade academy. Student identities were not available during any of the data collection process or during the reporting of the results.

Specifically, the following information was obtained from PowerSchool and Star Student:

1. The number of ninth grade students attending School A and School B during each year of the 5-year study.
2. The number of core credits earned by each ninth grade student in School A and School B during each year of the 5-year study.
3. The number of elective courses earned by each ninth grade student in School A and School B during each year of the 5-year study.
4. The number of absences accumulated for each ninth grade student in School A and School B during each year for the 5-year study.
5. The GPA for each ninth grade student in School A and School B during each year of the 5-year study.
6. The number of basic math credits earned by female students and male students in School A and School B during each year of the 5-year study.
7. The number of Algebra I credits earned by female and male students in School A and School B during each year of the 5-year study.

Research Questions and Null Hypotheses

The quantitative research design guided the following research questions and null hypotheses.

Research Question 1: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between ninth grade students prior to implementation of the ninth grade academy (2005-2007) and after implementation of the ninth grade academy (2007-2010) for School A?

Ho₁: There are no significant differences in core credits earned by ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

Ho₂: There are no significant differences in elective credits earned by ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

Ho₃: There are no significant differences in number of absences between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

Ho₄: There are no significant differences in GPA of ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

Research Question 2: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between ninth grade students prior to implementation of the ninth grade academy (2005-2008) and after implementation of the ninth grade academy (2008-2010) for School B?

Ho2₁: There are no significant differences in core credits earned by ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

Ho2₂: There are no significant differences in elective credits earned by ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

Ho2₃: There are no significant differences in number of absences between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

Ho2₄: There are no significant differences in GPA of ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

Research Question 3: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A?

Ho3₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

Ho3₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

Ho3₃: There are no significant differences in number of absences between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

Ho3₄: There are no significant differences in GPA between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

Research Question 4: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students after implementation of the ninth grade academy (2007-2010) for School A?

Ho4₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

Ho4₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

Ho4₃: There are no significant differences in number of absences between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

Ho4₄: There are no significant differences in GPA between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

Research Question 5: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences,

and GPA) between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B?

Ho5₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

Ho5₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

Ho5₃: There are no significant differences in number of absences between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

Ho5₄: There are no significant differences in GPA between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

Research Question 6: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B?

Ho6₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

Ho6₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

Ho₃: There are no significant differences in number of absences between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

Ho₄: There are no significant differences in GPA between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

Data Analysis

Data from this research project were analyzed through quantitative methods. To find the statistical calculations of this study *SPSS for Windows* and *Microsoft Office Excel* were used. The data sources that were analyzed were credits earned, elective credits earned, absences, and GPA. All six research questions make comparisons between two different groups of students on all four measures. The six research questions were analyzed using a paired-samples t-test or an independent-samples t-test for all four measures.

Summary

Chapter 3 presented the methodology and procedures used in conducting the study. After a brief introduction, a description of the research design, selection of the population, the data collection procedures, research questions and null hypotheses, and data analysis procedures were outlined in this chapter.

CHAPTER 4

ANALYSIS OF THE DATA

The purpose of this study was to compare student data prior to and after implementation of a ninth grade academy in East Tennessee high schools. Two rural high schools identified as School A and School B serving grades 9-12 were selected for this study. The two high schools were located in a nonfarm, rural setting with similar student populations.

In this chapter data were presented and analyzed to answer six research questions and 24 null hypotheses. Data represented years prior to implementation of a ninth grade academy and years after implementation of a ninth grade academy. Four data measures for ninth grade students were analyzed: core credits earned, elective credits earned, absences, and GPA. Data were retrieved from two student data management systems within the schools.

Analysis of Research Questions

Research Question 1: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between ninth grade students prior to implementation of the ninth grade academy (2005-2007) and after implementation of the ninth grade academy (2007-2010) for School A?

H_{01} : There are no significant differences in core credits earned between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

A paired-samples t-test was conducted to evaluate whether the number of core credits earned by ninth grade students prior to implementation of the ninth grade academy (2005-2007) was significantly different from number of core credits earned by the ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. Results indicated that the

mean number of core credits earned by the ninth grade students prior to implementation of the ninth grade academy ($M = 3.55$, $SD = 1.21$) were significantly less than the mean number of core credits earned by ninth grade students after implementation of the ninth grade academy ($M = 4.47$, $SD = 1.68$), $t(803) = 12.96$, $p < .01$. The standardized effect size index, η^2 , was .17, indicating a small effect size. The 95% confidence interval for the mean difference between the number of core credits earned prior to implementation and after implementation of the ninth grade academy was -1.07 to -.79. Null hypothesis H_{01_1} was rejected.

