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Jacob Nichols  
May 2013

PERFORMANCE OF STUDENTS IN A MIDDLE SCHOOL GIFTED AND  
TALENTED ACADEMY PROGRAM: IMPLICATIONS FOR SCHOOL LEADERS

A Doctoral Thesis Presented to the  
Faculty of the College of Education  
University of Houston

In Partial Fulfillment  
of the Requirements for the Degree

Doctor of Education  
in Professional Leadership

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## Dedication

For M.W., Emma, Terry, Karen, Justin and the entire Nichols family!

I want to dedicate this dissertation to my parents, Terry and Karen Nichols. You taught me at an early age to stay in school and educate myself to the highest level. Well, here I am! I also want to thank M.W. and Emma Nichols. My grandfather and grandmother had the equivalent of a 1st and 3rd grade education. My grandparents were an integral part of my life from day one, and they also taught me to stay in school and pursue my dreams. To the entire Nichols family, I thank you for your love, encouragement, and support throughout my entire life. Education has always been an important fabric of my life, and I am proud of my accomplishments.

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## Abstract

Public education reform combined with the school choice movement calls for middle school leaders to offer a competitive and differentiated educational experience that meets middle school learners at their level. While some students need on-level education, there is a large population of learners that crave and require accelerated options. This study analyzed standardized test scores and number of high school credits earned by middle school gifted and talented (GT) students. This study compared the performance of GT students that attended a GT academy program with those that attended their zoned middle school. The study found that there was little to no difference on TAKS scores for the two groups. The GT Academy students earned an average of 2.13 more high school credits than the zoned district GT students. School leaders that want to challenge gifted students should consider accelerated programs to meet the needs of advanced students.



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# Chapter 1

## Introduction

### Statement of the Problem

Middle schools are a challenge for many school leaders. Middle School reform has been a major topic in education over the last 30 years. The updated *Turning Points 2000* is an in-depth examination of how to improve middle school education. The newest report is released from the same Carnegie Corporation of New York. *Turning Points 2000* is a follow-up to the original report first released in 1989. The original groundbreaking report entitled *Turning Points: Preparing American youth for the 21<sup>st</sup> Century* (1989) described the current state of middle school education and gives recommendations for improving how adolescents are educated in the 10-15 age range. David Hamburg in the foreword explained the significance of focusing on middle school adolescents by explaining:

Students spend most of the day in a primary classroom with a cohort of students and teacher and then transition to a larger, more impersonal institution, farther from home, with many different classes and teachers. This transition occurs at the same time that most adolescents are experiencing rapid physical, emotional, and cognitive changes. (Jackson, Anthony, & Davis, 2000)

Middle school students are historically viewed as individuals that cannot think abstractly, act with independence, cannot consider the consequences of their actions, or be given responsibilities. This widely accepted view of adolescent deficiencies has created a self-fulfilling prophecy in which 10-15 year old students are spoon-fed information and not allowed to work cooperatively. *Turning Points 2000* explains:

There is a crucial need to help adolescents at this early age acquire a durable basis for self-esteem, flexible and inquiring minds, reliable and close human relationships, as sense of belonging in a valued group, and way of being useful beyond ones' self. (Jackson et al., 2000)

Middle school is an environment in which students can ascend towards a productive and fulfilling life or fall off the path to a diminished future. Middle school leaders aware of the history and willing to take action are paving the way for a brighter future for the world. Today's adolescent is capable of taking an active role in the learning process. Students that are allowed to give input and help create social contracts will feel connected and respected by their teacher(s). As changes in the fabric of society continue to evolve, middle school educators and leaders play a more instrumental role in shaping the future. *Turning Points* concluded that curriculum and adolescent development are mismatched. The incongruence is alarming given that adolescent students are facing such an enormous crossroads in their lives. Middle school students who do not feel connected will become disengaged from school, show a spike in discipline and behavior, and could possibly drop out of public schooling altogether. The research in *Turning Points* shows that middle schools willing to nurture and create a family climate have a higher possibility of their students achieving both academically as well as socially. The students merge from multiple elementary schools for the first time, and they arrive with different academic backgrounds, ideas of school norms, and neighborhoods. The students are only at the school for two to three years, which gives school leaders a short amount of time to assess, teach, and grow these young adolescents into young adults. Middle school students learn to transition from class to class, use lockers, socialize, and join sports teams or clubs. It

is an exciting time for these students but can often leave school leaders with gray hairs. Middle school leaders need to be prepared to do whatever it takes to lead a successful school and sometimes need to think outside the box.

District leaders need to make important decisions about middle schools. Middle schools are caught in the middle of the scope and sequence between elementary schools and high schools. They must meet the needs of students in a way that takes the students' vast range of academic readiness and prepare them for a common goal of preparing for high school as well as some form of higher education. The setting of this study is a large urban/suburban, multicultural school district with a new superintendent coming into the district who had a vision for a Gifted and Talented academy middle school in the form of a school-within-a-school model. The Superintendent had already executed a similar model with success at the previous district. Situational leadership, timing, and an ineffective principal at a centrally located middle school laid the groundwork for the ideal site for this GT middle school academy. This study looked at a middle school campus which, for the purpose of this thesis, was called the GT Academy. The GT Academy became a school-within-a-school (SWAS) by adding a gifted and talented (GT) academy program. The district helped facilitate this SWAS by passing a K-6 initiative to make room for the incoming GT academy students. The district-zoned students attending the non-academy portion of the school are predominantly African American and feed into the school from two elementary campuses. The school continued to serve the feeder pattern zone of students but allowed for parents of gifted and talented students to apply for this program, which would cater to their gifted child. Students interested in applying for the GT middle school academy must complete a portfolio submission packet. In 2011-2012,

the school completed its 5<sup>th</sup> year as a school-within-a-school, and the number of attendees to the academy has risen from 87 to 592. The school is now a TEA Recognized campus, and student discipline problems have decreased significantly.

### **Purpose of the Study**

The purpose of this study was to analyze if a GT Academy model of homogeneous high-ability grouped students made a difference when compared to the academic performance of GT students attending their standard-zoned district GT middle school program. The GT Academy students received an accelerated curriculum with increases in rigor and depth of concepts. The GT students attending their standard-zoned district GT middle school program received the standard district curriculum at their home school. Performance was analyzed in two ways: 1) on the 2010-2011 8<sup>th</sup> grade TAKS Reading and Math test, and 2) the number of high school credits earned prior to entering high school.

The study examined implications for school leaders regarding the need for focusing on our nations' highest achieving students, matching curriculum and challenge to reach high-achieving students through accelerated opportunities for high school courses and rigor, and adding to the scarcity of research on a middle school SWAS GT Academy program. The goal is to give school leaders a look at a program's performance results as compared to the standard-zoned district GT middle school offerings.

### **Significance of the Study**

There is little, if any, empirical research on middle school academy programs for the gifted that examine quantitative academic performance results in relation to standard-zoned gifted and talented offerings. Most of the research is based on ninth grade



academies and smaller high school learning communities. The educational research studying a middle school GT Academy is minimal. This school-within-a-school pulled students from throughout the district with a common denominator of being gifted through an application and portfolio process. This study decreases the gap in middle school research regarding homogeneous grouping of high-ability students and their achievement through the middle school years. The information in this study can be utilized to inform practice for educational leaders at the middle school level.

### **Implications for School Leadership**

**Meeting the range of students' academic needs.** Because middle school students arrive with such varying ranges of academic readiness, school leaders and teachers must make decisions regarding differentiated instruction, ability grouping, and flexibility in curriculum. At the GT Academy, middle school students are offered more opportunities to move ahead into high school curriculum and earn credits towards graduation. For example, in some cases, 8<sup>th</sup> grade students take high school pre-AP Algebra II, which is three years ahead of the standard course sequence. At the GT Academy, students have the opportunity to leave middle school with as many as 5 high school credits, including two years of required Spanish.

School leaders will gain information on the differences in academic performance of high-achieving students when they are faced with curriculum and rigor based on ability-level versus grade-level. In an era of school-choice and competition, district leaders and stakeholders should be interested in concepts that keep their programs relevant, individualized, and catered to the needs of students and parents of all types.

**Professional development.** In the era of accountability, educational leaders face increasing pressure to focus on low-achieving students and raising them to levels of proficiency. High-achieving students are often misconceived to be self-driven, able to learn on their own, and not needing as much teacher assistance and attention. This simply is not the case, especially in the years of adolescence when each child, regardless of their academic readiness, needs to be challenged and encouraged to reach his/her fullest potential. School leaders and teachers can analyze the academic performance of gifted students to guide professional development of teachers of gifted students.

### **Research Questions**

This study examined the academic performance of students who attend a middle school gifted and talented academy as well as the performance of gifted and talented students that attend their standard-zoned district GT middle school program. Students will be compared on the basis of overall academic performance, gender, and ethnicity. The specific research questions addressed in the study are:

- Is there a difference in the academic achievement as measured by the 2010-2011 8<sup>th</sup> grade Reading and Math TAKS test between students who attend a middle school gifted and talented academy compared to gifted and talented students attending their standard-zoned district GT middle school program?
- Is there a difference in the number of high school credits earned in middle school when analyzing students who attend a gifted and talented academy middle school compared to those gifted and talented students attending their standard-zoned district GT middle school program?

## Definition of Terms

- Accelerated Learning: A strategy of progressing through education at rates faster or ages younger than the norm (National Association for Gifted Children, 2012).
- Affective Domain: The affective domain includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes. The five major categories are listed from the simplest behavior to the most complex.
- Gifted and Talented: The federal Elementary and Secondary Education Act defines gifted and talented students as:
 

Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities. (United States Department of Education, 2012)
- Heterogeneous Grouping: Grouping students by mixed ability or readiness levels. A heterogeneous classroom is one in which a teacher is expected to meet a broad range of student needs or readiness levels (National Association for Gifted Children, 2012).
- High school credits: Credits are awarded to a student for the successful completion of a course for each academic term. All courses, which are to be counted toward graduation, must be state approved courses. High school students in Texas need 26 credits to graduate on the Recommended Plan.

- Homogeneous Grouping: Grouping students by need, ability, or interest.

Although variations between students exist in a homogeneous classroom, the intent of this grouping pattern is to restrict the range of student readiness or needs that a teacher must address (National Association for Gifted Children, 2012).

- Middle School Gifted and Talented Academy: The Academy for the Gifted and Talented will engage students in evidence-based curriculum and rich instructional strategies to differentiate for the academically gifted. The focus of the Academy is to provide challenging learning opportunities and special curricula that modify learning environments to enhance self-awareness, self-efficacy, problem-solving, and the learning of critical/creative thinking skills. The instructional program will emphasize the development, practice, and transfer of advanced knowledge and skills to assist students in preparing for creative and productive careers. The treatment group of students attending the school-within-a-school offering a specialized and accelerated curriculum for students and parents based on the principles of learning communities, relevance and rigor, and overlapping concepts. Students must submit an application portfolio process and be scored by a committee. Only the top scoring students will be accepted to the academy. The academic competition among students accepted into the middle school GT Academy creates an atmosphere of student learning and acceptance. These students are the top intellects of their respective elementary schools, and they are now all residing in the same classroom. Students from all around the district are melded together and the dynamic is powerful.

- **No Child Left Behind (NCLB):** Passed by Congress in 2001, this federal mandate supports standards-based education. The Act was designed to close an achievement gap and calls for schools to have 100% of students at proficiency levels no matter their ethnic background or socioeconomic status by 2013-2014. The Act requires states to develop assessments on basic skills to be given to all students in certain grades, if those states are to receive federal funding for schools. The Act does not assert a national achievement standard; standards are set by each individual state (Texas Education Agency, 2012).
- **School-Within-A-School (SWAS):** A special program provided for high-ability students who take most of their course credits as a specialized cohort, thereby creating the feeling of a small and cohesive multi-grade-level school within a larger school (Kitchen & Matthews, 2007).
- **Standard-Zoned District GT Middle School Program:** The control group of students that are following the district's recommended school feeder pattern gifted and talented offerings at the students' home campus.
- **TAKS Test:** The Texas Assessment of Knowledge and Skills (TAKS) assessments are criterion-referenced achievement tests designed to measure the extent to which a student has learned and is able to apply the defined knowledge and skills at each tested grade level (Texas Education Agency, 2012). In Texas, this is used as the state's accountability standardized test.

## **Chapter 2**

### **Literature Review**

#### **Gifted and Talented Education**

The advancement and launch of Sputnik propelled Russia into the lead as an advanced nation in terms of inventions and the advancement of mankind. Americans did not want to fall behind in terms of global competitiveness. United States Congress called for a report on the state of the country's gifted and talented students, which was later called the Marland Report (Marland, 1972). The U.S. Secretary of Education at that time, Sidney P. Marland, completed the report. This report detailed the state of gifted and talented education and also outlined recommendations for change. One of the key findings in Marland's report was that "research has confirmed that many talented children perform far below their intellectual potential... Intellectual and creative talent cannot survive educational neglect and apathy" (Marland, 1972, p. vii).

Marland continued to stress the importance for changes in gifted and talented education. Only a small percentage of America's gifted and talented students were being reached in 1972. There were vast inequities in gifted and talented education as well as exclusion of disadvantaged and minority populations. The report explained that exceptionally talented students could not excel without assistance and resources. A major finding from his report included that "Differentiated education for the gifted and talented is presently perceived as a very low priority at Federal, state, and most local levels of government and education administration" (Marland, 1972, p. 11). The Marland Report placed public education on notice that gifted and talented students were being neglected and not equally served. America had to take notice and reform education for the gifted in order to compete and stay up with current trends/needs. The Marland Report

(1972) outlined key components to a differentiated education program, which are “1) a differentiated curriculum which denotes higher cognitive concepts and processes; 2) instructional strategies which accommodate the learning styles of the gifted and talented curriculum content; and 3) special grouping arrangements which include a variety of administrative procedures appropriate to particular children, i.e., special classes, honor classes, seminars, resource rooms, and the like” (p.21).

Another key report requested by the Secretary of Education regarding the quality of education in America became *A Nation at Risk: The Imperative for Educational Reform* in 1983. The Secretary of Education’s National Commission on Excellence in Education with sponsorship of the United States Department of Education gave his findings in the form of an open letter to the American public. The report described American education as one that contained a “rising tide of mediocrity that threatens our very future as a Nation and a people (National Commission on Excellence in Education, 1983, p. 9). This report noted that over half of the nation’s gifted students were not achieving to a level that matched the students’ abilities. The report called on the federal government to work with state and local governments in order to meet the needs of American students.

### **Historical Perspective: Gifted and Talented Start-Up Cities**

Joyce Van Tassel-Baska (2010) analyzes in depth the history of gifted and talented education in *The History of Urban Education*. The article gives historical perspective and beginnings of the formation of education for the gifted in urban settings. The beginnings of gifted or specialized education can be traced back to 1918 when a school in Los Angeles sought to identify the brightest students and separate them for

advancement of the curriculum. Van Tassel-Baska also refers to the lack of empirical research or data related to early gifted and talented programs:

The work was never translated into journal articles to find its way to the field.

Rather, it was archived in Research and Evaluation offices in the individual urban school district, never to be used as a basis for further study or as the foundation on which to build future programs. (2010, p. 20)

Research on education as a whole has focused on equality and the right for every student to have equal opportunities in education. The notion has been studied for decades. Van Tassel-Baska states:

Recommendations from early reports on improving the state of gifted education have focused on the need to include more students from underrepresented groups, provide more diversity in program options, and conduct more research to demonstrate the efficacy of gifted programs in various configurations. (2010, p. 19)

The article chronicles the startup, components, and progression of gifted and talented programs in Chicago, New York, and San Diego. Chicago, New York, and San Diego showed an early awareness and willingness to develop their brightest and highest achieving students.

Chicago formed a system-wide model that stressed coherent and cohesive design and implementation. Chicago's gifted program served 25,000 students in a district of half a million. Chicago's program offered 40 citywide options, six regional centers, and 518 local programs in individual schools. Chicago employed 25 employees to work on administration and service delivery aspects of the program from central administration.



In addition, there were six full-time program coordinators who were responsible for program design and curriculum, and psychologists and social workers, all of whom assisted with testing, counseling, and home visits (VanTassel-Baska, 1983). Chicago also offered museology options at 24 different museums culminating in opportunities of collaborating with a curator on a semester long project for students in grades 7-12. Students also showcased opportunities or field experiences to the Chicago Symphony, attending theater productions, ballet, and art exhibits in world class venues like the Goodman Theater and Art Institute; even experiencing opera (Maxwell, 1984).

Chicago's elementary students benefitted from a curriculum derived from two major works: Matt Limpan's *Philosophy for Children* and Jerome Bruner's *Man: A Course of Study*. Secondary students pioneered early examples of the use of Advanced Placement (AP) and International Baccalaureate (IB) programs in tandem with mentorship and internship opportunities.

Chicago also adopted the talent search concept, using off-level testing as well as providing programs at local universities for those gifted students who qualified in mathematics. Latin, Creative Writing, and other advanced courses were offered in middle school for the first time. University programs in gifted education have also been hallmarks for Chicago public schools. Summer courses and academic year programs have been offered by Northwestern University since 1983. The Fry Foundation has also become a business partner that helps middle school and impoverished families deal with transitions to high school, counseling opportunities, and scholarship aid and information.

Selection and identification of gifted students in Chicago's public schools is a result of multiple approaches: ability, achievement, and recommendations from parents

and teachers. For several years, the Chicago school system has undergone a statewide funding crisis. The administration has been largely decentralized and controlled at the campus level until recently. In the past few years, program staff has regained control and a standardized gifted curriculum for K-8 has been established. Enrichment opportunities with regard to museums, music, and theater still exist and flourish to this current day.

New York City's gifted and talented programs can be characterized as "a loosely strung necklace of citywide options open to students from all five boroughs in addition to school-based opportunities, dependent on interest and resource decisions" (VanTassel-Baska, 2010, p. 21). A few examples of New York City's gifted and talented roots include New York City—Brooklyn Tech (1918), Bronx High School (1938), the Hunter College Schools (1930), and Stuyvesant High School (1904). These schools have waiting lists that number in the thousands.

The Hunter programs have traditionally offered opportunities at secondary schools while sporadically offering elementary options as well. The individual principals, often not trained in gifted and talented education, used a vision of a developmentally good and appropriate program rather than a sterling example of gifted education. Math and Science specialization has always been a priority at Bronx, Stuyvesant, and Brooklyn Technical High Schools as well as preparing students to compete in the Intel (Westinghouse) competition throughout their school careers. The Speyer school opened in 1926 and was the first elementary to offer gifted and talented education for primary students. Speyer became the prototype for elementary schools by offering several features: "differentiated curriculum developed into units of study, the use of special enrichment options like foreign language and philosophy introduced at primary level to

gifted children, and the use of diagnostic assessment for curriculum decisions in a nongraded setting” (Hollingworth, 1926).

VanTassel-Baska (2010) detailed additional breakthroughs in gifted education include the creation of the Arts programs. New York was the home place of the first school of Performing Arts. The notion of competition has also been imbedded into New York’s gifted culture. The Intel Science Competition, as well as MATHCOUNTS, and International Olympiad competitions are just a few examples of opportunities for gifted students to compete and challenge one another. New York’s public school system is the largest in the nation serving more than one million students. There were a reported 268 gifted programs in 2006 out of a total of 1,300 schools. From the outside perspective, the offerings seem insufficient considering that the programs and services do not reach all of the districts’ qualifying students. Matthews conducted a case study in which she recommended stronger administrative support, using the new teacher education standards, and achieving some consistency with regard to program design and accountability for gifted and talented education.

Van Tassel-Baska (2010) described San Diego as the home to the oldest continuously operating, citywide gifted program in the country. The beginnings of San Diego gifted education were a result of a 1948-1949 large cities testing report with findings of how gifted students were not performing up to their level of ability. A pilot program of 300 students resulted from this research and recommendations. The next stage of San Diego’s gifted education can be traced to 1958 under the direction of a citywide committee chaired by the deputy superintendent. This committee still exists in current San Diego public school education. One of the committee’s first visions was to

develop a district wide screening process for grades 3, 7, and 10. Sixteen elementary schools were coined as schools for the gifted. In 1974 where there were 37 programs serving students in grades 3-6. Certain classes were limited to caps of 15 for those struggling with adjustment issues. Middle and high school students were able to test out of classes and accelerate their graduation from high school. San Diego also employed a site-based teacher as well as a specialized counselor to work with gifted and talented students.