H_{01_2} : There are no significant differences in elective credits earned by ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

A paired-samples t-test was conducted to evaluate whether the number of elective credits earned by ninth grade students prior to implementation of the ninth grade academy (2005-2007) was significantly different from the number of elective credits earned by the ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. Results indicated that the mean number of elective credits earned by ninth grade students prior to implementation of the ninth grade academy ($M = 1.94$, $SD = 1.42$) were significantly less than the mean number of elective credits earned by the ninth grade students after implementation of the ninth grade academy ($M = 2.86$, $SD = .93$), $t(802) = 15.11$, $p < .01$. The standardized effect size index, η^2 , was .22, indicating a small effect size. The 95% confidence interval for the mean difference between the number of core credits earned prior to implementation and after implementation of the ninth grade academy was -1.04 to -.80. Null hypothesis H_{01_2} was rejected.

Ho1₃: There are no significant differences in number of absences between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

A paired-samples t-test was conducted to evaluate whether the number of days absent for ninth grade students prior to implementation of the ninth grade academy (2005-2007) was significantly different in the number of days absent by the ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. Results indicated that the mean number of days absent by the ninth grade students prior to implementation of the ninth grade academy (M = 6.25, SD = 6.01) were significantly less than the mean number of days absent by the ninth grade students after implementation of the ninth grade academy (M = 8.34, SD = 7.44), $t(1037) = 7.10$, $p < .01$. The standardized effect size index, η^2 , was .05, indicating a small effect size. The 95% confidence interval for the mean difference between the number of days absent prior to implementation and after implementation of the ninth grade academy was -2.66 to -1.51. Null hypothesis Ho1₃ was rejected.

Ho1₄: There are no significant differences in GPA of ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School A.

A paired-samples t-test was conducted to evaluate whether the GPA of ninth grade students prior to implementation of the ninth grade academy (2005-2007) was significantly different from the GPA of the ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. Results indicated that the mean earned by the ninth grade students prior to implementation of the ninth grade academy (M = 2.78, SD = .91) were slightly greater than the GPA of the ninth grade students after implementation of the ninth grade

academy ($M = 2.73$, $SD = .90$), $t(803) = 1.15$, $p = .25$. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the mean difference between the GPA prior to implementation and after implementation of the ninth grade academy was -.04 to .14. Null hypothesis H_{04} was retained. The means and standard deviations of the four variables (core credits earned, elective credits earned, absences, and GPA) prior to implementation (2005-2007) and after implementation (2007-2010) of the ninth grade academy for School A are shown in Table 1.

Table 1

Means and Standard Deviations of Four Measures Prior to Implementation and After Implementation of the Ninth Grade Academy for School A

<i>Variable</i>	Prior to Implementation 2005-2007 (After Implementation 2007-2010)			
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Core Credits Earned	803	3.55 (4.47)	1.21 (1.68)	< .01
Elective Credits Earned	802	1.94 (2.86)	1.42 (.93)	< .01
Absences	1037	6.25 (8.34)	6.01 (7.44)	< .01
GPA	803	2.78 (2.73)	.91 (.90)	.25

In addition to data collected for core credits earned for ninth grade students at School A, data were collected on how many ninth grade students were enrolled in basic math or Algebra I prior to and after implementation of the ninth grade academy. Thirty-six percent of the ninth grade students took basic math; 49% took Algebra I; and 15% took other math courses, did not earn a math credit, or were not enrolled in a math course prior to implementation of the ninth

grade academy (2005-2007). After implementation of the ninth grade academy (2007-2010), 34% of the ninth grade students took basic math; 52% took Algebra I; and 14% took other math courses, did not earn a math credit, or were not enrolled in a math course.

Research Question 2: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between ninth grade students prior to implementation of the ninth grade academy (2005-2008) and after implementation of the ninth grade academy (2008-2010) for School B?

Ho₂₁: There are no significant differences in core credits earned between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

A paired-samples t-test was conducted to evaluate whether the number of core credits earned by ninth grade students prior to implementation of the ninth grade academy (2005-2008) was significantly different from number of core credits earned by ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. Results indicated that the mean number of core credits earned by the ninth grade students prior to implementation of the ninth grade academy ($M = 4.83$, $SD = 1.29$) were significantly greater than the mean number of core credits earned by the ninth grade students after implementation of the ninth grade academy ($M = 3.68$, $SD = 1.92$), $t(906) = 15.18$, $p < .01$. The standardized effect size index, η^2 , was .20, indicating a small effect size. The 95% confidence interval for the mean difference between the number of core credits earned prior to implementation and after implementation of the ninth grade academy was 1.00 to 1.30. Null hypothesis Ho₂₁ was rejected.

Ho₂: There are no significant differences in elective credits earned between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

A paired-samples t-test was conducted to evaluate whether the number of elective credits earned by ninth grade students prior to implementation of the ninth grade academy (2005-2008) was significantly different from number of elective credits earned by the ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. Results indicated that the mean number of elective credits earned by ninth grade students prior to implementation of the ninth grade academy ($M = 2.57$, $SD = 1.07$) were significantly less than the mean number of elective credits earned by the ninth grade students after implementation of the ninth grade academy ($M = 3.10$, $SD = 1.28$), $t(906) = 9.64$, $p < .01$. The standardized effect size index, η^2 , was .09, indicating a small effect size. The 95% confidence interval for the mean difference between the number of core credits earned prior to implementation and after implementation of the ninth grade academy was -.64 to -.42. Null hypothesis Ho₂ was rejected.

Ho₃: There are no significant differences in number of absences between ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

A paired-samples t-test was conducted to evaluate whether the number of days absent for ninth grade students prior to implementation of the ninth grade academy (2005-2008) was significantly different in the number of days absent by the ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. Results indicated that the mean number of days absent by ninth grade students prior to implementation of the ninth grade academy ($M = 9.15$, $SD = 8.65$) were significantly greater than the number of days absent by

ninth grade students after implementation of the ninth grade academy ($M = 6.18$, $SD = 4.64$), $t(840) = 8.90$, $p < .01$. The standardized effect size index, η^2 , was .09, indicating a small effect size. The 95% confidence interval for the mean difference between the number of days absent prior to implementation and after implementation of the ninth grade academy was 2.31 to 3.63. Null hypothesis H_{03} was rejected.

H_{04} : There are no significant differences in GPA of ninth grade students prior to implementation of a ninth grade academy and after implementation of a ninth grade academy for School B.

A paired-samples t-test was conducted to evaluate whether the GPA of ninth grade students prior to implementation of the ninth grade academy (2005-2008) was significantly different from the GPA of the ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. Results indicated that the mean earned by the ninth grade students prior to implementation of the ninth grade academy ($M = 2.75$, $SD = .87$) were significantly greater than the GPA of the ninth grade students after implementation of the ninth grade academy ($M = 2.43$, $SD = 1.03$), $t(906) = 7.45$, $p < .01$. The standardized effect size index, η^2 , was .06, indicating a small effect size. The 95% confidence interval for the mean difference between the GPA prior to implementation and after implementation of the ninth grade academy was .24 to .41. Null hypothesis H_{04} was rejected. The means and standard deviations of the four variables (core credits earned, elective credits earned, absences, and GPA) prior to implementation (2005-2008) and after implementation (2008-2010) of the ninth grade academy for School B are shown in Table 2.

Table 2

Means and Standard Deviations of Four Measures Prior to Implementation and After Implementation of the Ninth Grade Academy for School B

<i>Variable</i>	Prior to Implementation 2005-2008 (After Implementation 2008-2010)			
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Core Credits Earned	906	4.83 (3.68)	1.29 (1.92)	< .01
Elective Credits Earned	906	2.57 (3.10)	1.07 (1.28)	< .01
Absences	840	9.15 (6.18)	8.65 (4.64)	< .01
GPA	906	2.75 (2.43)	.87 (1.03)	< .01

In addition to data collected for core credits earned for ninth grade students at School B, data were collected on how many ninth grade students were enrolled in basic math or Algebra I prior to and after implementation of the ninth grade academy. Twenty-three percent of the ninth grade students took basic math; 70% took Algebra I; and 7% took other math courses, did not earn a math credit, or were not enrolled in a math course prior to implementation of the ninth grade academy (2005-2008). After implementation of the ninth grade academy (2008-2010), 20% of the ninth grade students took basic math; 64% took Algebra I; and 16% took other math courses, did not earn a math credit, or were not enrolled in a math course.