San Diego's assessment and identification for gifted and talented students has been directly tied to the "Study of the First Order Gifted Children" during 1957-1959 (History of San Diego Gifted Program). The researchers in this study determined that students of IQ 148+ were dissatisfied with their current schooling and thus needed special services. As a result of the research along with the creation of the Mentally Gifted Minor Program, San Diego's state guidelines for identification of the gifted and talented became two tiered. So the state relied on an IQ score of 132-139 on the Binet scale while San Diego continued to classify students with IQ of 140+ in order to be considered "San Diego Gifted". The result was state gifted students attended classes at their geographical feeder pattern while "San Diego Gifted" students would attend classes at specialized regional centers. Programs for the highly gifted were also formed in San Diego: "In 1966, four First Order Gifted (FOG) secondary seminar centers for students were opened for students with IQ 155+" (VanTassel-Baska, 2010, p. 23). This program was modeled after the "Oxford Plan" including seminars, teachers as tutors/mentors, and the use of community resources. Concerns arose in the 1970's on the lack of cultural diversity in the city's gifted programs. The proposed remedy was the creation in 1987 of the Raven's

Progressive Matrices as a tool for finding more underrepresented populations (VanTassel-Baska, 2010).

San Diego also pioneered professional development standards for educators of the gifted and talented. In the 1960's, elementary teachers were required to attend six weeks of summer training related to gifted education and the nature of teaching gifted students. In 1969, the formation of the Association of San Diego Educators of the Gifted (ASDEG) formed to support teachers of the gifted as well as holding a yearly conference for gifted educators. Currently, San Diego has seminar programs in 51 schools with a breakdown of 20 elementary schools, 15 middle schools, and 13 high schools. Students that do not qualify under the normal gifted and talented thresholds have to rely on scoring at the 95<sup>th</sup> percentile on the Raven as well as 95<sup>th</sup> percentile or higher for two concurrent years on state standardized achievement batteries. These students attend gifted programs where 25-75% of the campus contains children that are not gifted. The amount of the non-gifted group depends on campus grouping model decisions. An administrator is in charge of the GATE program to oversee personnel and all aspects of the program. The formation of a Pupil Study Center includes a half-time employed psychiatrist in addition to two full time employed clinical psychologists to provide services for the gifted and talented student with severe adjustment problems. San Diego's gifted and talented education arose from influence of outside consultants from universities as well as local committee members.

Van Tassel-Baska (2010) summarized that New York's, San Diego's, and Chicago's gifted and talented programs were created due to concern and awareness for meeting the special needs of these students. Teachers, administrators, and outside consultants from universities were the leaders in each of the three cities that pioneered the

creation of gifted and talented education. Parents were not a driving force in any of these three cities. Chicago and New York focused their vision on academic rigor and enrichment opportunities, while San Diego addressed social adjustment and underachievement. Each of the three cities incorporated some form of ability grouping. Chicago and San Diego had citywide plans that included elementary as well as secondary opportunities while New York mostly offered high school opportunities exclusively. All three cities created comprehensive programs within sites that included testing, academic, and social and emotional services. Chicago, New York, and San Diego employed psychologists, social workers, and counselors on a full-time basis to address the needs of gifted and talented students.

VanTassel-Baska (2010) concludes by recognizing four areas of focus as a result of this work. Professionals in education need to build on the past rather than destroying its footprint. Using the history of researched practices can prevent districts from regression and aid in the equality of gifted education. Employing diverse learning opportunities based on individual districts and needs is imperative for reaching the gifted and talented learner. In addition, models that previously were successful can be utilized in today's classrooms as long as these programs are tweaked for the 21<sup>st</sup> Century learner. Research and evaluation are also key to ensure gifted programs are being driven by sound and tested practices. VanTassel-Baska also insists that community-based services be reinstated and/or expanded. The use of Skype and other networking media can assist with enrichment opportunities without costing money or leaving the campus. Finally, she asks that educators apply the lessons learned from working with students of poverty and color. These programs show intense focus and interventions with relation to students that

traditionally did not have the resources or opportunities of their more privileged peers. The need for scholarships, free after school and summer programs, as well as free entry to cultural events within the city helps level the playing field for less fortunate students. Opportunities and access to education are the keys to creating a society of life-long learners. Studying the history of these three gifted and talented programs gives researchers and educators resources on how to appropriately plan and reach the gifted and talented student.

### **Defining Gifted and Talented**

Schools and districts first began to take notice of gifted students around the early Twentieth Century. Initially, gifted students were defined as those who scored a 140 or higher on an IQ test. The definition later expanded to include consideration of characteristics such as creativity and leadership. The Marland Report (1972) defined gifted and talented children as children who have demonstrated or have the potential ability in “1) general intellectual ability, 2) specific academic aptitude, 3) creative or productive thinking, 4) leadership ability, 5) visual and performing arts, and 6) psychomotor ability” (p. ix). The Texas Education Agency (2012) defines a gifted and talented student as a

Child or youth who performs at or shows the potential for performing at a remarkably high level of accomplishment when compared to others of the same age, experience, or environment and who: (1) exhibits high performance capability in an intellectual, creative, or artistic area; (2) possesses an unusual capacity for leadership; or (3) excels in a specific academic field.

In addition to defining what it means to be gifted and talented, it is important to know and understand the characteristics of gifted and talented students. Characteristics of gifted and talented children fall within three main categories: cognitive traits, social and emotional traits, and language traits.

Examples of cognitive traits:

Very observant, extremely curious, intense interests, excellent memory, long attention span, excellent reasoning skills, well-developed powers of abstraction, conceptualization, and synthesis, quickly and easily sees relationships in ideas, objects, or facts, elaborate and original thinking, excellent problem solving skills, learns quickly and with less practice and repetition, unusual and/or vivid imagination

Examples of social and emotional traits:

Interested in philosophical and social issues, very sensitive emotionally and even physically, concerned about fairness and injustice, perfectionistic, energetic, well-developed sense of humor, usually intrinsically motivated, relates well to parents, teachers, and other adults

Examples of language traits:

Extensive vocabulary, reads rapidly and widely, and may read earlier than most peers

**Maslow's Human Motivation Theory**

Abraham Maslow was a humanistic psychologist who was interested in studying the top 1% of people (Maslow, 1998). Maslow chose to study mentally healthy and extremely successful people such as Albert Einstein, Thomas Jefferson, and Thomas Edison rather than mentally ill people, who most other psychologists at that time were studying and treating. He is a seminal thinker who greatly influenced education after the



1960's. Before his and other humanistic psychologists' influence, schools focused on the cognitive abilities of students. He influenced current views on meeting the affective domain needs of students, which covers the emotions, needs, and feelings of students.

Adolescents deal with the transition from elementary to middle school, hormonal changes, and the need to be accepted by peers. The nature of adolescence contributes to the difficulties of middle school. Teachers and school leaders who use the affective domain to nurture middle school students can attain a high rate of success in reaching the middle school student (Maslow, 1998).

Maslow is most known for his Hierarchy of Needs which was outlined in two books *Motivation and Personality* (1954) and later clarified in *Toward a Psychology of Being* (1968). Maslow believed that human beings always have needs or motivations. Once needs are met, others will surface. Needs motivate people to do what they do. There are stages in which these needs appear: a system or hierarchy in which the needs surface.

Abraham Maslow's Hierarchy of Needs (1954) has five levels: 1) physiological, 2) safety, 3) love and belonging, 4) esteem, and 5) self-actualization. The first four levels are considered D-motivations, or deficiency-motivations. Self-actualization is considered a B-motivation, or being-motivation.

Physiological needs include breathing, food, water, and air. Safety needs include physical safety, financial security, and good health. Love and belonging needs include the need for friendship, family, and sexual intimacy. Esteem needs include the need for acceptance, respect of others and by others, and self-confidence. Self-actualization needs include morality, creativity, lack of prejudice, and acceptance of facts (Maslow, 1998).

Most people spend their lives trying to get deficiency motivations met. They do not get to self-actualization, or a sense of being, because their attention and lives are focused on underlying needs. Maslow believed that people whose deficiency needs are met are able to function at a higher level of enjoyment and clarity. These people are able to see reality more clearly. Thus the person's interactions with oneself, others, and the world will be more accepting, more capable of love and appreciation, and overall just plain more enjoyable (Maslow, 1998).

Peak-experiences are a key part of Maslow's theory of self-actualization. Peak-experiences are moments of awe, wonder, and heightened clarity, which lead to self-actualization. They can happen multiple times a day for self-actualizing people. Maslow (1970) later extended that self-actualization can happen to anyone. Self-actualization is also not an all-or-nothing affair, but can have varying degrees and frequencies (Maslow, 1998).

**Self-actualization.** When a person is able to break out of the deficiency needs, he or she has the clarity and awareness to satisfy being-needs. Self-Actualization occurs when individuals are functioning at a "state of metamotivation." Metamotivation is the term Maslow (1970) coined to describe the motivation of people who go beyond the scope of the basic needs and strive for constant betterment. Metamotivated people are driven by B-needs (Being Needs), instead of D-Needs (Deficiency Needs). Once an individual can unlock these higher levels of human possibilities, that person begins to live with a heightened ability and clarity that is unknown to most of the population (Maslow, 1998). As a result, the individual is more confident, aware, and is not frightened of the unknown or negative possibilities. This is directly opposite to individuals that operate in

the deficiency motivation level because they fear perceived dangers due to their perception of life and the struggles they face from living in strife. A person who is self-actualized not only realizes what his or her potential can be, but that person also has the knowledge and skills to achieve his or her full potential (Maslow, 1998).

**Maslow's impact on education.** Maslow's theory on humanistic psychology has had great influence on education and humanistic curriculum. In the 1960's and 1970's, schools focused on cognitive learning and subject matter. American schools were charged in Charles Silberman's best-selling book *Crisis in the Classroom, The Remaking of American Education* (1970) as being repressive. He advocated humanizing American schools. Humanistic curriculum focuses on the affective domain rather than cognitive outcomes.

In the 1970's, schools began melding the cognitive and affective domains in schools. Student participation, joint responsibility, and meaningful learning were implemented. Schools began considering the whole person and integrated thinking, feeling, and acting by the students (Maslow, 1998).

Applying Maslow's (1998) beliefs to current schools, evidence of humanistic influences is easy to find. Implications of physiological needs include free and reduced lunch programs and regulated building temperatures. Safety needs are addressed with anti-bullying programs, codes of conduct, emergency plans and drills, maintained facilities, and zero tolerance to drugs and weapons. Love and belonging are brought into schools through peers, clubs, organizations, character-building programs, and student/teacher interactions. Without appropriate love and belonging, students may turn to gangs to meet this need, which can have negative implications to schools. Over the

years, meeting esteem needs has become more prevalent in schools. Awards, recognitions, Honor Roll, equitable teacher-student interaction, private discipline, and accommodations for special needs are efforts used to increase esteem. Lastly, efforts to instill self-actualization motivations in students can be seen in high expectations, meaningful connections in lessons, promoting creativity and self-expression, college and career initiatives, and teaching lifelong learning skills.

Maslow (1998) contributed to creating an awareness that school personnel know students learn and are impacted cognitively and affectively. Understanding middle school age students is necessary for successful school leaders. Schools will have to continue increasing efforts to meet the affective domains of students so cognitive learning can take place at its highest potential. Abraham Maslow's theory relates to humans being the best they can be, knowing and actualizing their fullest potential, and living life through a clear lens. Applying Maslow's beliefs on motivation in relation to the gifted and talented students in this study, these students attempt to reach self-actualization and are functioning in the "B" motivations. In order for this type of students to reach their full potential, they must be challenged with engagement, rigor, and appealing to the affective domain. Educators share these same ideals for their students. They strive to create life-long learners, wish success upon them, and hope they will rise to their fullest potential.

### **Heterogeneous versus Homogeneous Ability grouping of High Achievers**

Grouping students by ability has a rich history in public education. Michael Petrilli (2011), in his article "All Together Now? Educating High and Low Achievers in the Same Classroom", gives the example:

In the old days, ‘ability grouping’ and tracking provided the answer: you’d break your students into reading groups, with the bluebirds in one corner, tackling advanced materials at warp speed, and the redbirds in another, slowly making their way through basic texts. (p. 49)

This article gives a description of the typical classroom in 2011 where students achieve three levels above their grade while peers in the same classroom are functioning at two to four levels below their grade. How does a teacher reach such a wide range of students? In the past, schools used ability grouping to segregate students based on their level. This technique was in place for decades until the mid-eighties, when opponents to ability grouping and tracking emerged.

*Keeping Track* (1986), written by Jeannie Oakes, was a catalyst in the detracking movement. Oakes believed that all students should have equal opportunity and challenge regardless of socioeconomic status or race. Research and advocates believed that low achieving students were being limited by their education. The anti-tracking movement ensued and students began to mix heterogeneously by ability level. Students of all ability levels were grouped in the same classroom. While the leaders of the anti-tracking movement wanted to theorize that the high achieving students would not be affected, research is showing that from 2000-2007, achieving of high-achievers stagnated (Loveless, 2008). Differentiated instruction has been touted as the answer to today’s classroom, but teachers have had difficulty grasping the concept. Petrilli (2011) mentions that 8 out of 10 teachers report that differentiated instruction is “very” or “somewhat” hard to implement. He believes that schools without dynamic leadership are destined to

fail. Differentiated instruction is a huge paradigm shift, and teachers are going to need a vast amount of support and resources as well as time to practice.

“Challenging the Gifted: Nuclear Chemistry and Sartre Draw the Best and Brightest to Reno” is an article written by June Kronholz (2011). This article talks about how gifted and talented education is often cut from district expenditures. While districts continue to raise the lower students up to proficient, the high flyers are not growing with their education. Kronholz (2011) sets the article by explaining:

Alex Wade’s field is linguistics. In his search for the perfect language—and ‘annoyed,’ he says, with Esperanto—he has created 10 languages and 30 or 40 alphabets, including one language without verbs, just for the challenge. He’s taking course at the University of Nevada, Reno, in Basque, linguistics, and microbiology. And there’s this: Alex is 13. (p. 4)

Kronholz asks the question of what does a public school do with a student like Alex. The National Association for Gifted children (NAGC) surveyed states in 2008 about what they provide in the way of gifted education and found “not much” (p. 4). Certain states do not allow students to start Kindergarten early, middle school students to enroll in a high school course, or waive the compulsory attendance laws for the 15 year old student that has finished all of his/her coursework (Kronholz, 2011). Kronholz continues through the article to explain that teachers are not prepared to deal with students at such a high level of intellect. These students require specialized instruction as well as being grouped with peers of their ability. America has not wanted to remove the high achievers from the general classroom due to the fact that these high achievers increase scores for their low achieving peers. While this is commendable, there is significant damage to the

advancement of mankind if high achieving students are not challenged to their full potential.

Cross, Colangelo, and Robinson argue that the U.S. teach every youngster to his potential, rather than narrowing it by ignoring youngsters who have reached state minimums. Not because slower learners shouldn't be helped, but because faster learners shouldn't be kept waiting. (Kronholz, 2011, p. 6)

Kronholz continues by stating, "Cross and Colangelo both doubt that profoundly gifted students can be accommodated in the typical public-school classroom: Like profoundly challenged children, they may need special classes, teachers, and even schools that adapt to their differences" (Kronholz, 2011, p. 9). Kronholz also chronicles the startup of Davidson Academy for students with IQs in the 140-170 range. These students are grouped by ability and progress with the opportunity to advance based on the acceleration of each individual student. Bob Davidson, one of the academy's founders, closes the article by explaining, "Ability grouping 'may fly in the face of closing the achievement gap,' but neglecting the country's brightest kids flies in the face of logic. 'Don't stop them,' he says" (Kronholz, 2011, p. 9). High achieving students require special education and even the most talented differentiated educators struggle to vary techniques for exceptionally bright students such as those mentioned in this article.

Epstein, Pianko, Schnur, and Wyner (2011) collaborated on *Are We Lifting All Boats or Only Some?* Basically the authors partner up based on their beliefs and research findings. Schnur and Wyner believe that students at all achievement and academic levels are being short changed. "This is not surprising in some ways, given problems in current educational practice: we tend to provide less funding, have fewer outstanding teachers

and principals, and require less rigorous coursework in schools that serve lower-income students” (Epstein et al., 2011, p. 49). Schnur and Wyner believe that reforming public education should focus on the totality of education for all, not just the most gifted students. “Changing entire systems of education is the best strategy for improving overall performance and increasing the performance of advanced students, while also closing achievement gaps” (Epstein et al., 2011, p. 49). Epstein and Pianko discuss the importance of differentiated instruction and reaching each level of student within the same classroom. Most of the successes of differentiated instruction are more prevalent in elementary schools. Epstein and Pianko expand by saying, “however, the paradigm starts to break down by the time students reach middle school. The challenges become insuperable by the time students reach high school” (Epstein et al., 2011, p. 51). In addition:

The difference between those students capable of doing calculus and those who are barely ready for geometry, is too dramatic for even the ablest teachers to span in one classroom. Either there is separate education, with whatever perceived stigma it might have, or students at both ends of the spectrum will languish.

(Epstein et al., 2011, p. 51)

Policy makers are concerned with improving students’ grades from the bottom while neglecting those high achieving students at the top of the spectrum. These students are 21<sup>st</sup> century innovators and inventors of the next great startup companies and niche markets.

Since we fail to focus attention on increasing the aggregate number of Americans capable of achieving radical innovation or starting new entrepreneurial endeavors,



we have likely sacrificed any number of start-ups that could have led to a Fortune 500 company or the next Facebook. (Epstein et al., 2011, p. 52)

Educators believe that achievement gaps should be closed, but the closing of this gap should not come at the cost of our highest achieving students. Ability grouping of these high achievers allow for collaboration, acceleration, and opportunities for challenge.

In *Tracking and Detracking: High Achievers in Massachusetts Middle Schools*, Tom Loveless (2009) examines tracking--the practice of grouping students into separate classes or courses based on their prior academic achievement as well the overall percentage of high achieving students in tracked and untracked schools. Massachusetts is known as a “reformer” for tracking; and Loveless analyzes the changes that have occurred over 18 years (1991-2009). Loveless reported four main findings as a result of his research. First of all, tremendous changes have occurred in tracking since the 1990’s. In the 90’s, students were offered two to three distinct tracks with those being honors, regular or academic, and basic or remedial. Students were usually placed in these setting based on previous teacher and administrator recommendation (Loveless, 2009). Secondly, the 8<sup>th</sup> grader of 2008 is mostly on a one-track day in which he/she attends a heterogeneous class that focuses on differentiated instruction meeting each individual learner. Mathematics in 8<sup>th</sup> grade is usually tracked in that a portion of the students enroll in 8<sup>th</sup> grade math while advanced or high achieving students are placed in Pre-Algebra or Algebra. Detracking is most likely to have occurred at schools with lower socioeconomic status while districts and schools with higher socioeconomic status have retained or continued tracking. Parents that are vocal and involved are more likely to advocate and recommend schools continue to track. The third finding is that detracking is more

prevalent in urban, high poverty schools. These types of schools have the highest at-risk factor with detracking students in urban schools serving large numbers of poor, low-achieving children. The final and most significant finding is that detracking carries risks for high-achieving students (Loveless, 2009).

The Loveless Massachusetts study compared percentage of students achieving at the advanced level on the MCAS in tracked and untracked schools. With a school level SES held constant, there was no difference in Language Arts, but there were significant differences in math for schools that offered more than one track. Schools with multiple track levels have significantly more students scoring at advanced and proficient levels in addition to fewer students scoring at needs improvement and failing levels. Schools that offer two tracks have 18.6% scoring at the advanced level, while schools with one track have 15.8% scoring at the advanced level. Schools that offer three tracks had 26.6% scoring at that advanced level. Each additional track (up to three) accounted for a three percentage-point gain in students scoring at the advanced level (Loveless, 2009). In an 8<sup>th</sup> grade class of 200, this would equate to 12 more students scoring at the advanced level. Loveless feels many schools scramble to assist struggling students to gain a level of proficiency in academic subjects, while the needs of the high achieving students are neglected. Much of the nations' low achieving student population is from low-SES schools that are detracked; these students do not have access to the same educational resources or opportunities as their high-SES peers. In conclusion, no one wants to regress to the tracking of the 60's and 70's where students were predestined to a low or vocational track without opportunity of ascending to high level of instruction. However, tracking can be a worthwhile tool to increase performance of high-achieving students.

### **School-Within-A-School**

In *School-Within-a-School Gifted Programs: Perceptions of Students and Teachers in Public Secondary Schools* by Dona Matthews and Julian Kitchen (2007), the authors conduct open-ended surveys of 530 students and teachers in three publicly funded schools with different approaches to providing high-ability “school-within-a-school”: a gifted program, an international baccalaureate program, and a high-ability program with a science focus. The purpose of this study was to put the educational research to work by applying what educators have learned over the last 30 years of gifted and talented education.