Research Question 3: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A?

Ho3₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the number of core credits earned by female ninth grade students was significantly different from the number of core credits earned by male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A. The test was significant, $t(802) = 8.97$, $p < .01$. Female ninth grade students ($M = 3.93$, $SD = 1.29$) on the average earned more core credits than male ninth grade students ($M = 3.20$, $SD = 1.02$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .09, indicating a small effect size. The 95% confidence interval for the difference in means was .57 to .89. Null hypothesis Ho3₁ was rejected.

Ho3₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the number of elective credits earned by female ninth grade students was significantly different from the number of elective credits earned by male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A. The test was significant, $t(801) = 41.21$, $p < .01$. Female ninth grade students ($M = 3.16$, $SD = 1.04$) on the average earned more elective credits than male ninth grade students ($M = .82$, $SD = .50$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .07, indicating a small effect size. The 95% confidence interval for the difference in means was 2.23 to 2.45. Null hypothesis Ho3₂ was rejected.

Ho3₃: There are no significant differences in number of absences between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the number of days absent by female ninth grade students was significantly different from the number of days absent by male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A. The test was significant, $t(1036) = .85$, $p = .39$. Female ninth grade students ($M = 6.08$, $SD = 5.64$) on the average had fewer absences than male ninth grade students ($M = 6.40$, $SD = 6.32$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was -1.05 to .41. Null hypothesis Ho3₃ was retained.

Ho3₄: There are no significant differences in GPA between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the GPA by female ninth grade students was significantly different from the GPA by male ninth grade students prior to implementation of the ninth grade academy (2005-2007) for School A. The test was significant, $t(802) = 1.12$, $p = .29$. Female ninth grade students ($M = 2.74$, $SD = .93$) on the average had a lower GPA than male ninth grade students ($M = 2.81$, $SD = .88$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .02, indicating a small effect size. The 95% confidence interval for the difference in means was -.20 to .05. Null hypothesis Ho3₄ was retained. The means and standard deviations between female students and male students for each of the four measures (core credits earned, elective credits

earned, absences, and GPA) prior to implementation (2005-2007) of the ninth grade academy for School A are shown in Table 3.

Table 3

Means and Standard Deviations of Four Measures Between Female and Male Students Prior to Implementation of the Ninth Grade Academy for School A

<i>Variable</i>	Females Prior to Implementation 2005-2007 (Males Prior to Implementation 2005-2007)			
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Core Credits Earned	802	3.93 (3.20)	1.29 (1.02)	< .01
Elective Credits Earned	801	3.16 (.82)	1.04 (.50)	< .01
Absences	1036	6.08 (6.40)	5.64 (6.32)	.39
GPA	802	2.74 (2.81)	.93 (.88)	.29

Research Question 4: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students after implementation of the ninth grade academy (2007-2010) for School A?

Ho4₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the number of core credits earned by female ninth grade students was significantly different from the number of core credits earned by male ninth grade students after implementation of the ninth grade academy

(2007-2010) for School A. The test was slightly significant, $t(802) = 2.65$, $p < .01$. Female ninth grade students ($M = 4.64$, $SD = 1.13$) on the average earned more core credits than male ninth grade students ($M = 4.32$, $SD = 2.04$) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was .08 to .54. Null hypothesis $Ho4_1$ was rejected.

$Ho4_2$: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the number of elective credits earned by female ninth grade students was significantly different from the number of elective credits earned by male ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. The test was not significant, $t(802) = .14$, $p = .89$. Female ninth grade students ($M = 2.85$, $SD = .96$) on the average earned fewer elective credits than male ninth grade students ($M = 2.86$, $SD = .90$) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was -.14 to .12. Null hypothesis $Ho4_2$ was retained.

$Ho4_3$: There are no significant differences in number of absences between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the number of days absent by female ninth grade students was significantly different from the number of days absent by male ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. The test was significant, $t(1037) = .61$, $p = .54$. Female ninth grade students ($M =$

8.19, SD = 7.38) on the average had fewer absences than male ninth grade students (M = 8.47, SD = 7.50) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was -1.19 to .63. Null hypothesis Ho4₃ was retained.

Ho4₄: There are no significant differences in GPA between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School A.

An independent-samples t-test was conducted to evaluate whether the GPA by female ninth grade students was significantly different from the GPA by male ninth grade students after implementation of the ninth grade academy (2007-2010) for School A. The test was significant, $t(802) = 3.91$, $p = .01$. Female ninth grade students (M = 2.86, SD = .85) on the average had a higher GPA than male ninth grade students (M = 2.61, SD = .94) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .02, indicating a small effect size. The 95% confidence interval for the difference in means was .12 to .37. Null hypothesis Ho4₄ was rejected. The means and standard deviations between female students and male students for each of the four measures (core credits earned, elective credits earned, absences, and GPA) after implementation (2007-2010) of the ninth grade academy for School A are shown in Table 4.

Table 4

Means and Standard Deviations of Four Measures Between Female and Male Students After Implementation of the Ninth Grade Academy for School A

<i>Variable</i>	Females After Implementation 2007-2010		(Males After Implementation 2007-2010)		<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>		
Core Credits Earned	802	4.64 (4.32)	1.13 (2.04)		< .01
Elective Credits Earned	802	2.85 (2.86)	.96 (.90)		.89
Absences	1037	8.19 (8.47)	7.38 (7.50)		.54
GPA	802	2.86 (2.61)	.85 (.94)		< .01

In addition to the core credits earned data that were gathered for ninth grade students at School A, data were collected on how many female ninth grade students and male ninth grade students were enrolled in basic math or Algebra I prior to implementation of the ninth grade academy (2005-2007). Thirty-five percent of the female ninth grade students took basic math compared to 37% of the male ninth grade students; 48% female ninth grade students took Algebra I compared to 50% male ninth grade students; and 17% female ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course compared to 13% male ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course prior to implementation of the ninth grade academy (2005-2007) for School A.

After implementation of the ninth grade academy (2007-2010) for School A, 32% of the female ninth grade students took basic math compared to 35% of the male ninth grade students;

54% of the female ninth grade students took Algebra I compared to 50% of the male ninth grade students; and 14% of the female ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course compared to 15% of the male ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course after implementation of the ninth grade academy (2007-2010) for School A.

Research Question 5: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B?

Ho5₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the number of core credits earned by female ninth grade students was significantly different from the number of core credits earned by male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B. The test was not significant, $t(905) = 1.14$, $p = .26$. Female ninth grade students ($M = 4.78$, $SD = 1.29$) on the average earned fewer core credits than male ninth grade students ($M = 4.88$, $SD = 1.29$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was -.27 to .07. Null hypothesis Ho5₁ was retained.

Ho5₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the number of elective credits earned by female ninth grade students was significantly different from the number of elective credits earned by male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B. The test was slightly significant, $t(905) = 1.32$, $p = .19$. Female ninth grade students ($M = 2.62$, $SD = 1.02$) on the average earned more elective credits than male ninth grade students ($M = 2.52$, $SD = 1.12$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .02, indicating a small effect size. The 95% confidence interval for the difference in means was -.05 to .23. Null hypothesis $Ho5_2$ was retained.

$Ho5_3$: There are no significant differences in number of absences between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the number of days absent by female ninth grade students was significantly different from the number of days absent by male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B. The test was significant, $t(840) = .82$, $p = .41$. Female ninth grade students ($M = 8.92$, $SD = 8.52$) on the average had fewer days absent than male ninth grade students ($M = 9.42$, $SD = 8.82$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was -1.67 to .68. Null hypothesis $Ho5_3$ was retained.

$Ho5_4$: There are no significant differences in GPA between female ninth grade students and male ninth grade students prior to implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the GPA by female ninth grade students was significantly different from the GPA by male ninth grade students prior to implementation of the ninth grade academy (2005-2008) for School B. The test was slightly significant, $t(905) = 2.53$, $p < .01$. Female ninth grade students ($M = 2.82$, $SD = .87$) on the average had a higher GPA than male ninth grade students ($M = 2.68$, $SD = .85$) prior to implementation of the ninth grade academy. The standardized effect size index, η^2 , was .07, indicating a small effect size. The 95% confidence interval for the difference in means was .03 to .26. Null hypothesis H_{054} was rejected. The means and standard deviations between female students and male students for each of the four measures (core credits earned, elective credits earned, absences, and GPA) prior to implementation (2005-2008) of the ninth grade academy for School B are shown in Table 5.