When high ability programs are housed in larger schools, educators need to pay attention to the relationships that are so established and work proactively toward (a) transparency and communication; (b) flexible access to gifted programs; (c) equitable access to equipment, facilities, and field trips; (d) awareness of misconceptions and stereotypes; and (e) recognition of diverse pathways to excellence and achievement. (Kitchen & Matthews, 2007, p. 1)

A model that has emerged in the last ten years is the school-within-a-school setting which includes a gifted and talented, high ability, specialized cohort of students; this model creates a cohesive multi-grade-level school within a larger school. Two juxtaposing points of view outline the argument for/against a high ability gifted and talented school-within-a-school. One perspective is that gifted and talented high ability learners require learning with peers of the student’s intellectual ability in order to flourish. The other perspective says that segregating learners based on ability can cause problems of equity and elitism (Borland, 2003b). School districts have chosen to offer

opportunities for advanced learners by creating school-within-a-school programs. Schools-within-a-school were designed to provide an enriched academic experience for motivated, gifted, and talented learners. These programs are housed within a larger feeder pattern school. Fiscally, opening a school-within-a-school is much cheaper than building a separate school for highly advanced gifted and talented students, and the school-within-a-school also offers unique opportunities for students to mix heterogeneously during electives, physical education, and lunch. Though definitions of a school-within-a-school vary, the idea is that a percentage of the student population is educated separately from the general population of students, while sharing the same physical location. Students that are part of a school-within-a-school have a fostered sense of belonging and an increased sense of community. Researchers have found that it is important for students in a school-within-a-school setting have opportunities to mix and co-exist. Students value the education they are receiving in advanced classes, but they also expressed a need to interact with students who are academically different from them (Kitchen & Matthews, 2007).

Researchers have found that problems can result from school-within-a-school settings. Dewees (1999) said that larger schools might be at a disadvantage to the smaller school, resulting in rivalries, lost relationships, and less cohesion within the school as a whole. The advanced program can be seen as the privileged group, with access to better technology and permitted to go on more field trips (Gootman, 2004; Kitchen & Matthews, 2007). Schools that house school-within-a-school programs must work proactively to respond to these difficulties and incorporate opportunities for all students to feel part of one larger whole group.

The amount of integration of the different school-within-a-school programs varies by campus and district. Certain school-within-a-school settings allow students to choose the amount of advanced classes to be taken (Kitchen & Matthews, 2007). In contrast, other school-within-a-school models are all or nothing in that the acceptance into the program comes with the expectation that students will take all advanced courses within the setting. The role of teachers can also vary in each school-within-a-school setting. Matthew and Kitchen explain that certain programs allow teachers to instruct advanced students as well as those in the general curriculum program. Other programs are completely separated in that teachers instruct only the advanced learners or only the general population. There is a balance between autonomy and elitism. School-within-a-school programs must have the authority to function separately, but the program cannot lose sight they exist within the larger school with regards to community, socials, and resources/opportunities. Matthews and Kitchen recommend schools of this nature to instill transparency in communication and information, flexible access to gifted programs, equitable access to equipment, facilities, and field trips, educators' awareness of misconceptions and stereotypes, and recognition of diverse pathways to excellence and achievement. In conclusion, special programs within larger schools can provide highly capable gifted and talented learners with the intellectual challenges they need as well as opportunities to interact with their intellectual peers in addition to a heterogeneous integration for physical education, electives, and lunch/social/extracurricular activities.

### **Acceleration Opportunities at the Middle School Level**

**Acceleration.** In *A Nation Deceived: How Schools Hold Back America's Brightest Students*, the authors begin Chapter 1 with, "America's school system keeps

bright students in line by forcing them to learn in a lock-step manner with their classmates. Teachers and principals disregard students' desires to learn more-much more-than they are being taught" (Colangelo, 2004). The GT Academy does not fall under this system. Students are encouraged by teachers to take Credit By Exam (CBE) tests in math in order to accelerate to Algebra and Geometry in middle school. A small percentage of GT Academy students accelerate up to Algebra II in 8<sup>th</sup> grade. Other high school courses offered at the middle school level are Biology Pre-AP and English I Pre-AP. Students are not held back or instructed on what they cannot take at the GT Academy. Parents and students within this district welcome this opportunity. The increased growth of the GT Academy from 87 to 592 students in five years empirically shows that a demand and need exists for middle schools that provide accelerated academic choices. Students are encouraged to challenge themselves and grow academically. In *A Nation Deceived* this concept is explained:

Excellence can lose its vibrancy. It can become complacency. It can become apathy. What it always becomes, if it's ignored is less than it could be. When we say no to acceleration, we are quietly and, ironically with good intentions, lowering our national standards from excellence to baseline competence. (Colangelo, 2004)

In classrooms which comprise of students from all levels of ability, teachers are charged with designing instruction that will differentiate for such a wide range of abilities. Ability grouping was used for decades as a way to educate students by forming homogeneous classrooms based on academic achievement. For example, basic students attending classes with all basic students, general students attended classes with general

students, and advanced students attended classes with all advanced students. During the 70s and 80s, a detracking or opposition of ability grouping movement sprang up through the form of books and carried momentum of breakneck speed (Petrilli, 2011, pp. 49-50). The literature explained that students who were ability grouped would have self-esteem problems as well as more limited life chances. Opponents also felt that teachers and educators would challenge students less if they were in the lower tracks. In current public education, most students are on one of two tracks. These two tracks are the regular curriculum and then the gifted and talented or Pre-AP/AP track. Students previously separated into low and regular tracks are now combined with the hope that peers will help increase achievement as well as teachers. As the data accumulated during the mid-80s and into the 90s, archival data began to show that the lack of ability grouping was hindering the gifted and talented students or top ten percent. These high achievers were stagnant over the course of ten years (Petrilli, 2011, p. 50). As more states increase accountability standards, the emphasis remains to increase scores of low achievers while our high achievers are required to advance or accelerate themselves with the help of parents/family/activities. The largest opposition of ability grouping talks of inequitable education opportunities for students. Research has been compiled to prove that students of low and middle ability can be grouped without detrimental effect. The same cannot be said about gifted and talented learners. These high achieving students require high levels of individualized instruction in addition to differentiated instruction on a period-by-period basis. While ability grouping can be detrimental to lower and moderate achievers, gifted students can and will flourish when grouped with their peers. In a study for the Fordham Institute:

Loveless found a clear pattern in the late 1990's when states adopted accountability regimes: the performance of the lowest decile of students shot up, while the achievement of the top 10 percent of students stagnated. That's not surprising; these accountability systems, like No Child Left Behind (NCLB) in 2002, pushed schools to get more students over a low performance bar. They provided few incentives to accelerate the academic growth of students at the top. (Petrilli, 2011, p. 50)

Another study looked at the effects of Hurricanes Rita and Katrina on Houston schools. Bruce Sacerdote states, "The high achieving kids seemed to be the most sensitive. They do particularly well by having high-achieving peers. And they are particularly harmed by low-achieving peers" (Petrilli, 2011. p. 51). While detracking can be appropriate for low and middle ability learners, gifted and talented students stand to be harmed from such a heterogeneous mix. Ability grouping of the gifted and talented should result in improved achievement, increase in rigor, and opportunities for student learning from peer to peer.

Data showed that NCLB and accountability measures have caused a stagnation effect of scores for gifted and talented students. There is also evidence that states under heavy financial pressure have eliminated funds for gifted and talented education altogether. June Kronholz (2011) writes in *Challenging the Gifted*, "In the 2008 NAGC survey of state policies, 18 states reported they don't provide money for gifted education, and 7 others fund it only if they have money to spare" (p. 6). This is an alarming finding that half of our nation's states have little or no resources for education of the gifted. Teachers are faced with the challenge of differentiated instruction in order to properly cultivate these students that are crucial to the advancement of our nation through



inventions, discoveries, and increased problem-solving logic. Professional development opportunities that focus on challenging the gifted and talented learner can be one example of reform. Teachers need tools and skills to succeed in reaching the gifted and talented learner. The state of gifted and talented education varies from one district to another and this can complicate the vision and mission of gifted and talented education.

Administrators that are savvy and willing to think outside the box could have staff members within a campus present information or staff development. Money is not always the issue or need in order to educate properly.

In *A Nation Deceived*, the author states, “Acceleration is really about letting students soar. Acceleration is a strategy that respects individual differences and acknowledges the fact that some of these differences merit educational flexibility. It provides cumulative educational advantage” (Colangelo, 2004, p. 5). Students are constantly enrolling in schools at various stages of academic readiness. Students ready for the challenge of Algebra, Geometry, and Biology should have the opportunity if the willingness and prerequisite skills exist within the student(s). Middle school students enrolling in high school courses will have the benefit of more choices in high school. Freshman students entering high school with high school credits ranging from two to five are afforded the option to take a specialized course or enriching course of interest to further a student’s journey in advancement. The nation’s brightest students are being held back due to misconceptions about acceleration and incomplete or incorrect information (Colangelo, 2004). There are several forms of acceleration. Single subject acceleration for students is a great opportunity to try acceleration. Students also are able to take a course by exam (CBE) that allows them to test out of a particular subject.

Students not allowed this opportunity for acceleration would have to sit in a classroom through curriculum that is already mastered for an entire school year. The brightest students need challenge, rigor, and problem-solving skills to innovate in the 21<sup>st</sup> Century. Acceleration allows gifted students to grow academically and socially through interactions and challenging coursework.

Colangelo (2004) continues to make the point for acceleration by giving a historical lesson. Great leaders like Martin Luther King Jr., T. S. Eliot, and W.E.B. DuBois accelerated through public school and graduated early. These dynamic leaders were advanced for their age and were given the opportunity to soar and reach for new horizons. “When great leaders reach society early, everyone benefits” (Colangelo, 2004). The demand for acceleration continues to grow as more high schools in America are offering high school students more choice. James Borland, Professor, Teachers College, Columbia University talks about the overwhelming research supporting acceleration and the phenomenon of educational practitioners being closed off and refusing to acknowledge the positive impact as well as benefits (Borland, 1989). Acceleration can benefit students marginally in the short-term. If the long-term is factored in, the benefits and positive effects of acceleration can be exponential. Each student progresses at his/her own pace. Some students require the need for extensions, and deeper connections to the curriculum. These students should be afforded the opportunity to accelerate if the skill set, hard work, and prerequisite skills exist.

Adolescents identified before the age of 13 as having exceptional mathematical and verbal reasoning were tracked in the article Top 1 in 10000: A 10-year follow-up of the profoundly gifted. When the adolescents became adults, they were surveyed. A high

number of those adults surveyed explained that they did not regret acceleration. The regret the adults had was not accelerating more. They basically would have accelerated at an earlier age if they could go back and do it again. This is an overwhelming endorsement for acceleration. Many of the subjects surveyed in this study progressed through life to attain doctoral degrees and create noteworthy literary, scientific, or technical products by their early 20s. (Lubinski, Webb, Morelock, & Benbow, Aug 2001).

Colangelo (2004) discusses, in *A Nation Deceived*, gifted and talented students in high school. The notion of cool and uncool is the age-old challenge for gifted high school students. Gifted and high achieving students must choose between being socially accepted or accelerating academically. The two are juxtaposed and are usually tied together in an indirect relationship. The more students accelerate academically, the more their peers will think they are “uncool” or a bookworm. The research shows that a number of gifted students think about the typical teenage issues as well as the art of thinking itself during the middle school years. These gifted and talented students need to be challenged academically. These students crave information and love learning. These students possess a different attitude and they must be met with a challenging curriculum. If these high achieving gifted students are not met with a challenging curriculum, teenage ambition can turn into boredom and a failure for the nation’s brightest students to reach their full potential (Colangelo, 2004).

Acceleration is another valuable tool in educating the brightest gifted and talented students in America’s schools. The data derived from Colangelo’s study has proven that there is a definite demand and interest in acceleration during the middle school years.

The GT Academy students performed above and beyond the standard-zoned district GT student in relation to the number of high school credits. The report *A Nation Deceived* begins by explaining that “acceleration is the art of matching the level, complexity, and pace of the curriculum with the readiness and motivation of the student” (Colangelo, 2004, p. 5). Continuing in *A Nation Deceived* (2004), the logic behind acceleration is clarified by stating that acceleration is not based on numbers. It is based on the legitimate educational needs of high-ability students. The author is trying to prove the point that if a campus has seven to ten high-achieving students on a given campus, that campus should institute a different curriculum and system of learning for the campus’ highest achievers. The historical perspective would have been for parents of the seven to ten students to supplement or enrich his/her child’s needs through after-school programs or tutorials. The 21<sup>st</sup> Century mission is that superintendents and district/campus leadership should promote high achievement and education for all students. Students that do not feel supported or part of a school are going to adversely affect the entire learning community. Researchers have studied acceleration through the medium of AP classes. Students that have taken an AP course are 59% likely to graduate with their Bachelor’s Degree. On the opposite end of are those students that never take an AP class in high school. These students are 33% likely to graduate with their Bachelor’s Degree. This is a statistical difference worth investigating further.

In conducting research for this topic, it is evident that there is little advancement in the plight of gifted and talented students over the last ten years. The nation’s brightest and highest achieving students continue to show stagnated scores (Petrilli, 2011, p. 50). In addition, there is a scarcity of research on advanced learners in middle school.

Elementary and High School programs are abundant in research with regards to gifted and talented students while there is little to no research specifically related to middle school students. In addition, there is not a study that looks at a middle school gifted and talented academy students in relation to their academic performance. School-within-a-school programs are abundant in high school settings while middle schools show little evidence of a school-within-a-school program for the gifted. Scholars and educators in gifted and talented forums call for further research into the education of the gifted. These students are those that will begin Fortune 500 start-ups as well as inventors who will discover the next cancer breakthrough.

### **Turning Points: Middle School Reform**

In 1989 a report on reforming middle school practices was released. *Turning Points: Preparing Youth for the 21<sup>st</sup> Century* was put together by the Carnegie Council on Adolescent development. The report took an in-depth look at current middle school theory, practice, and the changing economic and social contexts. The report paints a grim picture of adolescence and their ability to function adequately. The authors describe a scene where 10-15 year olds cannot think abstractly, cannot act independently, cannot consider the consequences of their actions, or be given responsibilities. Motivation behind this project came from the business world and concerned educators. The state of America during this time frame was that of economic uncertainty and changing population. Business CEO's and corporate America asked the question(s) of how America could compete in a global society and be competitive. The term turning points was developed to explain the dichotomy of adolescence during the 10-15 year old range. The authors believed that this crucial time of life was as an opportunity to become a

productive and fulfilled citizen or to fall through the cracks and begin the decline towards a diminished future. The authors of the work give insight into the importance of middle school education by stating, “in growing for a solid path toward a worthwhile adult life, adolescents can grasp the middle school grade school as the crucial and reliable handle” (Carnegie Council on Adolescent Development, 1989). The authors believed that there were eight main principles middle schools ought to operate under. Middle schools that operated under these principles would benefit all students especially those at-risk. Large middle school grades schools should be divided into smaller learning communities. Middle grades schools should transmit a core of common, substantial knowledge to all students to foster curiosity, problem-solving, and critical thinking. Middle schools should be organized to ensure success for all students. Middle schools should have teachers and principals that take responsibility and ownership to transform middle school students. Teachers should be specifically trained and prepared to handle young adolescents and be rewarded and recognized distinctively for the willingness to successfully reach middle school adolescent students. Middle schools should be environments for health promotion and life sciences. The notion of education and personal health, along with the application of these subjects simultaneously linked, is a component for the 21<sup>st</sup> Century learner. Families should be allied with school staff in spirit and mutual respect and have many opportunities for joint collaboration. And the final recommendation of the original Turning Points is the belief that middle schools should be partners with various kinds of community organizations in educating young adolescents. This includes involving the middle school students in the actual experience

and application of learning through service (Carnegie Council on Adolescent Development, 1989).

The current day trend of school choice and competition for stakeholders is uncharted territory for most school districts. Following proven research and best practices can be the most noteworthy marketing tool. Middle schools that follow the recommendations of Turning Points can be rewarded with a learning community capable of fostering the critical thinking and problem-solving skills the 21<sup>st</sup> Century workforce is going to require. Joan Lipsitz proclaimed in *Growing Up Forgotten*, “We have been startled by the extent to which this age group is underserved” (Lipsitz, 1980, p. xv). There had been little to no attention placed on the 10-15 year old learner for decades until the advent of the Turning Points report. Students in school districts across the nation were grouped as “junior high” students in grades 7-9. This age combination was found to be unsuccessful through the *Turning Points* report. The preferred method of grouping adolescent students is in a middle school model containing grades 6-8. There is too much of a cognitive and emotional gap between students in 7<sup>th</sup> and 9<sup>th</sup> grades. These “junior” high schools were housing emerging groups going through different stages in one building. Research now proves that the 10-14 year old mix in middle school is more conducive to building a successful learning community. Another recommendation of Turning Points is the concept of teaming students and teachers. A group of teachers, usually 3-5, are in charge of the same 80-140 students throughout the entire academic year. This logic creates a commonality among the group and interconnected learning community/cohort. The teachers know the students and can collaborate on ways to best reach them individually as well as a whole group. Teachers can share ideas and best

practices and conduct cross-curricular activities and projects with more success. Students feel a meaningful connection to the teachers and can also collaborate with peers in order to study or work on activities and projects. Arhar states in “The Effects of Interdisciplinary Teaming on Teachers and Students”, “Most middle-level schools have increased student and teacher teaming up from 33 percent in 1989 to 57 percent in 1992” (Arhar, 1997). This is a drastic increase in a minimal amount of time. The increased number of middle schools that team is another positive benefit of the Turning Points 1989 report. School districts willing to follow best practices and improve the learning community benefit students as well as staff with a curriculum and school culture to match the nature of the adolescent mind. Another author states, “since 1989, *Turning Points* has been the catalyst for development of both components and blueprints for designing and implementing bona fide middle schools throughout the United States” (Hough, 1997, pp. 288-289). The idea that middle schools could be improved, adapted, and restructured was a huge paradigm shift. Middle schools across the nation were continuing to educate students the way they have always been educated for decades without any reflection or criticism of the educators’ actual practices. Is the curriculum and system of education working for the middle school learner?

*Turning Points 2000* reiterates that the middle school leadership team is the heart of a middle school’s governance system. Fostering the skills and practices of shared - leadership and decision-making enables the school community “to manage and facilitate change, and to stay focused on teaching and learning” (Education, 1998). Team based learning communities create an environment in which teachers and students are free and willing to take risks, participate freely, and assess what is and is not working. No one is



ridiculed or made fun of making a mistake (Senge et al., 1994). Using data analysis in conjunction with teams can help middle school leaders build an ever-changing community of reflection and improvement. The school must use this information (data) to determine how to move a school toward greater equity in outcomes for students (Rugen, 1998). If student assessment data is not disaggregated, improvements can be masked or problems can be not visible until the damage to improvement has already been done. Making data-driven decisions with the combination of teaming can result in an improved middle school learning community. The GT Academy utilizes teaming and data-driven decision making as a result of the leadership team as well as the teachers and staff working within the program. Middle school leaders willing to implement the teaming structure in a campus/team learning community can accurately assess the campus programs to evaluate improvements or the need for alleviations.

The *Turning Points* report research and following studies have concluded that continuous improvement, a two-way exchange of ideas, collaboration, and building learning communities can make a difference during the adolescent years of 10-15. Middle school leaders willing to show courage and think outside the box can implement a more engaging and rewarding middle school experience for all students and teachers within the middle school population. Middle school gifted and talented students require a curriculum that is challenging and opportunities for social interactions entrenched in collaboration, exchanging thoughts and ideas, working cooperatively in groups, actively engaged in the education process, and a learning community that fosters improvement. Middle school adolescents need a learning environment conducive to their emotional,

physical, and psychological state. Turning Points and the continuing action and research have championed a paradigm shift in educating middle school students.

## **Chapter 3**

### **Methodology**

This chapter outlines the procedures for analyzing the performance of GT Academy middle school students and standard-zoned district GT middle school students in 8<sup>th</sup> grade. This chapter includes a description of the research design, research questions, setting, subjects, procedures, instruments, and limitations.

#### **Description of the Research Design**

This archival study utilized descriptive statistics to examine quantitative data to gain insight on the performance of middle school GT students attending a homogeneous GT academy program as well as GT students attending standard-zoned middle school. The quantitative data consisted of scaled scores from the 2010-2011 8<sup>th</sup> grade TAKS Reading and Math test as well as the number of high school credits earned at the completion of middle school. The study will examine if differences exist between the middle school GT Academy and the standard-zoned district GT middle school students. Differences will be analyzed with descriptive statistics in terms of overall performance, gender, and ethnicity.

The data used in this study determined differences and similarities between standardized test scores and number of high school credits earned between GT students attending the middle school GT Academy and their standard-zoned district GT middle school counterparts. Students attending the middle school GT Academy have the opportunity to earn up to five high school credits prior to entering high school. Do other middle school GT students in the district have as many credits when they leave middle school?

## **Research Questions**

The subjects of this research study are from two groups. The first group consists of those 8<sup>th</sup> grade GT Academy students attending the academy middle school, while the second group consists of all the remaining 8<sup>th</sup> grade GT students in the district attending their standard-zoned district GT middle school campus. Differences will be analyzed in terms of overall performance, gender, and ethnicity.

- Is there a difference in the academic achievement as measured by the 2010-2011 8<sup>th</sup> grade Reading and Math TAKS test between students who attend a middle school gifted and talented academy compared to gifted and talented students attending their standard-zoned district GT middle school program?
- Is there a difference in the number of high school credits earned in middle school when analyzing students who attend a gifted and talented academy middle school compared to those gifted and talented students attending their standard-zoned district GT middle school program?

## **Setting**

The setting for this study is large, urban/suburban, multicultural school district in the southwestern United States. The district is one of the largest school districts in Texas comprised of 170 square miles, 74 campuses as well as 14 special sites, with over 9,000 employees, 67,000 students, and a diverse student population of over 100 different languages and dialects spoken. The district's GT population makes up 7% of the total student population. For the purpose of this study, GT students from 13 middle schools were analyzed. The GT middle school academy is one of the 13 district middle schools.

There is only one GT Academy middle school campus. The 146 accepted students in the GT Academy are comprised of students from all 13 middle schools.

**Process for gifted and talented identification.** There is a very specific process in each district on how students can be identified as gifted and talented. The Texas Education Agency defines a gifted and talented student as a

Child or youth who performs at or shows the potential for performing at a remarkably high level of accomplishment when compared to others of the same age, experience, or environment and who: (1) exhibits high performance capability in an intellectual, creative, or artistic area; (2) possesses an unusual capacity for leadership; or (3) excels in a specific academic field. (Texas Education Agency, 2012)

For the district used in this study, identification criteria comprised of students' test scores, teacher inventory scores, and parent inventory scores. The scores are plotted on the Gifted and Talented Identification Profile. The Campus Selection Committee, consisting of a campus counselor, administrator, and three teachers, convenes to make identification decisions based on district criteria. All members of the Campus Selection Committee have been trained in gifted education and specifically in identifying students' needs for the education services provided by the large, urban/suburban, multicultural district. Decisions regarding students' needs for GT services are made by subject area. There should be a preponderance of scores in the gifted range relating to a subject area for a student to be identified as needing GT services in that subject area. Almost all of the students attending the GT Academy have been identified in elementary school.

**The negative stigma surrounding gifted and talented labels.** Borland (2003b) states that over the decades, the general perception surrounding GT identification has created some opponents to labeling students. He also describes that GT identification and programs create and promote elitism and inequity has influenced gifted and talented program development. In addition, policies like No Child Left Behind force schools and districts to focus on low-achieving or below-proficient students. Less attention and focus on high-achieving students have, in some districts, resulted in gifted and talented programs becoming practically non-existent. This thesis is not intended to advocate one way or another regarding gifted and talented programs. It is intended to examine the performance of students who attended a middle school that caters to students at an accelerated pace with greater exposure to high school curriculum and the implications for school leaders.

### **Definition of GT Academy**

**Background.** In February 2007, the district approved a proposal of a middle school gifted and talented academy to be implemented during the 2007-2008 school year. The school reflects the schools-within-a-school concept. Matthews and Kitchen define a school-within-a-school as: “special programs are provided for high-ability students who take most of their course credits as a specialized cohort, thereby creating the feeling of a small and cohesive multi-grade-level school within a larger school” (School-Within-A-School Gifted Programs: Perceptions of Students and Teachers in Public Secondary Schools, 2007, p. 1). The goals of the program are to promote student achievement by implementing a smaller learning community and to provide specialized and rigorous academic opportunities for gifted and talented middle school students from the around the

district. The program welcomed 87 students in the inaugural year of existence. The enrollment of the Academy program is currently 592 students. The Gifted and Talented Academy has welcomed around 200 sixth graders each year for the last three years. The district has definitely shown a demand for the program, as a number of applicants have been denied due to staffing and program capacity.

**Curriculum and technology integration.** The GT Academy program is based on current research and best practices. Students, once accepted, are treated to an integrated middle school experience. The GT Academy coordinator facilitates a personal learning community within the GT Academy with the support of the teachers. Students and teachers are teamed. The teachers at the Gifted and Talented Academy must have completed various staff development activities in technology-based integration as part of the district's three-year technology initiative in a concept-based curriculum and instruction that was conducted by the Gifted and Talented Academy coordinator. Teachers worked on creating curriculum that integrates technology as well as a curriculum that was driven by patterns, themes, and concepts for cross-curricular projects and activities. Teachers in the GT Academy continue to receive new professional development in technology integration, Web 2.0 tools, and applying the patterns, themes, and concepts across multiple areas of study. GT Academy students complete assignments each week with the use of computer labs, rolling lap-top carts, and personal devices. Students are encouraged to collaborate and create through the use of technology. Teachers work as a team to create cross-curricular activities across disciplines.

**Holistic learning experience.** GT Academy students have a middle school experience beyond the standard-zoned middle school GT student experience. The

students accepted into the GT Academy are instantly part of a family-type atmosphere in which 200 students are part of a three-year cohort. The students are welcomed in the late spring semester, and there is an orientation camp in August before the start of the school year. Parents are encouraged to network and interact at the orientation separately from their children, allowing for collaboration and sharing of ideas for both students and adults with aged-like peers. Participation in the PTO and chaperone opportunities are constantly being updated and communicated. The students attending the GT Academy, barring removal or withdrawal, will complete standard middle school curriculum as well as high school coursework in middle school. Acceleration is an option for families and students willing to take on the challenge and rigor. The brightest students in the district assembled together in conjunction with the teaming concept makes for personal learning experiences in which students are constantly interacting socially and academically. GT Academy teachers facilitate presentations, group projects, debates, poetry slams, persuasive presentations, research-based projects, social media academic opportunities, and various clubs/activities. The students also benefit from two to three field experiences a school year. Certain field experiences are conducted on campus as a guest speaker/presenter with teambuilding and engaging activities. Remaining field experiences take place off campus and are interconnected with the particular theme or pattern of the current curriculum depending on the scope and sequence of the school year.

**Communication and feedback for improvement.** As the GT Academy program was being implemented and functioning during the first year, the district conducted surveys completed by teachers, parents, and students to receive feedback on difficulties and areas of improvement. Communication was a recurring theme amongst the three



groups. Teachers felt the need to communicate expectations to parents and students more clearly at the beginning of the school year. Parents and students gave feedback asking for monthly or weekly newsletters to keep students and parents informed due to the dispersed geographic nature of the cohort of students within the GT Academy. Parents and students also requested that the GT Academy have a syllabus/calendar to show homework and project dates as well as social events, clubs, and tutorials. Parents gave feedback requesting more socials and opportunities to network socially due to parents coming from all over the district's geographic region.

The current GT Academy coordinator has sent out newsletters weekly for parents and students with all upcoming events, pertinent information, and ways to get involved at the Academy. There are also over 20 social and academic clubs which students can take part of at the GT Academy. Teachers of GT Academy students have hosted Weeblys, social network opportunities within Edmodo, and other online mediums for students to stay connected and collaborating.

**Transportation of academy students.** The logistics of transporting students from all four geographic regions within the district efficiently and in a timely manner has been a source of concern and stress for the district, parents, and students. The transportation department released schedules, and the students and parents gave feedback that the actual bus did not always follow the intended time schedule, which resulted in long waits at the bus stop. The delays in traffic and distance of travel in the afternoon also resulted in later drop off times at home in the afternoon as well. The parents of the GT Academy also report that pick-up locations are not convenient requiring parents to supplement by driving students to the local stop due to distance the student would have to walk. Also,

parents have complained that some stops are unsafe or take place at busy intersections. The transportation department has received the feedback and is constantly improving operations for the GT Academy students being transported. The campus administration is in constant communication with students and parents to keep transportation up to date with student/parent concerns. The transportation department has even instituted a district-wide “hotline” for parents to call with concerns. The GT Academy works to accommodate all parent input and has worked closely with the district to amend/adjust practices and logistics of routes in order to continually improve the transportation for families attending the GT Academy program.

**Integration.** The integration of GT Academy students with the non-academy students is an important piece of the program. Students attending the GT Academy are integrated at several times throughout the day. The 6<sup>th</sup> grade students attending the GT Academy are the only 6<sup>th</sup> grade students at the campus. The only time these students are integrated with the non-academy students is during hall change every period and for electives. The morning procedure integrates all 7<sup>th</sup> and 8<sup>th</sup> grade students from both Academy and non-academy groups. Students in 7<sup>th</sup> and 8<sup>th</sup> grade are also integrated for physical education/health and their electives. Students also integrate during their lunch period. Students benefit from the integration of students within the school-within-a-school with their non-academy peers. Students from different groups and backgrounds provide a diverse student culture and social experiences.

**Spanish as a core subject.** Students attending the GT Academy program are required to take Spanish courses for 6-8 grades. GT Academy students take Spanish A in 6<sup>th</sup> grade, worth half a high school credit, Spanish B in 7<sup>th</sup> grade, worth half a high school

credit, and then the GT Academy students take Spanish II for a full high school credit in 8<sup>th</sup> grade. If students can stay on pace, then the students exit with a minimum of two high school credits when leaving middle school. The head start these Academy students get in middle school will allow them to take more specialized courses in high school as well as the opportunity to take more electives. However, the two-credit Spanish completion by GT Academy students could provide skewed results when analyzing the number of high school credits per student.

**Student learning.** Students attending the GT Academy program are encouraged to collaborate and create in pairs and groups. Classrooms are often noisy and to the outside ear could sound chaotic at times. Upon closer inspection, the noise is due to debates, sharing of ideas, providing feedback, and testing/proving hypotheses. The GT Academy classroom is rarely quiet and non-engaged except for the purpose of district assessments, state assessments, and formal assessments within the normal grading process. The dynamic of having gifted and talented students from throughout the district forms a melting pot of diverse backgrounds and cultures. Combining of high-ability students in a classroom creates connections among the student cohort. In addition, the competition of having the best students sitting within the same classroom elevates the level of all students. Students collaborating and sharing ideas help facilitate higher order thinking skills. The standard-zoned district GT middle school programs are typically not 100% gifted and talented within each individual classroom. The concept of “GT fillers” has arisen because individual schools do not have a large enough gifted and talented program to account for entire classes. The remaining students are those students who are high achieving in their group, but not previously identified gifted and talented by the

district. Parents have the right to sign a contract in order for their child to attempt the classes if their son/daughter is able to meet the requirements of the course.

The middle school GT Academy campus is the only middle school campus that contains a school-within-a-school model. Sixty percent (592 students) of the middle school GT academy campus is comprised of the districts' gifted and talented students that have been identified gifted and talented in elementary school as well as completed and been accepted through an application portfolio process. The remaining 40% (404 students) of the campus are 7<sup>th</sup> and 8<sup>th</sup> grade students that live within the natural geographic feeder pattern at the middle school. The academy students are very diverse and speak many different languages in addition to English. The non-academy, or feeder pattern students, are 60% African-American and feed into the middle school from two elementary schools in the zoned area. The middle school GT Academy's mission is to offer a rich and dynamic academic program through connections as well as using problem-based, interdisciplinary study, and investigation. Students are given the autonomy to complete assignments through portfolios, presentations, performances, and building off of core themes and concepts. Students start in 6<sup>th</sup> grade with an exploration theme, move into a connections theme in 7<sup>th</sup> grade, and then end their middle school career by looking within through reflection. Students can also take credit by exams and advance through courses if parents feel their son or daughter is ready to test out of a particular subject. The GT Academy offers extra-curricular activities such as Math Counts, Science Olympiad, Robotics, Destination Imagination, Pentathlon, Mars Rover, Future Problem Solvers, and Geography Bee.

The standard-zoned district GT middle school students are those students that follow the traditional district progression. These students attend the middle school that the district has zoned for them based on their residential address.

The ability for gifted and talented students to reach their full potential can be inhibited by a lack of options or a campus culture that does not promote acceleration. The students attending the GT Academy can leave middle school with five high school credits if they take advantage of Academy middle school opportunities. This can be instrumental when transitioning through a paradigm shift of career and college readiness the nation is currently going through. GT Academy students have increased opportunities to take college-level courses in high school because they have completed the necessary graduation credit requirements early.

The Texas Education Agency has an accountability system in place based on how middle school students score on the TAKS test in relation to five student groups: All students, African-American, Hispanic, White, and Economically Disadvantaged. The four ratings assigned are: exemplary, recognized, academically acceptable, and academically unacceptable. Two of the 13 middle schools received a TEA Exemplary rating in 2011, four of the 14 middle school received a TEA Recognized rating with one of the four Recognized schools being the middle school GT academy, six middle schools received a TEA Acceptable rating, and one of the 13 middle schools was academically unacceptable.

### **Subjects**

The subjects in this study include all 8<sup>th</sup> grade Gifted and Talented students attending middle schools in the district in 2010-2011. The sample group of this study is

determined by the number of 8<sup>th</sup> grade GT students that took both the Reading and Math TAKS test for the 2010-2011 school year. The resulting sample is a total of 546 students. The GT Academy middle school receives applications from students who attend all 14 middle schools. These students attended 8<sup>th</sup> grade during the 2010-2011 school year in a large suburban school district in the southwest Houston area. This research study contained a treatment group of 146 8<sup>th</sup> graders attending a GT academy program and a control group of 400 students who attend their standard-zoned district GT middle school campus within the same district. The quantitative data (TAKS scores and high school credits) were de-identified archival data. The student groups were compared as two groups. The researcher looked at each individual standard-zoned district GT middle school together as one group (400 students) in comparison against the GT Academy (146 students) group of students. Table 3-1 shows the ethnicity of the sample GT student group.

Table 3-1

*Ethnicity of 8th Grade GT Students*

Student Group	Number of Students	Asians		White/Anglo		African-American		Hispanic		Multi-Racial	
		N	%	N	%	N	%	N	%	N	%
GT Academy	146	55	37.6%	50	34.2%	28	19.2%	5	3.4%	8	5.5%
District GT	400	193	48.3%	144	36%	34	8.5%	17	4.3%	10	2.5%

Note: Total number of students in cohort = 546

### Procedures

The University of Houston, Committee of the Protection of Human Subjects, granted approval of this study (See Appendix A). All data and information used in this study were de-identified prior to the research study.

This archival study utilized descriptive statistics with averages and percentages based on information for all Gifted and Talented 8<sup>th</sup> grade students in one school year. Students in this study attended either the GT Academy middle school or a standard-zoned district GT middle school program. Student scores on the 2010-2011 8<sup>th</sup> grade Reading and Math TAKS and number of high school credits earned at the completion of middle school were analyzed and compared.

## **Instruments**

This study analyzed the performance of students in two ways: the 2010-2011 8<sup>th</sup> grade Reading TAKS and Math TAKS scaled scores, and the number of high school credits earned at the completion of middle school. The two quantitative instruments used to collect data were the 2010-2011 TAKS test, and high school credits.

The purpose of the TAKS is to measure the mastery of the Texas Essential Knowledge and Skills (TEKS) by students. The Texas Assessment of Knowledge and Skills (TAKS), is a criterion referenced assessment directly defined by the content which is assessed. The No Child Left Behind Act of 2001 (NCLB) mandates that states have processes and systems in place to verify the accurate alignment of their assessments and the state adopted curriculum (TEA, 2006). Numerous review committees consisting of Texas educators from across the state were formed to test each subject area for alignment, relevance, and appropriateness. The different specialists within these committees are teachers, test development specialists, and TEA staff members. The main objectives for these committees are to identify TEKS student expectations vital to assess mastery, develop test objectives, develop item guidelines, and test-item types. Field testing was also utilized to gauge each yearly test for bias and relevance. Table 3-2 shows the TAKS subjects tested by grade level.



Table 3-2

*TAKS Test Subject and Grade Levels*

Grade Level Tested	Subject					
	Reading	Mathematics	Writing	English Lang. Arts	Social Studies	Science
<b>3</b>	X	X				
<b>4</b>	X	X	X			
<b>5</b>	X	X				X
<b>6</b>	X	X				
<b>7</b>	X	X	X			
<b>8</b>	X	X			X	
<b>9</b>	X	X				
<b>10</b>		X		X	X	X
<b>11</b>		X		X	X	X

Reliability refers to how consistently a test or instrument is measuring learning across an entire population. TAKS assessments provide estimates of achievement levels and will contain a certain amount of error by nature. The test reliability measurements quantify the range of error. TAKS reliability data is based on internal consistency measures (TEA, 2007). The Kuder Richardson Formula 20 (KR20) is often used to measure internal consistencies and determine test reliability. This formula is generally used for assessments that utilize multiple-choice items and test involving a combination of multiple choice and short answer/extended response items. As related to TAKS, the Kuder Richardson Formula 20 shows most internal consistency reliabilities in the high .80s to low .90s range, with 1.0 being perfectly reliable. Therefore, the Texas Education Agency (TEA) reports the validity of the TAKS test as very high. TEA feels that the

TAKS test offers an aligned evaluation of the state curriculum (Texas Essential Knowledge and Skills/TEKS) and student performance. The collaborative effort of educators, specialists, and advisory committees contribute significantly to the quality of assessment and alignment between the TEKS and TAKS test.

Table 3-3 shows the criteria for meeting the standard and scoring commended on the Reading and Math TAKS.

Table 3-3

*Reading and Math TAKS Instrument Measure of Performance 2010*

Grade	Subject	Total Number of Questions on Test	Number of Questions Correct to Meet Standard	Percentage of Questions Correct to Meet Standard	Number of Questions Correct to Meet Commended Performance	Percentage of Questions Correct to Meet Commended Performance
8	Reading	48	35	73%	45	94%
8	Math	50	29	58%	45	90%

### **Limitations**

A limitation of this study lies in the nature of gifted and talented programs and identification. Students who are identified as gifted in 5<sup>th</sup> grade are determined by rating the student based on assessments as well as teacher or administrator recommendations. Although there are district criteria and oversight, each campus has an appeals process and ultimately the building principal can have the final decision in determining whether the child is identified as gifted or not. The process by nature breeds inconsistency and a

subjective system based on the type of educational leader making the decisions for a given campus. Each district has flexibility in how they rate and determine the process of assessing if a child is gifted.

A limitation is that only one school year of student performance data was used to determine results of the research questions. This study did not analyze the students' performance prior to entering the GT Academy or district GT middle school. Therefore, growth over time was not examined.

Another limitation is using a criterion referenced standardized test to measure achievement in students who typically score in the very high percentiles of performance. Mastery of this type of test for high achieving students is very likely.

Another limitation of this study is that it did not factor the internal intervening factors at each middle school that could have contributed to increases or decreases in performance. Some examples are climate, culture, discipline, intervention programs available, and the quality of the education at each campus. This study also did not analyze external factors and interventions that could have taken place outside of school and could have contributed to student performance such as afterschool enrichment opportunities, private learning programs, and parental influence.

## **Chapter 4**

### **Results**

#### **Restatement of the Problem**

Middle schools are a challenge for many school leaders. Middle School reform has been a major topic in education over the last 30 years. The report entitled *Turning Points: Preparing American youth for the 21<sup>st</sup> Century* described the current state of middle school education and gives recommendations for improving how adolescents are educated in the 10-15 age range (Carnegie Council on Adolescent Development, 1989). Middle school students are historically viewed as individuals that cannot think abstractly, act with independence, cannot consider the consequences of their actions, or be given responsibilities. This widely accepted view of adolescent deficiencies has created a self-fulfilling prophecy in which 10-15 year old students are spoon-fed information and not allowed to work cooperatively. Certain educators are unwilling to empower middle school students to participate as active citizens in the learning process. Middle school is an environment in which students can ascend towards a productive and fulfilling life or fall off the path to a diminished future.

The research questions addressed in this study were:

- Is there a difference in the academic achievement as measured by the 2010-2011 8<sup>th</sup> grade Reading and Math TAKS test between students who attend a middle school gifted and talented academy compared to gifted and talented students attending their standard-zoned district GT middle school program?
- Is there a difference in the number of high school credits earned in middle school when analyzing students who attend a gifted and talented academy middle school

compared to those gifted and talented students attending their standard-zoned district GT middle school program?