Table 5

Means and Standard Deviations of Four Measures Between Female and Male Students Prior to Implementation of the Ninth Grade Academy for School B

Females Prior to Implementation 2005-2008 (Males Prior to Implementation 2005-2008)				
<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Core Credits Earned	905	4.78 (4.88)	1.29 (1.29)	.26
Elective Credits Earned	905	2.62 (2.52)	1.02 (1.12)	.19
Absences	840	8.92 (9.42)	8.52 (8.82)	.41
GPA	905	2.82 (2.68)	.87 (.85)	< .01

Research Question 6: Are there significant differences in each of the following four measures (number of core credits earned, number of elective credits earned, number of absences, and GPA) between female ninth grade students and male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B?

Ho₆₁: There are no significant differences in core credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the number of core credits earned by female ninth grade students was significantly different from the number of core credits earned by male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. The test was slightly significant, $t(905) = 2.23$, $p = .03$. Female ninth grade students ($M = 3.82$, $SD = 2.17$) on the average earned more core credits than male ninth grade students ($M = 3.54$, $SD = 1.62$) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .05, indicating a small effect size. The 95% confidence interval for the difference in means was .03 to .53. Null hypothesis Ho₆₁ was rejected.

Ho₆₂: There are no significant differences in elective credits earned between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the number of elective credits earned by female ninth grade students was significantly different from the number of elective credits earned by male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. The test was not significant, $t(905) = .59$, $p = .56$. Female ninth grade students ($M = 3.12$, $SD = 1.25$) on the average earned more elective credits than

male ninth grade students ($M = 3.07$, $SD = 1.32$) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01, indicating a small effect size. The 95% confidence interval for the difference in means was -.12 to .22. Null hypothesis $Ho6_2$ was retained.

$Ho6_3$: There are no significant differences in number of absences between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the number of days absent by female ninth grade students was significantly different from the number of days absent by male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. The test was significant, $t(840) = 2.17$, $p = .03$. Female ninth grade students ($M = 6.48$, $SD = 4.94$) on the average had more days absent than male ninth grade students ($M = 5.79$, $SD = 4.20$) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .06, indicating a small effect size. The 95% confidence interval for the difference in means was .07 to 1.33. Null hypothesis $Ho6_3$ was rejected.

$Ho6_4$: There are no significant differences in GPA between female ninth grade students and male ninth grade students after implementation of a ninth grade academy for School B.

An independent-samples t-test was conducted to evaluate whether the GPA by female ninth grade students was significantly different from the GPA by male ninth grade students after implementation of the ninth grade academy (2008-2010) for School B. The test was slightly significant, $t(905) = 3.59$, $p < .01$. Female ninth grade students ($M = 2.55$, $SD = 1.01$) on the average had a higher GPA than male ninth grade students ($M = 2.30$, $SD = 1.04$) after implementation of the ninth grade academy. The standardized effect size index, η^2 , was .01,

indicating a small effect size. The 95% confidence interval for the difference in means was .11 to .38. Null hypothesis H_{064} was rejected. The means and standard deviations between female students and male students for each of the four measures (core credits earned, elective credits earned, absences, and GPA) after implementation (2008-2010) of the ninth grade academy for School B are shown in Table 6.

Table 6

Means and Standard Deviations of Four Measures Between Female and Male Students After Implementation of the Ninth Grade Academy for School B

<i>Variable</i>	Females After Implementation 2007-2010 (Males After Implementation 2007-2010)			
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Core Credits Earned	905	3.82 (3.54)	2.17 (1.62)	.03
Elective Credits Earned	905	3.12 (3.07)	1.25 (1.32)	.56
Absences	840	6.48 (5.79)	4.94 (4.20)	.03
GPA	905	2.55 (2.30)	1.01 (1.04)	< .01

In addition to the core credits earned data that were gathered for ninth grade students at School B, data were collected on how many female ninth grade students and male ninth grade students were enrolled in basic math or Algebra I prior to implementation of the ninth grade academy (2005-2008). Twenty-two percent of the female ninth grade students took basic math compared to 24% of the male ninth grade students; 72% female ninth grade students took Algebra I compared to 69% male ninth grade students; and 6% female ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course compared to

7% male ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course prior to implementation of the ninth grade academy (2005-2008) for School B.

After implementation of the ninth grade academy (2008-2010) for School B, 22% of the female ninth grade students took basic math compared to 21% of the male ninth grade students; 62% of the female ninth grade students took Algebra I compared to 62% of the male ninth grade students; and 16% of the female ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course compared to 17% of the male ninth grade students took other math courses, did not earn a math credit, or were not enrolled in a math course after implementation of the ninth grade academy (2008-2010) for School B.