### **Data Analysis**

This archival study utilized descriptive statistics to compare the performance of middle school GT students attending a homogeneous GT academy program with the performance of GT students attending standard-zoned district GT middle school program. The quantitative data consisted of scaled scores from the 2010-2011 8<sup>th</sup> grade TAKS Reading and Math test as well as the number of high school credits earned at the completion of middle school. The study examined if differences exist between the GT Academy middle school and the standard-zoned district GT middle school students.

For the purpose of Chapter 4 and comparing the student groups, the groups will be called GT Academy and district GT. The district GT is the standard-zoned district GT middle school students. The groups have been compared for differences using descriptive analysis in terms of overall performance, gender, and ethnicity.

To be included in the sample, the students had to attend the same middle school throughout grades 6-8 and receive a score on the 2010-2011 8<sup>th</sup> Grade Reading and Math TAKS test. Table 4-1 shows cohort breakdown by gender.

Table 4-1

*Cohort Breakdown by Gender*

Gender	Number of Students	GT Academy Students	District GT students	Percent of Cohort
Males	279	75	205	51.0
Females	267	71	195	49.0

Note: Total number of students in cohort = 546

**Demographics of Student Sample**

Only 8<sup>th</sup> grade GT students who had scores on the 2010-2011 Reading and Math TAKS were used for this sample. There are a total of 546 students with 400 students comprising the district GT students attending their standard-zoned middle school GT program and 146 students which attended the GT Academy. Table 4-2 shows the ethnic breakdown for sample students.

Table 4-2

*Ethnic Breakdown of Student Sample*

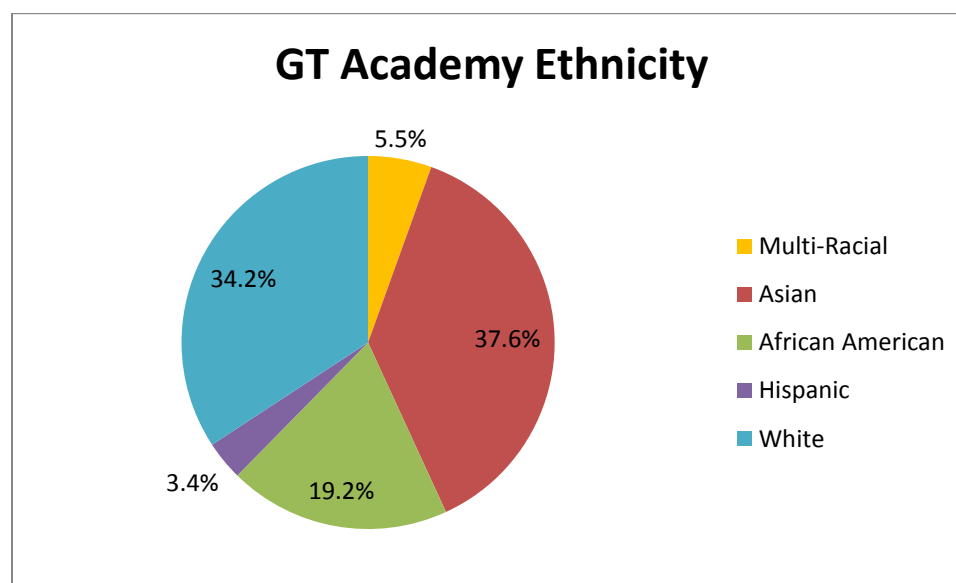
Student Group	Number of Students	Asians		White/Anglo		African-American		Hispanic		Multi-Racial	
		N	%	N	%	N	%	N	%	N	%
GT Academy	146	55	37.6%	50	34.2%	28	19.2%	5	3.4%	8	5.5%
District GT	400	193	48.3%	144	36%	34	8.5%	17	4.3%	10	2.5%

Note: Total number of students in cohort = 546

The resulting students meeting the criteria for the GT Academy are 146 students. The breakdown of students in GT Academy is as follows: 75 (51%) are male and 71 (49%) are female. The largest ethnicity group was Asians with 55 total students 37.6%, followed by White/Anglo 50 total students 34.2%, then African-American 28 total students 19.2%, Hispanic 5 total students 3.4%, and Multi-Racial 8 total students 5.5%. The percentage breakdown of ethnic groups within the GT Academy is illustrated in Figure 4-1.

Figure 4-1

*Percentage of Ethnic Groups in GT Academy Middle School*

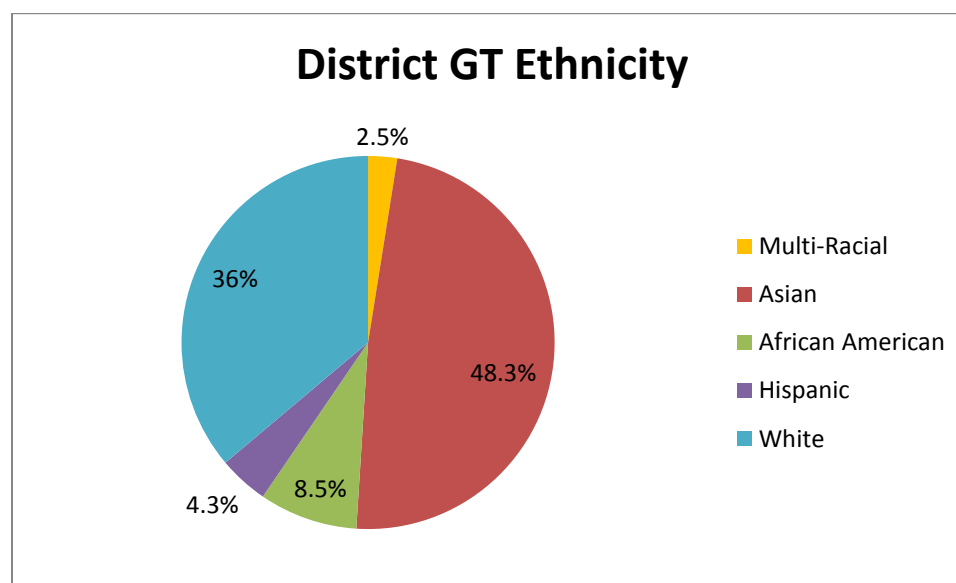


The control group of district GT students that attended their regular zoned middle school campus meeting the criteria contained 400 students. The breakdown of students in the control group of the district GT students are as follows: 205 total students 51% males and 195 total students 49% are female. The largest ethnicity group was Asians 193 total students 48.3%, followed by White/Anglo 144 total students 36%, then African American 34 total students 8.5%, Hispanic 17 total students 4.3%, Multi-Racial 10 total students 2.5%, and American Indian 2 total students .5 %. The ethnic breakdown of district GT students is illustrated in Figure 4-2.



Figure 4-2

*Percentage of Ethnic Groups in District GT Standard-Zone Middle School*



### Methods of Analysis

Data were interpreted and analyzed for the 8<sup>th</sup> grade Reading and Math TAKS test as well as the total number of high school credits students earn during middle school. The TAKS data have been analyzed by investigating the scale score, which has a maximum score of 991 for reading and 1025 for math. Each student's scores were analyzed and used for comparison of this study.

The number of credits will be averaged overall as a cohort, and by gender and ethnicity for both groups. The number of credits earned ranged from zero to five credits. Only those students who had scores on the 2010-2011 8<sup>th</sup> Grade Reading and Math TAKS scores were considered and compared. This resulted in a total sample size of 546 students.

**Data analysis for research question one.**

Research question one:

Is there a difference in the academic achievement as measured by the 2010-2011 8<sup>th</sup> grade Reading and Math TAKS test between students who attend a middle school gifted and talented academy compared to gifted and talented students attending their standard-zoned district GT middle school program?

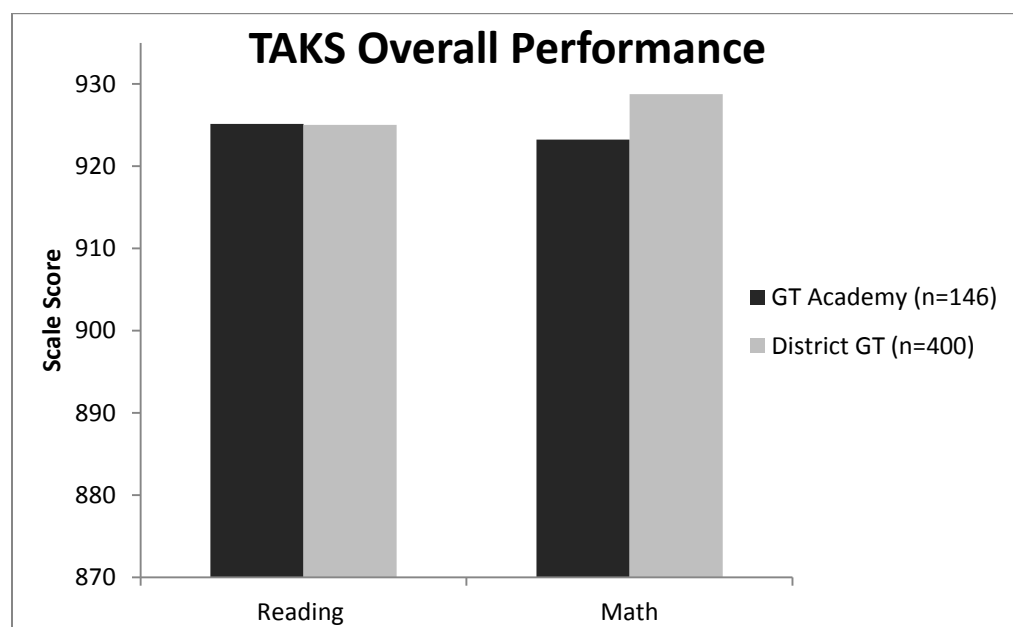
The study analyzed the overall performance of the students by scale score and also the percentage of students that earned commended performance in the group. To further analyze if there is a difference in the academic achievement of the two groups, this study compared performance by ethnic groups and gender groups. This study found that there was very little difference in the performance of GT students by scale score on the TAKS test. A high percentage of both groups scored commended performance in both subjects. There were some differences between the performances of certain ethnic groups.

**Performance of GT Students on Reading and Math TAKS**

Overall, the average scale score in Reading for the GT Academy students was 925.01 compared to 924.96 for the district GT students. There was essentially no difference in Reading scores. In Math, the average scale score for the GT Academy was 923.23 compared to the district GT average of 930. The district GT students scored 7.57 points higher on the Math TAKS overall.

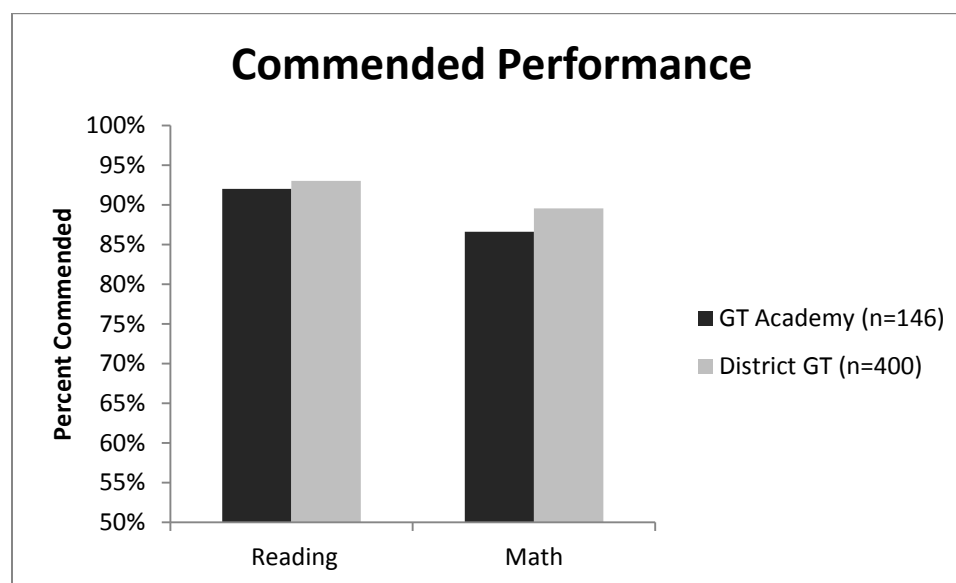
Figure 4-3

*Overall Reading and Math TAKS Scale Score Comparison*



Both the GT Academy and the standard-zoned district GT middle school program students' overall performance is illustrated in Figure 4-3.

Figure 4-4

*Commended Performance in Reading and Math*

On the TAKS test, commended performance was typically only a few questions away from total mastery. In reading, 136/146 (92%) GT Academy students scored commended while 373/400 (93%) district GT students scored commended on the Reading TAKS. In math, 133/146 (86.61%) GT Academy students scored commended while 346/400 (89.53%) district GT students scored commended on the Math TAKS. The district GT students outperformed the GT Academy in Reading by 1% and 2.92% in Math. Figure 4-4 depicts the results of commended performance.

To further analyze any differences in performance of students on the TAKS test, this study determined if there were differences in commended performance by ethnic and gender groups.

Table 4-3

*Number and Percent of Commended Performance by GT Groups*

<b>Description</b>	<b>GT Academy</b>	<b>District GT</b>
Math - number of students not commended	13	54
Math – number of students commended	133	346
Math - percent of group commended	86.61%	89.53%
Reading - number of students not commended	10	27
Reading – number of students commended	136	373
Reading – percent of group commended	92%	93%

Table 4-3 shows the number and percentage of commended performance overall for the two groups.

Figure 4-5

*Commended Performance by Ethnicity for Reading TAKS*

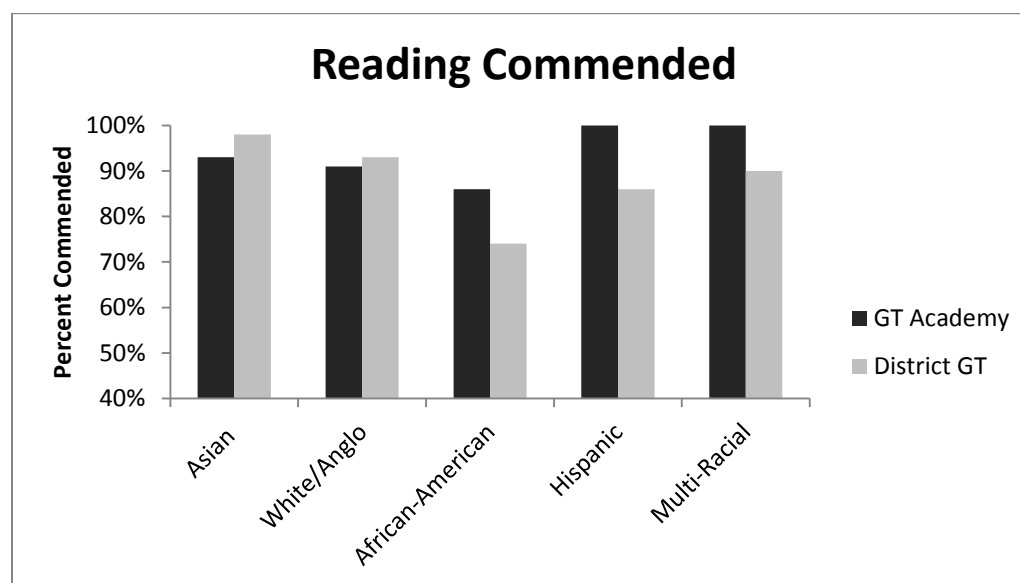
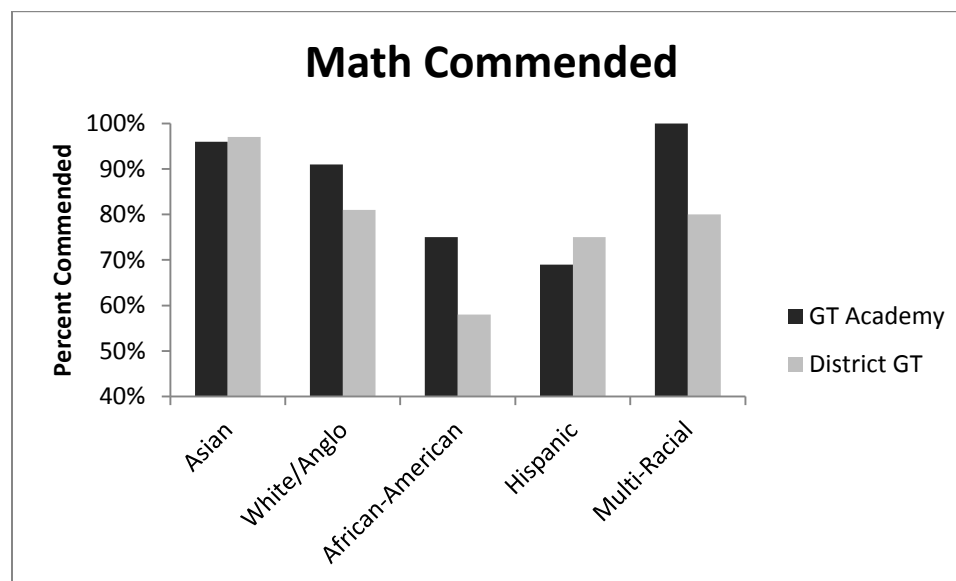


Figure 4-5 shows the comparison of ethnic groups in Reading and Figure 4-6 shows the comparison of ethnic groups in Math. These commended illustrations are included in this study to illustrate the high percentage of GT students scoring near perfect on the TAKS Reading and Math.

Figure 4-6

*Commended Performance by Ethnicity for Math TAKS*

In math and reading, both groups had high percentages of students earning commended performance. The results show that there was a higher percentage of commended performance among African American, White, and Multi-Racial students attending the GT Academy versus the district GT. In Reading, the GT Academy African American population had an 11% higher population scoring commended. For Math commended performance, the GT Academy African Americans had a 17% higher population of commended performance than those African American students attending their standard-zoned district GT middle school program.

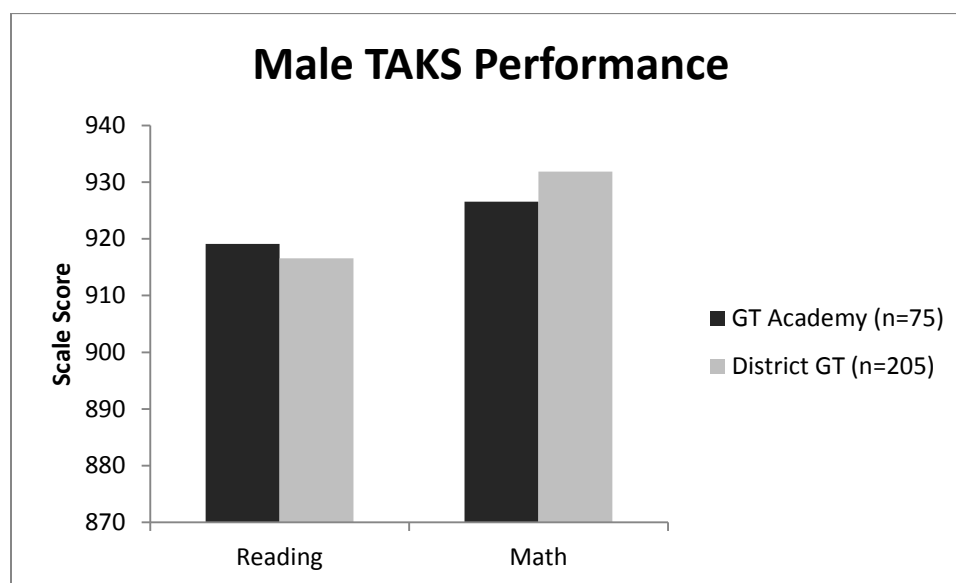
Overall, for the two groups, there was little difference in terms of scale score and commended performance on the Reading and Math TAKS tests. To further analyze the groups by scale score, this study divided the students by ethnic and gender groups.

Below are the results of the ethnic and gender groups by scale score for the GT Academy and district GT students.

When comparing gender groups, the average scale score for Reading for male GT Academy students was 919.11 compared to 916.56 for male district GT students. The average scale for Math for male GT Academy students was 926.54 compared to 931.86 for male district GT students. The average scale score for Reading for female GT Academy students was 931.32 compared to 933.80 for female district GT students. The average scale for Math for female GT Academy students was 919.82 compared to 929.68 for female district GT students.

Figure 4-7

*Male Comparison in Reading and Math TAKS*



Male student comparison is depicted in Figure 4-7. The male students in the GT Academy scored 2.55 points higher on Reading TAKS scale score than the District GT



control group. The District GT students scored 5.32 points higher on Math TAKS scale score than the male students attending the GT Academy.

Figure 4-8

*Female TAKS Performance*

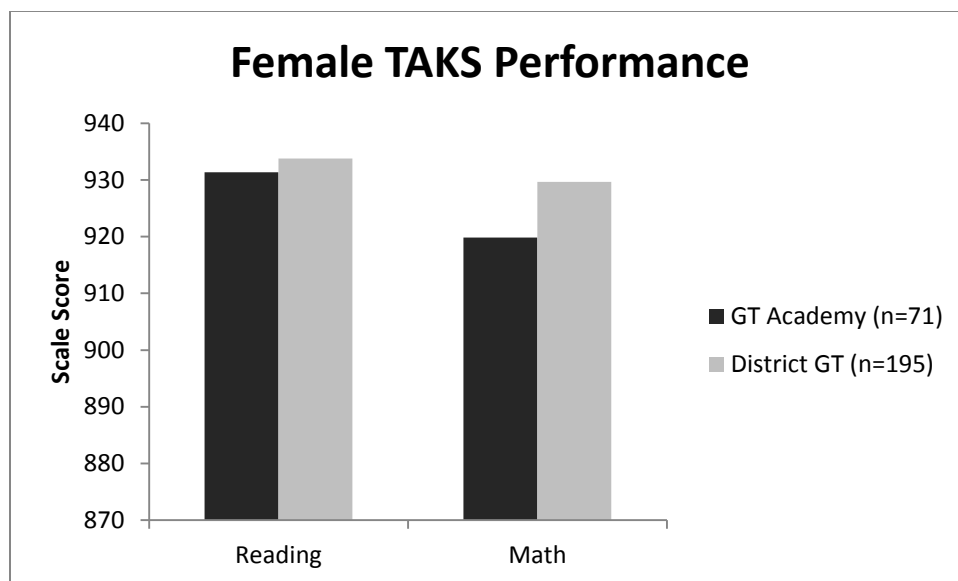
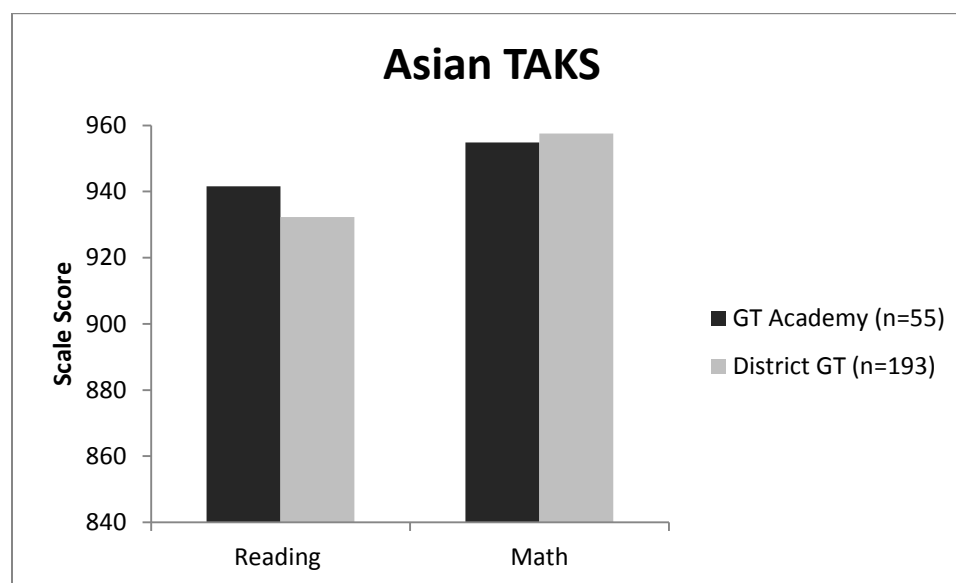


Figure 4-8 illustrates the female comparison of GT students. The females in the District GT group scored 2.48 points higher than the GT Academy female students in terms of Reading TAKS scale score. The district GT female students scored 9.86 points higher than the GT Academy female students in terms of Math TAKS scale score.

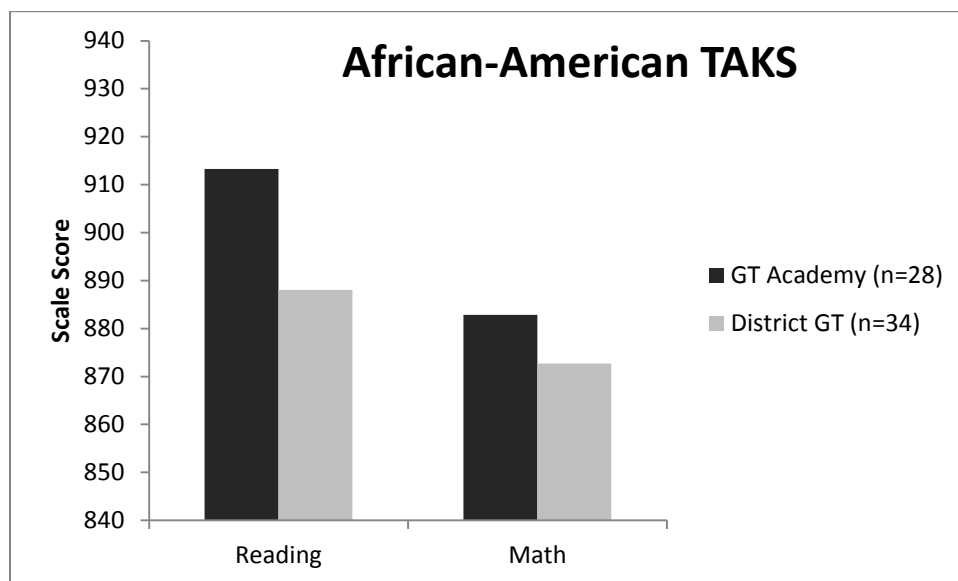
To further analyze performance differences between the GT Academy and the district GT, the students were analyzed by ethnic group. The main ethnicity groups included were Asian, White/Anglo, Hispanic, African American, and Multi-Racial. The GT Academy students were compared against their district GT counterparts for descriptive analysis.

Figure 4-9

*Asian TAKS Scaled Score Comparison*

The Reading TAKS scale score average for Asians attending the GT Academy was 941.81 while the Asians attending the district GT standard-zoned middle school program scored 932.85. This equals 8.96 point higher performing score for the GT Academy Asian students over the district GT Asian students. The Math TAKS scale score for the Asians attending the GT Academy was 954.80 while the Asians attending their district GT middle school scored on average a 957.57. This equals a 2.77 point higher performance for the district GT Asian students in relation to Math TAKS scale score. Figure 4-9 shows the Asian results for GT students.

Figure 4-10

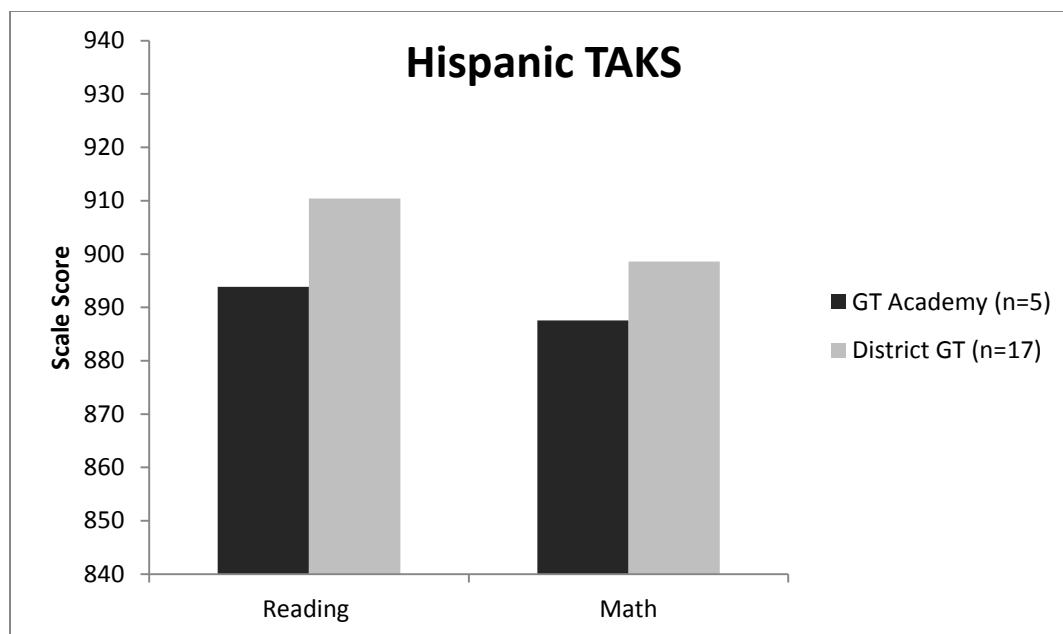
*African American TAKS Scaled Score for Reading and Math*

The Reading TAKS scale score for the GT Academy African American student group resulted in an average score of 912.35 while the district GT African American students attending their standard-zoned middle school GT program resulted in a scale score average of 888.65. This data revealed a difference on average of 23.70 points higher performance for the African American students attending the GT Academy. The African American student population is performing higher than those peer African American students attending their standard-zoned middle school district GT campus. The Math TAKS scaled score for the GT Academy African American student group was 882.86 while the District GT African American average score resulted in a 872.68 scaled score. This equals a 10.18 point higher performance by GT Academy African American students than those in the District GT group. African Americans score higher at the GT

Academy in both Reading and Math TAKS scaled score. Figure 4-10 depicts African American results.

Figure 4-11

*Hispanic TAKS Scaled Score Comparison*

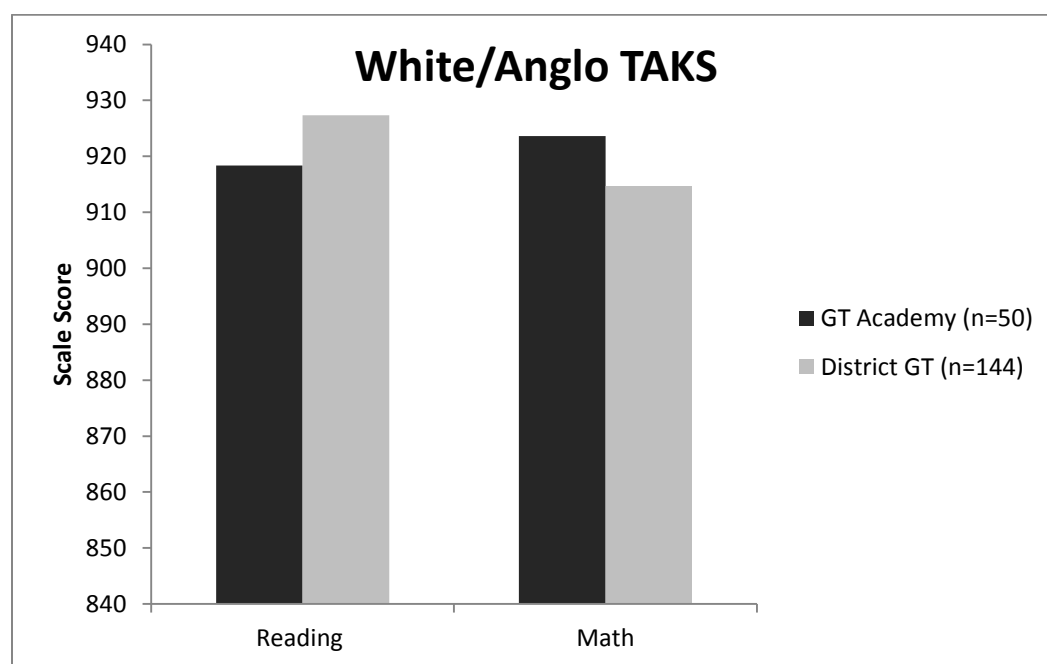


The Reading TAKS scaled score average for Hispanic students attending the GT Academy was 894.52 and the district GT Hispanic student group scored a 912.45. This results in a 17.93 point higher scaled score for Hispanics attending their standard-zoned district GT middle school program over those Hispanic students attending the GT Academy. The Math TAKS scaled score for Hispanic students attending the GT Academy was 887.54 while the District GT Hispanic students scored an average of 898.61. This equaled a 11.07 point higher performance on Math TAKS scale score for Hispanic students attending their District GT middle school over those Hispanic students

attending the GT Academy. Hispanic students attending District GT middle school score higher on the Reading and Math TAKS scaled score than those Hispanic students attending the GT Academy program. The small number of Hispanic students attending the GT Academy could affect the lower scores. Figure 4-11 illustrates Hispanic TAKS results.

Figure 4-12

*White/Anglo TAKS Scaled Score Comparison*



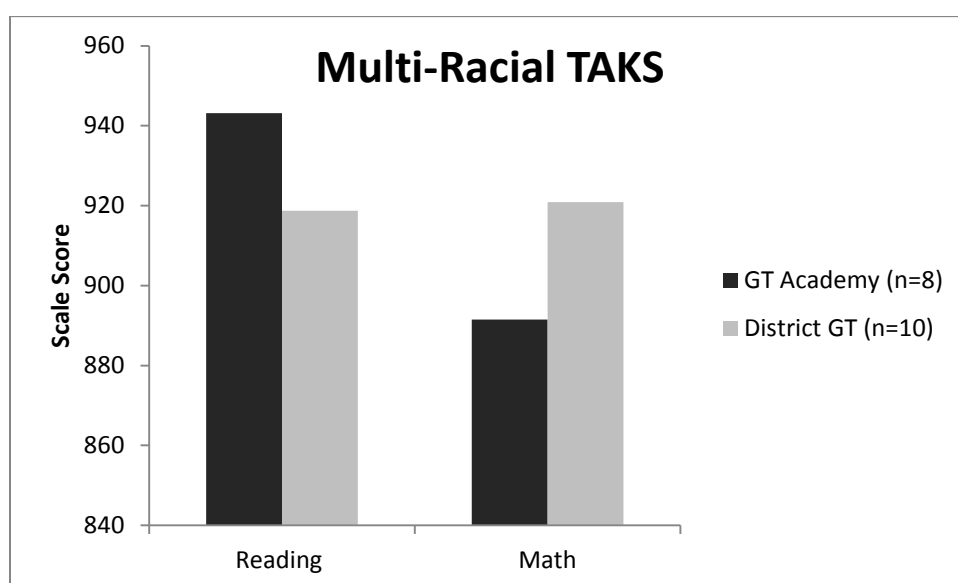
The Reading TAKS scaled score average for White/Anglo students attending the GT Academy was 916.75 while the District GT White/Anglo students scored on average a 926.59. This result is a 9.84 point higher score for White/Anglo students attending the district GT middle school over those White/Anglo students attending the GT Academy.

The Math TAKS scaled score for the White/Anglo GT Academy students was 923.60

while the District GT White/Anglo students scored 914.67. The GT Academy White/Anglo students scored on average 8.93 points higher on the Math TAKS than the district GT White/Anglo student group. Figure 4-12 depicts results of White/Anglo TAKS results.

Figure 4-13

*Multi-Racial TAKS Scaled Score Comparison*



The Multi-Racial students attending the GT Academy scored an average scale score of 943.17 on the Reading TAKS while the district GT Multi-Racial group scored 925.46. This results in a 17.71 point higher performing score on the Reading TAKS for those Multi-Racial students attending the GT Academy program. In terms of Math TAKS scaled score for Multi-Racial GT Academy students, their average scaled score was 891.50 while the District GT Multi-Racial group scored 920.90. This gives the district GT Multi-Racial student group a 29.4 point higher performing scaled score than

the GT Academy Multi-Racial student group. This is a big difference for the district GT Multi-Racial student group. The Math scores for the GT Academy Multi-Racial student group are lower. Figure 4-13 demonstrates Multi-Racial TAKS results.

Table 4-4

*Overall TAKS Scaled Score Comparison of GT Academy and District GT Students*

Overall Comparison	GT Academy	District GT	Difference (Academy-District)
Reading Scale Score Avg.	925.01	924.96	0.05
Math Scale Score Avg.	923.23	930.80	-7.57
Reading-Female	931.32	933.80	-2.48
Math-Female	919.82	929.68	-9.86
Reading-Male	919.11	916.56	2.55
Math-Male	926.54	931.86	-5.32
Reading- Asian Subgroup	941.81	932.85	8.96
Math- Asian Subgroup	954.80	957.57	-2.77
Reading- African American	912.35	888.65	23.35
Math- African American	882.86	872.68	10.18
Reading- Hispanic	894.52	912.45	-17.93
Math-Hispanic	887.54	898.61	-11.07
Reading- White	916.75	926.59	-9.84
Math-White	923.60	914.67	8.93
Reading- Multi Racial	943.17	925.46	17.71
Math- Multi Racial	891.50	920.90	-29.40

As depicted in table 4-4, the overall performance of the GT Academy and the district GT is highlighted in terms of Reading and Math TAKS scores. The positive differences show a higher performance by the GT Academy while the negative differences show a high performance by the district GT student groups.

In summary, the answer to the first research question is that there is little to no difference in terms of Reading and Math TAKS scaled score for GT Academy students

and those students that attended his/her district GT middle school program. There are differences between the performances of certain ethnic groups. The GT Academy showed higher performance in the following areas: .012 higher in overall Reading scaled score, 2.55 higher in Reading scaled score overall male, 8.96 higher in Reading scaled score of overall Asian population, 23.35 points higher for overall African American Reading scaled score, 10.18 points higher for overall African American Math scaled score, 8.93 points higher for White/Anglo students on Math scaled score, and finally 17.71 points higher for Multi-Racial Reading scaled score. The district GT students attending their standard-zoned middle score outperformed the GT Academy in the following areas: 7.57 points higher in overall Math scaled score, 2.92% higher number of commended students in Math, 2.48 points higher in overall Reading female gender, 9.86 points higher for overall female Math scaled score, 7.57 points higher in overall male Math scaled score, 2.77 points higher on overall Asian Math scaled score, 17.93 points higher for Hispanic Reading scaled score, 11.07 points higher for Hispanic Math scaled score, 9.84 points higher for overall White/Anglo Reading scaled score, and finally 29.4 points higher for Multi-Racial students on Math scaled score.

#### **Data analysis for research question two.**

Research question two:

Is there a difference in the number of high school credits earned in middle school when analyzing students who attend a gifted and talented academy middle school compared to those gifted and talented students attending their standard-zoned district GT middle school program? The results indicate there is an advantage for the GT Academy students in the area of high school credits. The primary contributing factors are course



offerings and two required Spanish credits at the GT Academy. Students at the district GT standard-zoned middle school programs have the option to take Spanish, Algebra, and possibly Geometry. The GT Academy offers Biology Pre-AP and English I Pre-AP in addition to the standard district options. These factors play a role in total high school credits for the two groups when compared.

### **Performance of GT Students in Relation to High School Credits**

The students' high school credit data were compared by overall average, and then sub-divided by gender and ethnic groups. The total credits earned for the two groups was 428.5 total credits by the GT Academy (146 students) and 321 total credits by the district GT (400 students). This resulted in an overall average of 2.93 credits per GT Academy student and .80 credits per district GT student. The result is a difference of 2.13 credits per student that attended the GT Academy. The average for the district GT standard-zoned middle school student is less than one credit. This is due to more than half of the district GT students that did not earn any high school credits in middle school.