Summary

In this chapter data obtained over 5 years were presented and analyzed. There were six research questions and 24 null hypotheses. All data were collected through the technology department of the school district.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE PRACTICE AND RESEARCH

This chapter contains the findings, conclusions, and recommendations for readers who may use the results as a resource when planning a ninth grade academy. The purpose of this study was to compare student data prior to and after implementation of a ninth grade academy in East Tennessee high schools. The study was conducted using data from two East Tennessee high schools that served grades 9-12. Existing student data collected over 5 years were used in this study. The retrieved data for this study were core credits earned, elective credits earned, absences, and GPA. While evaluating core credits earned, an additional analysis of credits earned was accomplished between basic math and Algebra I for female and male students.

Summary of Findings

The statistical analysis reported in the study was based on six research questions presented in Chapters 1 and 3. In Chapter 3 each research question had four null hypotheses that related to the dependent variables of core credits earned, elective credits earned, absences, and GPA. The total number of student participants for the two schools in the study were 1,967 for School A and 2,268 for School B. School A had 804 student participants prior to implementation of the ninth grade academy (2005-2007) and 1,163 student participants after implementation of the ninth grade academy (2007-2010). School B had 1,361 student participants prior to implementation of the ninth grade academy (2005-2008) and 907 student participants after implementation of the ninth grade academy (2008-2010). A paired-samples t-test was used to answer two research questions, and an independent-samples t-test was used to answer four research questions. The level of significance used in the test was .05.

Conclusions

The purpose of this study was to compare student data prior to and after implementation of a ninth grade academy in East Tennessee high schools. The following conclusions were based upon the findings from the data of this study:

1. A significant difference was found between ninth grade students prior to implementation of the ninth grade academy and after implementation of the ninth grade academy for School A in three of the four measures (number of core credits earned, number of elective credits earned, and number of absences). There was very little difference in the GPA mean for ninth grade students prior to implementation and after implementation of the ninth grade academy. Research conducted by Morton (2002) and Sigler (2008) concluded that ninth grade academies impacted student achievement and had fewer student absences than larger school settings. Additionally, after analyzing credits earned in basic math and Algebra I, findings indicated more ninth grade students earned Algebra I credit than basic math credit prior to implementation and after implementation of the ninth grade academy. Findings of this study on earned credits in Algebra I coincided with the research from Shakrani (2008) that indicated that ninth grade students could learn Algebra.
2. A significant difference was found between ninth grade students prior to implementation of the ninth grade academy and after implementation of the ninth grade academy for School B in three of the four measures (number of core credits earned, number of absences, and GPA). The mean for the number of core credits, number of absences, and GPA for ninth grade students prior to implementation was greater than the mean after implementation. Therefore, implementation of the ninth

grade academy has had little positive impact on School B. The findings of this study did not support several previously conducted studies (Gewertz, 2009; Morton, 2002; Quint, 2008) that found students thrived in the ninth grade academy environment. Additionally, after analyzing the credits earned in basic math and Algebra I prior to implementation and after implementation of the ninth grade academy, findings indicated a greater number of students earned Algebra I credit over basic math. The finding of earned credits in Algebra I coincided with the research from Shakrani (2008) which indicated ninth grade students could learn Algebra.

3. A significant difference was found between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy for School A in three of the four measures (number of core credits earned, elective credits earned, and number of absences). Female ninth grade students on average earned more core credits and elective credits and had fewer days absent than male ninth grade students. Male ninth grade students had a slightly higher GPA than female ninth grade students. Bottoms (2008) found that many students are not challenged in their coursework and do not earn credits to graduate from high school. Bottoms's study regarding earned credits is contrary to the findings of this study. Additionally, after analyzing credits earned in basic math and Algebra I prior to implementation of the ninth grade academy findings indicated a large number of female and male ninth grade students earned Algebra I credit compared to basic math. Results indicated that there were 2% fewer females than males who earned Algebra I credit prior to implementation of the ninth grade academy. The finding of earned credits in Algebra I coincided with research from Shakrani (2008), which indicated ninth grade students