Figure 4-14

*Overall High School Comparison of GT Academy and District GT*

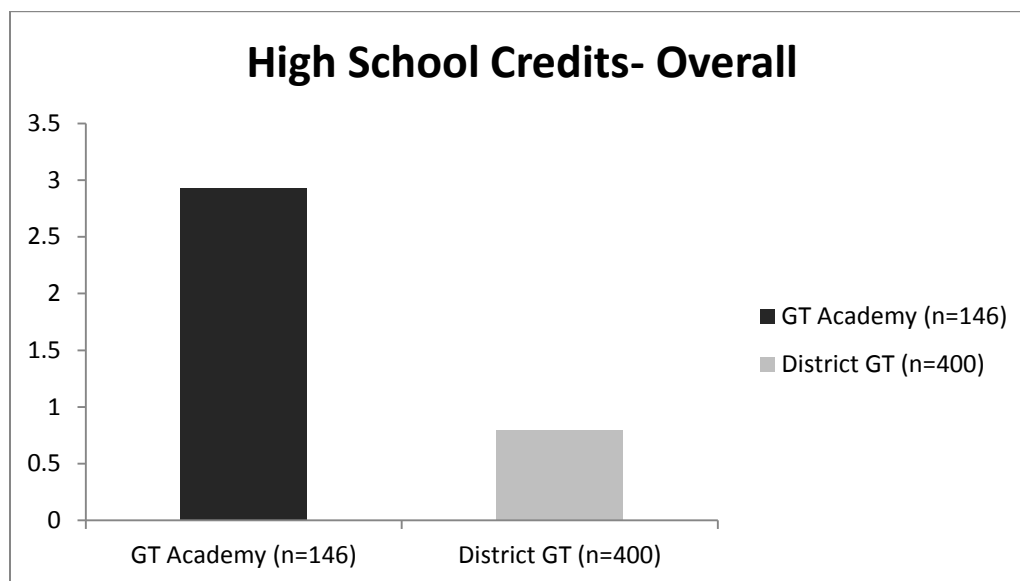
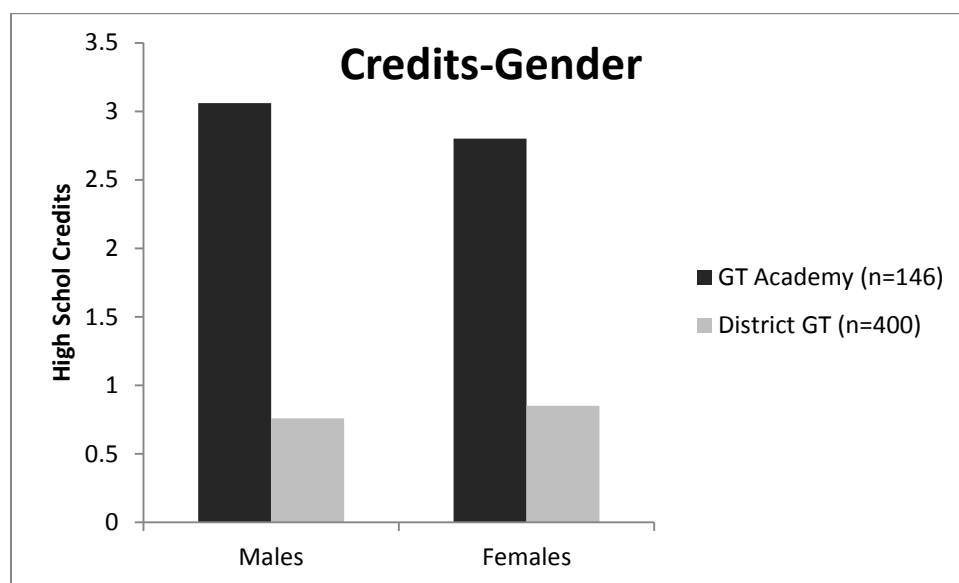


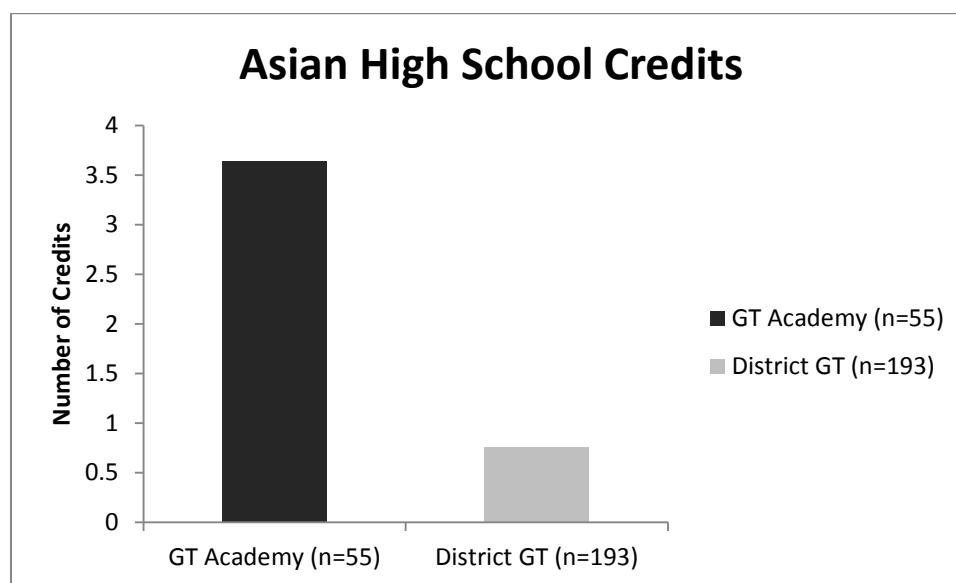
Figure 4-14 shows a comparison of overall high school credits for the GT Academy and district GT students.

Figure 4-15

*Overall Gender High School Credit Comparison*

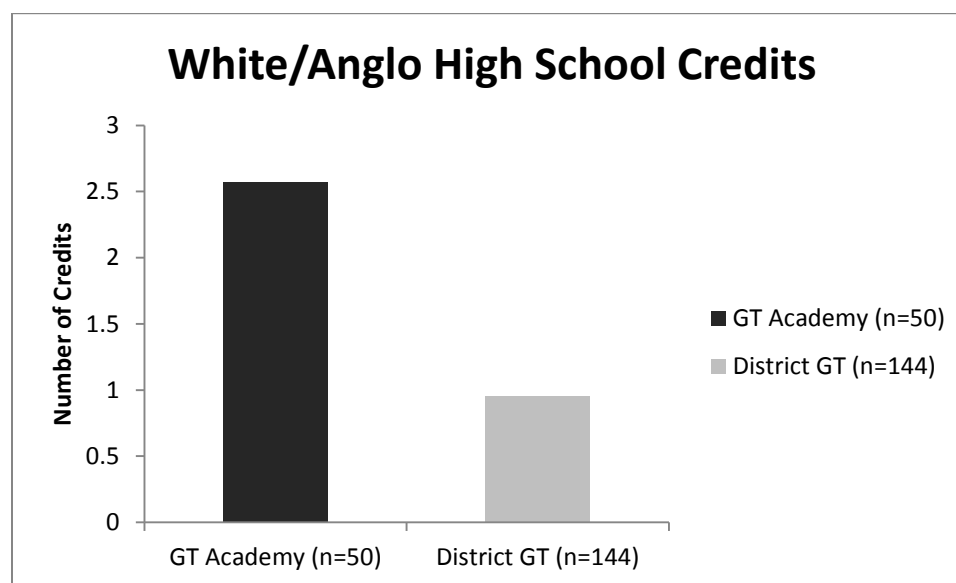
Gender breakdown of the two groups resulted in GT Academy male students with a 3.06 average credit per student compared to .76 average credit per student for district GT male students. The GT Academy males averaged 2.3 more high school credits per student. The GT Academy female students averaged 2.80 credits per student compared to .85 credits per student for district GT students. The GT Academy female students averaged 1.95 more high school credits per student. Figure 4-15 illustrates gender results of high school credits.

Figure 4-16

*Asian High School Credit Comparison*

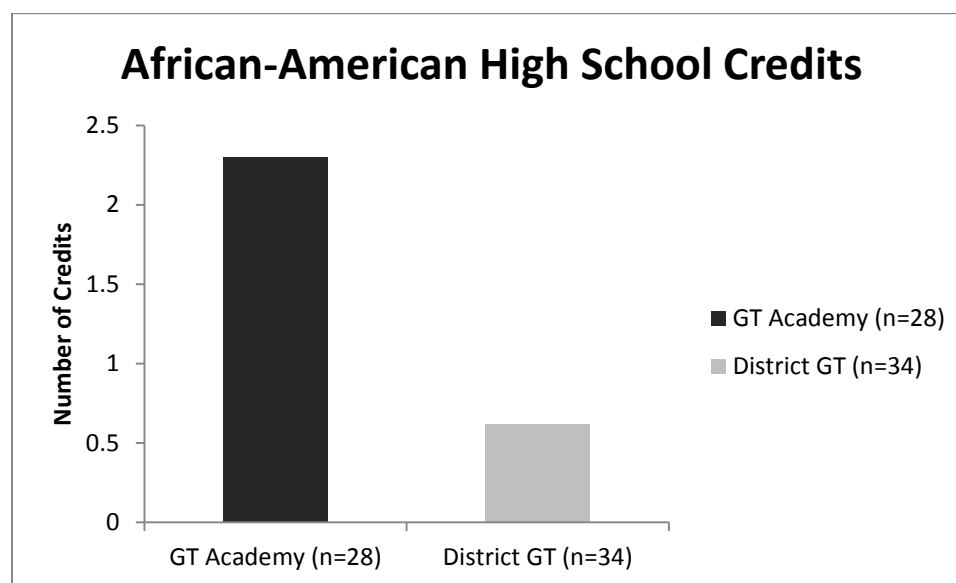
Asian students comprise the largest percentage of GT students in both groups. The GT Academy Asian population averaged 3.64 high school credits per student. The district GT Asian population averaged .76 high school credits per student. This is a difference of 2.88 more credits per GT Academy Asian student. Figure 4-16 depicts Asian high school credit comparison

Figure 4-17

*White/Anglo High School Credit Comparison*

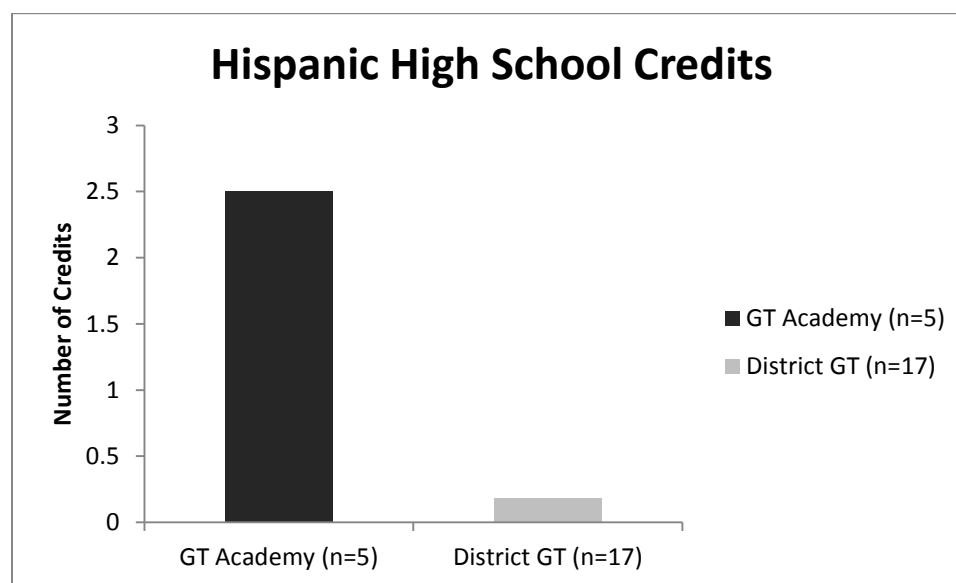
The second largest ethnic group is the White/Anglo student population. The GT Academy White/Anglo population averaged 2.57 high school credits per student. The district GT White/Anglo student population averaged .95 high school credits per student. The difference resulted with GT Academy White/Anglo students having 1.62 more high school credits per student than the district GT White/Anglo students. Figure 4-17 shows the White/Anglo high school credit comparison

Figure 4-18

*African American High School Credit Comparison*

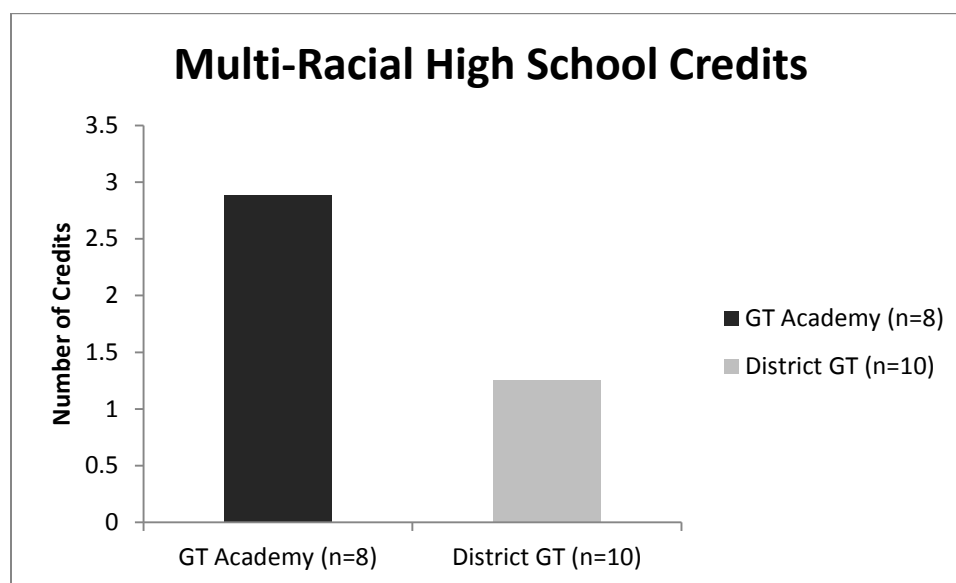
African American students represent the third largest ethnic population for both groups. African American students attending the GT Academy averaged 2.4 high school credits per student. The district GT African American student population averaged .62 high school credits per student. A difference of 1.78 more high school credits for these African American students attending the GT Academy over the district GT African American students. It is noted that the district GT African American population made up only 8.5% of total district GT students while African American students made up 19.2% of the GT Academy students. Figure 4-18 depicts African American high school credit results.

Figure 4-19

*Hispanic High School Credit Comparison*

Hispanic students attending the GT Academy averaged 2.5 high school credits per student. The district GT Hispanic student population averaged .18 high school credits per student. The difference is 2.32 more high school credits per Hispanic student attending the GT Academy when compared to the Hispanic average for the district GT middle school. The district GT Hispanic high school credit total was the lowest total in the entire study. Hispanic students are underrepresented in this GT group of 8<sup>th</sup> grade students for both GT Academy and district GT. Figure 4-19 illustrates Hispanic high school credit results.

Figure 4-20

*Multi-Racial High School Credit Comparison*

The GT Academy Multi-Racial student population averaged 2.88 high school credits per student. The district GT Multi-Racial student population averaged 1.25 high school credits per student. The difference is 1.63 more high school credits per Multi-Racial GT Academy student over Multi-Racial students attending the district GT standard-zoned middle school. Figure 4-20 illustrates Multi-Racial high school credit results.

In summary, the GT Academy students outperformed the district GT students attending their standard-zoned District GT middle school in number of high school credits earned in middle school. The overall comparison resulted in GT Academy student earning 2.13 more high school credits per student. By breaking the two larger groups into ethnic and gender groups, the data showed that all groups at the GT Academy earned



more high school credits. Table 4-4 combines all groups for high school credit comparison for GT students.

Table 4-5

*Overall High School Credit Comparison*

High School Credits:	GT Academy	District GT	Difference
Overall	2.93	0.80	2.13
Asian	3.64	0.76	2.88
African American	2.30	0.62	1.68
Hispanic	2.50	0.18	2.32
Multi-Racial	2.88	1.25	1.63
White	2.57	0.95	1.62
Male	3.06	0.76	2.30
Female	2.80	0.85	1.95

Below is a frequency distribution based on the number of credits for the GT Academy and district GT students. District GT students overall average was lowered due to 53.5% of the student population receiving no high school credits. There were 26.5% of district GT students that earned 2 high school credits. The majority of district GT students that did earn high school credits earned 2 credits or less.

The GT Academy resulted data are quite different from the district GT high school credit data. There was only one GT Academy student that did not earn a high school credit. There were 42 students (28.8%) that earned 2 high school credits. The

number of students that attended the GT Academy with 3 credits or more was 93 students or 63.7% of students. Fourteen GT Academy students earned 5 high school credits while in middle school. Table 4-6 depicts the resulted frequency distributions.

Table 4-6

*Frequency Distributions of High School Credits*

Number of Credits	GT Academy Frequency	Percentage	District GT Frequency	Percentage
0	1	0.7%	214	53.5%
0.5	1	0.7%	0	0.0%
1	9	6.2%	65	16.3%
1.5	0	0.0%	1	0.3%
2	42	28.8%	106	26.5%
2.5	2	1.4%	1	0.3%
3	54	37.0%	12	3.0%
4	24	16.4%	1	0.3%
5	14	9.6%	0	0.0%
6	1	0.7%	0	0.0%

The answer to research question two was the GT Academy students outperformed the district GT students attending their standard-zoned District GT middle school in number of high school credits earned in middle school.

## **Chapter 5**

### **Conclusions**

This chapter will provide a brief overview and a summary of this research study as well as discuss the implications for school leaders and further research. This research study of a middle school GT Academy program fills a gap in educational research and helps to focus attention on middle school learners. With the accountability measures and NCLB, increased focus has been on low-achieving students while the highest-achieving students are receiving less attention and focus nationally. The future of our nation and its global economy lies with our most gifted and bright students. In order to reach their full potential, students must be challenged and enriched in order to reach a new complexity and depth of curriculum, learning, and technological integration (Colangelo, 2004).

#### **Overview of Study**

The research study focused on 8<sup>th</sup> grade gifted and talented students in a large urban suburban school district. The students compared are from two groups. One group is a homogeneous high-ability grouped GT Academy and the other group is the remaining 8<sup>th</sup> grade GT students attending all other standard-zoned district middle schools. This research study focused on the performance of 8<sup>th</sup> grade GT Academy students when compared to the district's remaining 8<sup>th</sup> grade GT students attending their standard-zoned district GT middle school. Students attending the GT Academy were accepted after they completed an approved portfolio application. The students attend from all points in the district. The assembling of many of the district's brightest students provides for a homogeneous high-ability group setting that thrives on rigor, challenge, and competition. The GT Academy program has grown from 87 students to 592 students in a five year period. The district has shown that there is a demand for this school-

within-a-school setting. Students who have attended the GT Academy completed projects, presentations, research papers, and cross-curricular activities that promoted themes, patterns, connections, and reflections. The teaming environment and personal learning community culture promotes collaboration and communication among students and staff. This research study has analyzed the performance of GT Academy students to see if differences exist.

The resulting sample contained 146 GT Academy students and 400 district GT students. The 2010-2011 8<sup>th</sup> Grade Reading and Math TAKS test were compared by using scaled score. High school credits obtained at the completion of middle school were compared for the two groups. Sample students' performance was analyzed by overall group, gender, and ethnicity.

### **Purpose of the Study**

The purpose of this study was to analyze if a GT Academy of homogeneous high-ability grouped students made a difference when compared to the performance of GT students attending their standard-zoned district GT middle school program. The GT Academy provides students with an accelerated curriculum with increased rigor and depth of concepts in a homogeneous gifted setting. The GT students that attended their standard-zoned district GT middle school program are receiving the standard district curriculum at their home school. To compare the students' performance, this study analyzed two areas: 1) on the 2010-2011 8<sup>th</sup> grade TAKS exit-level Reading and Math test, and 2) the number of high school credits earned prior to entering high school.

### **Significance of the Study**

There are very few studies on middle school academy programs for gifted and talented students that examined quantitative performance results in relation to standard-zoned gifted and talented students. This study added to the research on homogeneous grouping of high-ability middle school students and their achievement through the middle school years. The information in this study informs the practice for educational leaders at the middle school level.

District leaders need to make important decisions about middle schools. Middle schools are caught in the middle of the scope and sequence between elementary schools and high schools. They must meet the needs of students in a way that takes the students' vast ranges of academic and social readiness and prepare them for a common goal of preparing for high school as well as some form of higher education.

The study examined implications for school leaders regarding focusing an awareness on high-achieving students, matching curriculum and challenge to reach high-achieving students through accelerated opportunities for high school courses and rigor, and adding to a scarcity of research on a middle school SWAS GT Academy program. The goal is to give school leaders a look at a program's academic performance results as compared to the standard-zoned district GT middle school program offerings.

With the push for No Child Left Behind and the accountability measures of the previous 10-12 years, education of the gifted and talented is being compromised and shortchanged as a result. In order for our nation to compete in a global economy, public education has to continue to conduct research, offer educators professional development geared specifically for the gifted and talented learner, and place an emphasis and

importance on the advancement of our highest achieving students. Jobs and careers of our future leaders do not exist, so preparing our students to be problem solvers and critical thinkers will be paramount. Providing educational opportunities, which foster a challenging and rigorous curriculum in addition to enrichment activities in a high ability grouped setting, touches on the level of differentiation needed in the gifted and talented classroom.

### **Research Questions**

This study examined the academic performance of students who attended a middle school gifted and talented academy against the academic performance of gifted and talented students that attended their standard-zoned district GT middle school program.

- Is there a difference in the academic achievement as measured by the 2010-2011 8<sup>th</sup> grade Reading and Math TAKS test between students who attend a middle school gifted and talented academy compared to gifted and talented students attending their standard-zoned district GT middle school program?
- Is there a difference in the number of high school credits earned in middle school when analyzing students who attend a gifted and talented academy middle school compared to those gifted and talented students attending their standard-zoned district GT middle school program?