- could learn Algebra. Results of this study also agreed with findings from Ullman (2010) and Mulphree and Wilder (2007) in that there is less than 1% difference in NAEP scores between males and females prior to and after implementation of a ninth grade academy, and males usually take more math courses than females.
4. A significant difference was found between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy for School A in three of the four measures (number of core credits earned, number of absences and GPA). Female ninth grade students on average earned one half additional core credit, had one half days less being absent, and had a higher GPA than male ninth grade students. On an average the number of elective credits earned for female and male ninth grade students were the same at three credits earned. Additionally, after analyzing credits earned in basic math and Algebra I, after implementation of the ninth grade academy, findings indicated a large number of female and male ninth grade students earned Algebra I credit compared to basic math. Results indicated that 4% more females than males earned Algebra I credit after implementation of the ninth grade academy. The finding of earned credits in Algebra I coincided with research from Shakrani (2008), which indicated ninth grade students could learn Algebra. Results of this study also agreed with findings from Ullman (2010) and Mulphree and Wilder (2007) in that there is less than 1% difference in NAEP scores between males and females prior to and after implementation of a ninth grade academy.
 5. A significant difference was found between female ninth grade students and male ninth grade students prior to implementation of the ninth grade academy for School B

in three of the four measures (number of elective credits earned, number of absences, and GPA) based on mean. The mean for elective credits earned was two and one half elective credits for ninth grade females and two elective credits for ninth grade males prior to implementation of the ninth grade academy. The mean for the number of days absent was slightly less for ninth grade females than ninth grade males prior to implementation of the ninth grade academy. In evaluating the significant difference in GPA mean, female ninth grade students had a higher GPA than ninth grade male students prior to implementation of the ninth grade academy. There were no significant differences in the mean of core credits earned between female and male ninth grade students prior to implementation of the ninth grade academy.

Additionally, after analyzing credits earned in basic math and Algebra I prior to implementation of the ninth grade academy, findings indicated over 70% of female ninth grade students and over 60% of male ninth grade students earned Algebra I credit. The finding of earned credits in Algebra I coincided with the research from Shakrani (2008) which indicated ninth grade students could learn Algebra. Results of this study also agreed with findings from Ullman (2010) and Mulphree and Wilder (2007) in that there is less than 1% difference in NAEP scores between males and females prior to and after implementation of a ninth grade academy. This study did not coincide with the study of Leinwand and Ginsburg (2007) that indicated students have weak mathematical skills.

6. There was a significant difference in three of the four measures (number of core credits earned, number of absences, and GPA) for female and male ninth grade students after implementation of the ninth grade academy for School B. Female ninth

grade students on average earned one half additional core credit, had one half days more being absent, and had a higher GPA than male ninth grade students. On an average the number of elective credits earned for female and male ninth grade students were the same at three credits earned. Additionally, after analyzing credits earned in basic math and Algebra I after implementation of the ninth grade academy, findings indicated over 60% of female ninth grade students and over 60% of male ninth grade students earned Algebra I credit. The finding of earned credits in Algebra I coincided with the research from Shakrani (2008) which indicated ninth grade students could learn Algebra. Results of this study also agreed with findings from Ullman (2010) and Mulphree and Wilder (2007) in that there is less than 1% difference in NAEP scores between males and females prior to and after implementation of a ninth grade academy.

Recommendations for Practice

The findings and conclusions of this study have enabled the researcher to identify the following recommendations for practice for the two East Tennessee high schools:

1. Administration should examine the effectiveness of each teacher working in the ninth grade academy and review how teachers were selected to teach in the academy.
2. Administration and teachers should evaluate course offerings to determine if more relevant and rigorous courses should be offered to ninth grade students.
3. Administration should implement research-based programs that focus on supporting and improving academic achievement for ninth grade students.
4. Teachers should attend professional development training on how to work with ninth grade students.

5. Teachers should continue to implement and expand instructional programs to existing practices in order to maximize academic potential of all the students.
6. Administration should strive to be consistent with handling student absences.

Recommendations for Future Research

Recommendations for future research include a replication of this study with an expansion of variables to include credits earned in English I or Honors English and standardized test scores. Expanding the study could provide an additional insight to a greater understanding of student achievement. The study could be expanded by adding survey information to the study from students, teachers, parents, and community members to find out their perceptions about the ninth grade academy. Soliciting information from multiple stakeholders may provide insight on how successful others view the ninth grade academy. Additionally, the study could be expanded by researching the stability of administration and how the consistency of policy implementation impacts the ninth grade academy.

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