### **Findings**

#### **Research question one.**

This study examined the students' performance by standardized test scores in Reading and Math using the TAKS test. There was basically no difference between GT

Academy students in Reading. Math TAKS data revealed that the district GT students performed better in terms of overall average of scale score. As depicted in table 5-1, the overall performance of the GT Academy and the District GT is highlighted in terms of Reading and Math TAKS scores. The positive differences show a higher performance by the GT Academy while the negative differences show a higher performance by the district GT student groups.

The GT Academy outperformed the district GT in Asian Reading TAKS, African American Reading TAKS, African American Math TAKS, and Multi-Racial Reading TAKS. The African American students perform higher at the Academy than do the district African American students.

The district GT students outperformed the Academy in overall group Math TAKS, female Math TAKS, Hispanic Reading TAKS, and Multi-Racial Math TAKS. The largest difference occurred in Multi-Racial Math TAKS with district GT students averaging 29.4 points higher on the Math TAKS over their GT Academy peers.

TAKS scaled scores can be deceiving. The Multi-Racial average difference of 29.4 points is a result of 1 question. When using scaled score for comparison, it is important to understand most differences in this study are a result of either 0, 1, or 2 questions. (See Appendices B & C for 8<sup>th</sup> grade Reading and Math conversion tables)

After analyzing the 2010-2011 Reading and Math TAKS data, there is little to no difference in the GT Academy students and district GT students. Almost all of the 8<sup>th</sup> grade GT students in this study scored commended or better. Several students had a perfect score.

A criterion referenced test such as the Reading and Math TAKS is used to measure proficiency or basic understanding. Gifted and Talented students have traditionally scored above standard on TAKS. TAKS measures students at a proficiency level of met standard. High achieving students score in this study scored commended by levels of 86% or higher in 8<sup>th</sup> Grade Reading and Math. These results are more data to support Texas' shift in state testing to the STAAR test. In spring 2012, the State of Texas Assessments of Academic Readiness (STAAR) replaced the Texas Assessment of Knowledge and Skills (TAKS) (Texas Education Agency, 2013). The lack of challenge for higher achieving students on TAKS is a major reason why the state of Texas has discontinued TAKS and is now in the process of instituting STAAR. The STAAR test is said to measure critical thinking and higher-order processing in transition for the College and Career Readiness movement.



Table 5-1

*Overall TAKS Scale Score Comparison of GT Academy and District GT Students*

Overall Comparison	GT Academy	District GT	Difference (Academy-District)
Reading Scale Score Avg.	925.01	924.96	0.05
Math Scale Score Avg.	923.23	930.80	-7.57
Reading-Female	931.32	933.80	-2.48
Math-Female	919.82	929.68	-9.86
Reading-Male	919.11	916.56	2.55
Math-Male	926.54	931.86	-5.32
Reading- Asian Subgroup	941.81	932.85	8.96
Math- Asian Subgroup	954.80	957.57	-2.77
Reading- African American	912.35	888.65	23.35
Math- African American	882.86	872.68	10.18
Reading- Hispanic	894.52	912.45	-17.93
Math-Hispanic	887.54	898.61	-11.07
Reading- White	916.75	926.59	-9.84
Math-White	923.60	914.67	8.93
Reading- Multi Racial	943.17	925.46	17.71
Math- Multi Racial	891.50	920.90	-29.40

**Research question two.**

This study also analyzed the performance of the students by number of high school credits earned at middle school. In terms of answering the second research

question, GT Academy students obtained more high school credits in middle school over the standard-zoned district GT middle school student. The range of difference was from the smallest difference 1.62 White student comparisons to the largest difference 2.88 Asian student comparison. The students attending the GT Academy averaged 2.13 more credits per student than the district GT student. Attending the GT Academy resulted in students earning more high school credits in middle school. The GT Academy had 99% participation of students that utilized acceleration options and earned high school credits in middle school. The district GT group only resulted in 46.5% of students that earned high school credits. This head start in middle school resulted in these GT Academy middle school students having the opportunity to take up to three additional courses in high school. The study showed that the district GT student population does not utilize acceleration options as frequently as the GT Academy student population. The data showed that non-academy students averaged less than one credit which was profound and eye-opening. Middle school students in this particular district are not taking full advantage of high school high school offerings during middle school.

The GT Academy students showed a distinct advantage over the district GT students based on the group averages. GT Academy students averaged over three credits per student while the district GT middle school student attending their standard-zoned middle school averaged less than one credit per student. Each ethnicity group at the GT Academy outscored their district GT counterpart. The GT Academy students have a distinct advantage in that two credits of Spanish are required as a core subject at the Academy. GT Academy students take Spanish in 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade. GT Academy students have the option to take Biology Pre-AP, English I Pre-AP, and Algebra II Pre-

AP if they are ready for the coursework. The standard-zoned district GT middle schools offer Spanish, Algebra, and only a few middle school that offer Geometry. After analyzing the data, there is a definite demand from both students and parents for acceleration and taking a proactive educational philosophy. Factor in the fact that this district has high school Academy programs that specialized in Medical, Media, Global Languages, Math and Science, and Business; these GT Academy middle school students will have up to three specialized courses they can take in high school due to utilized acceleration options in middle school.

While each Academy student earned at least two credits, district GT resulted in less than one out of two students that obtained a high school credit. There were a total of 400 district GT students in this study. Only 46.5% or 186 students actually obtained a high school credit. The remaining 53.5% or 214 students had zero high school credits. The large amount of district GT students with no high school credits brought the overall average of high school credits down for the district GT group. The GT Academy had 100% of its students with high school credits. The participation of all students obtaining credits is what caused such a higher number of overall credits per Academy student. With all the career and college readiness push that our nation is currently under, the district's gifted and talented students are not taking these challenging courses in middle school. The high school graduation plan is so tight with requirements, middle school students not willing to take advantage of middle school offerings will possess little choice over their courses in high school. Also, the challenge the GT Academy students put themselves through in middle school allows for an easier transition into high school as well as a higher level of preparedness for the high school curriculum. These GT

Academy students already have up to five credits earned and they have experienced the rigor and challenge of high school courses. This study shows that standard-zoned district GT middle school students are not nearly as exposed to high school curriculum when they leave middle school. Table 5-2 summarizes overall high school credit results. The GT Academy students outperform the district GT student in every category

Table 5-2

*Overall High School Credit Comparison*

High School Credits:	GT Academy	District GT	Difference
Overall	2.93	0.80	2.13
Asian	3.64	0.76	2.88
African American	2.30	0.62	1.68
Hispanic	2.50	0.18	2.32
Multi-Racial	2.88	1.25	1.63
White	2.57	0.95	1.62
Male	3.06	0.76	2.30
Female	2.80	0.85	1.95

**Implications for School Leaders**

Because middle school students arrive with such varying ranges of academic and social levels, school leaders and teachers must make decisions regarding differentiated instruction, ability grouping, and flexibility in curriculum (Carnegie Council on Adolescent Development, 1989). At the GT Academy middle school, students are allowed the opportunity to move ahead into high school curriculum and earn credits

towards graduation. Students have the opportunity to leave middle school with as many as five high school credits, including two years of required Spanish. Figure 5-1 below summarized Implications for School Leaders.

In an era of school-choice and competition, district leaders and stakeholders should be interested in concepts that keep their programs relevant, individualized, and catered to the needs of high-achieving students and parents of all types (Colangelo, 2004).

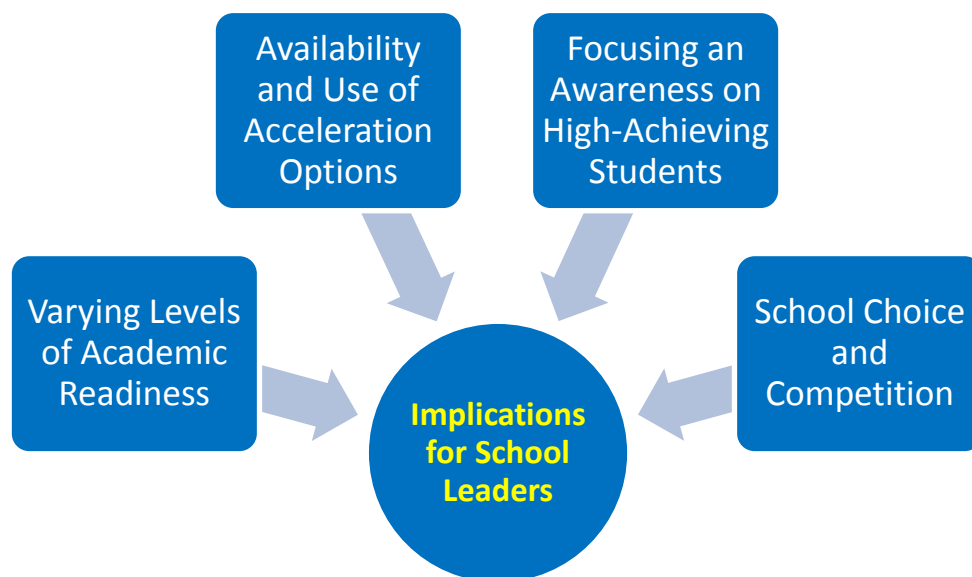
The GT Academy currently has the capacity for 207 students each year. For next school year, 420 GT students from all over the district applied for the GT Academy, which meant that 213 were denied entrance due to capacity. This has been the trend for the last three years. Parents want their son/daughter to attend the GT Academy. There is a demand and desire for programs catered to GT students. Numbers show that the GT Academy could and should be expanded based on demand.

Middle school leaders can also gain insight on the need for acceleration options. Students attending the GT Academy average one to one and a half more credits than the district GT counterpart. Several students leave the GT Academy with four to five high school credits. This acceleration opportunity is a way to attract gifted students and their parents. This data supported the need for middle school leaders to allow and encourage acceleration options at the middle school level. Middle school leaders could rely on acceleration as a recruiting tool for schools with a low enrollment or a leader ready to take middle schools to the next level. There is a population that demands acceleration options and want their children to have a head start (Colangelo, 2004). Middle schools that provide acceleration options can potentially attract parents into the communities and

their schools. This jumpstart in middle school allows GT Academy middle school students in this study the opportunity to take up to three more courses in high school. Students that attend a specialized high school or an Academy setting can benefit from the acceleration opportunities. Another revealing statistic is that the district GT student population does not utilize acceleration. The total student credit average for district GT students is less than one credit. Middle school students in this particular district are not taking full advantage of middle school high school offerings.

Figure 5-1

*Implications for School Leaders*



In the era of accountability, educational leaders adapt to increasingly overwhelming pressure which causes teachers and schools to focus on raising low-achieving students to levels of proficiency. High-achieving students are often misconceived as self-driven,

able to learn on their own, and not needing as much teacher assistance and attention. This simply is not the case, especially in the years of adolescence when each child, no matter their academic readiness, needs to be challenged and encouraged to reach their fullest potential (Jackson & Davis, 2000).

School leaders willing to think outside the box and look for diversified offerings can be rewarded with a program such as the GT Academy that allows students a theme-based curriculum, on and off-site field experiences tied to the curriculum, high school acceleration options in middle school, and a holistic learning experience suited for the true gifted and talented student dealing with social adjustment and belonging during the crucial adolescence years.

### **Implications for Further Research**

After completing the research study analyzing the student performance of GT Academy students and the standard-zoned district GT middle school students, implications for further research arise. Figure 5-2 below summarized Implications for Further Research.

As mentioned earlier, the advent of the STAAR test and the increased rigor and challenge would be a great starting point for comparison. To compare the GT Academy student against the district GT student would most likely result in a better comparison than did the 2010-2011 Reading and Math TAKS that has been conducted. The met standard nature of the criterion-based TAKS test does not provide much challenge for most of the GT students analyzed in this sample. Using the state's new end-of-course exams (EOC) for high school courses could also be analyzed and compared in relation to performance for the two groups.

Another implication or area of study would be to analyze the percentage of GT Academy students and district GT students that are accepted into the district's high school Academy programs. Is there a higher percentage of GT Academy students within these high school Academies over the standard-zoned district GT student? Do these GT Academy students continue to attend a non-traditional high school at a higher rate than their district GT counterpart? Is there difference between the two groups as a preparation for high school? These areas of study could provide for useful data when looking for trends and overall diversification of high school academy student population.

Adding qualitative data could give a deeper insight into the complexities of the GT Academy and the difference in the learning community. Students, parents, teachers, and the GT coordinator collaborate, monitor, give input, and constantly improve, and mold the middle school GT Academy program. Each stakeholder has an opportunity and venue to be heard and considered. A qualitative study of these students could give light to their perceptions and thoughts on GT programs.

The exclusivity and extension of power due to the privilege of attending this GT Academy contributes to competition, motivation, and academic excellence. Parents and students are vested into this program. Academy students have lengthier commutes than if they attended their zoned campus. The "student learning" that takes place on a daily basis is also something that can be more accurately measured through qualitative data.

Further research could also include internal or external factors in school that could contribute to increases or decreases in student performance. Examples of internal factors could be climate, culture, discipline, intervention programs available, and the quality of



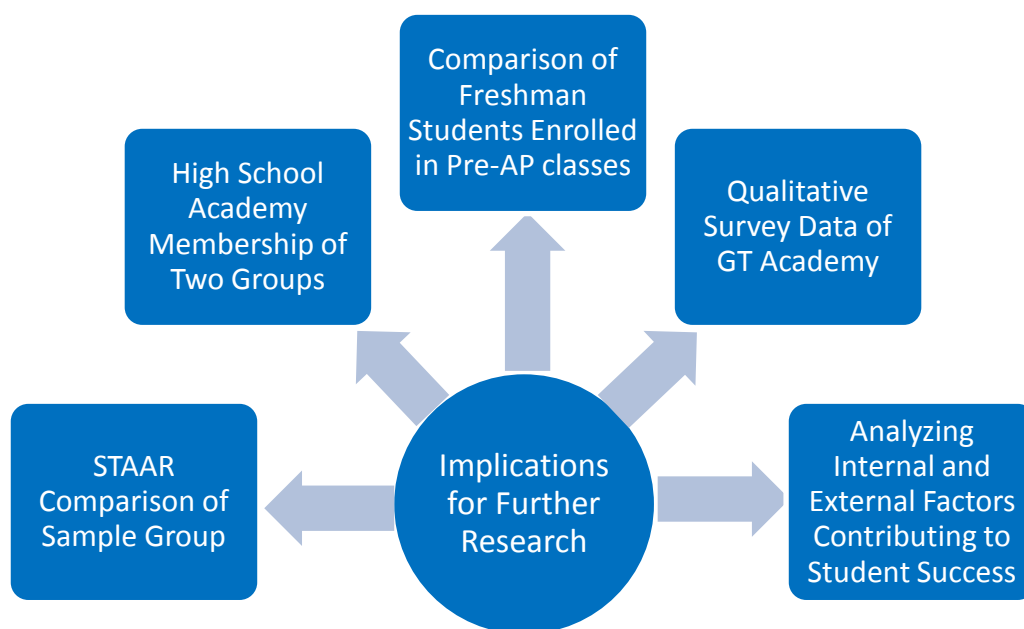
the education at each campus. Examples of external factors could be afterschool enrichment opportunities, private learning programs, and parental influence.

Another implication for research would be to analyze the students' prior performance in elementary school before entering the GT Academy or district GT program. By analyzing their performance over time, growth each year could be measured and analyzed.

A future researcher could analyze this sample group's high school performance. An investigator could analyze the number of Pre-AP and AP classes taken in high school. High school leaders could use the resulting data to determine if acceleration at the middle school level has both short-term and long-term advantages.

Figure 5-2

*Implications for Further Research*



African American students did better at the GT Academy in both TAKS scaled scores and number of high school credits. A further researcher could investigate the reason for the difference at the GT Academy. Is there less pressure for these African Americans at the GT Academy because everyone is competing and challenging one another? Do African Americans at their standard-zoned district GT middle school program feel pressure not to “look too smart” in the audience of their peers. The GT Academy African American students could be analyzed to determine what makes the difference at the GT Academy.

As the state and nation continue to transition to world of global competitiveness and career and college readiness, middle school leaders willing to think outside the box and institute a diversity of middle school offerings can match curriculum to student needs and offer challenges for our highest-achieving students; our nation’s greatest resource.

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**Appendix A**  
APPROVAL FROM THE UNIVERSITY OF HOUSTON HUMAN SUBJECT  
RESEARCH COMMITTEE

**UNIVERSITY of HOUSTON**  
DIVISION OF RESEARCH

January 17, 2013

Jacob Nichols  
c/o Dr. Michael Emerson  
Educational Leadership & Cultural Studies

Dear Jacob Nichols,

Based upon your request for exempt status, an administrative review of your research proposal entitled "PERFORMANCE OF STUDENTS AT A MIDDLE SCHOOL GIFTED AND TALENTED ACADEMY PROGRAM: IMPLICATIONS FOR SCHOOL LEADERS" was conducted on December 19, 2012.

At that time, your request for exemption under **Category 4** was approved pending modification of your proposed procedures/documents.

The changes you have made adequately respond to the identified contingencies. As long as you continue using procedures described in this project, you do not have to reapply for review. \* Any modification of this approved protocol will require review and further approval. Please contact me to ascertain the appropriate mechanism.

If you have any questions, please contact Alicia Vargas at (713) 743-9215.

Sincerely yours,



Kirstin Rochford, MPH, CIP, CPIA  
Director, Research Compliance

\*Approvals for exempt protocols will be valid for 5 years beyond the approval date. Approval for this project will expire **December 1, 2017**. If the project is completed prior to this date, a final report should be filed to close the protocol. If the project will continue after this date, you will need to reapply for approval if you wish to avoid an interruption of your data collection.

Protocol Number: 13183-EX

## Appendix B

### 2010-2011 8<sup>th</sup> GRADE READING TAKS CONVERSION TABLE

Texas Assessment of Knowledge and Skills Raw Score Conversion Table Reading - May 2011 Administration Grade 8		
Raw Score	Scale Score	Lexile Measure
0	E- 245	460L
1	E- 319	460L
2	E- 373	460L
3	E- 406	460L
4	E- 430	460L
5	E- 449	460L
6	E- 465	460L
7	E- 479	475L
8	E- 492	505L
9	E- 503	530L
10	E- 514	555L
11	E- 524	580L
12	E- 534	605L
13	E- 542	620L
14	E- 551	640L
15	E- 559	660L
16	E- 567	680L
17	E- 575	695L
18	E- 582	710L
19	E- 590	730L
20	E- 597	745L
21	E- 604	760L
22	E- 611	780L
23	E- 618	795L
24	E- 625	810L
25	E- 632	825L
26	E- 639	840L
27	E- 646	860L
28	E- 654	875L
29	E- 661	890L
30	E- 668	910L
31	E- 676	925L
32	E- 683	940L
33	E- 691	960L
34	E- 700 *	980L
35	E- 708	1000L
36	E- 716	1020L
37	E- 726	1040L
38	E- 735	1060L
39	E- 746	1085L
40	E- 757	1110L
41	E- 770	1140L
42	E- 784	1175L
43	E- 800	1210L
44	E- 819	1250L
45	E- 850 **	1325L
46	E- 875	1380L
47	E- 928	1465L
48	E-1002	1465L

\* Met Standard level

\*\* Commended Performance level



# **Appendix C** **2010-2011 8<sup>th</sup> GRADE MATH TAKS CONVERSION TABLE**

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Texas Assessment of Knowledge and Skills  
Raw Score Conversion Table  
Mathematics - May 2011 Administration  
Grade 8

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<u>Raw Score</u>	<u>Scale Score</u>
0	E- 324
1	E- 394
2	E- 443
3	E- 473
4	E- 494
5	E- 511
6	E- 526
7	E- 538
8	E- 550
9	E- 560
10	E- 569
11	E- 578
12	E- 586
13	E- 594
14	E- 601
15	E- 609
16	E- 615
17	E- 622
18	E- 629
19	E- 635
20	E- 641
21	E- 648
22	E- 654
23	E- 660
24	E- 666
25	E- 672
26	E- 678
27	E- 684
28	E- 690
29	E- 700 *
30	E- 703
31	E- 709
32	E- 715
33	E- 722
34	E- 729
35	E- 736
36	E- 743
37	E- 751
38	E- 759
39	E- 767
40	E- 776
41	E- 786
42	E- 796
43	E- 807
44	E- 820
45	E- 850 **
46	E- 852
47	E- 874
48	E- 904
49	E- 953
50	E-1021

\* Met Standard level  
\*\* Commended Performance level