The University of Southern Mississippi

ANALYSIS OF ACHIEVEMENT TRENDS OF GIFTED STUDENTS

by

Sharon Kay Webb Cato

A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

Director

Dean of the Graduate School

December 2002

UMI Number: 3071065

UMI®

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

The University of Southern Mississippi

ANALYSIS OF ACHIEVEMENT TRENDS OF GIFTED STUDENTS

By

Sharon Kay Webb Cato

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

December 2002

ABSTRACT

ANALYSIS OF ACHIEVEMENT TRENDS OF GIFTED STUDENTS

By Sharon Cato

December 2002

The close examination of the achievement trends of gifted students has been a neglected area for many years. The national focus on new accountability standards necessitates greater analysis of how gifted children are faring on national standardized tests.

This study examined the achievement trends of gifted students from grades three through seven in the areas of reading, math, and language. The gifted population in this study was comprised of those identified and ruled eligible for gifted placement at any time during the 5 year span from grades 3 through 7. A comparative group of nongifted students was used to ensure that any significant variances in achievement were attributable to only the gifted population. Test scores from the Iowa Test of Basic Skills and the Stanford Achievement Test were collected and analyzed for 5 consecutive years. These scores were also analyzed for significant differences due to gender.

Reading, math, and language scores from grades 3 through 7 revealed that gifted students do not experience any significant increase or decrease in scores, as compared to nongifted students. Mean achievement scores of gifted students were significantly higher than nongifted, as expected, but achievement trends for both groups through the years

were similar in time and magnitude. The study also indicated no significant differences for either group in relation to gender in the areas of reading, math, and language.

TABLE OF CONTENTS

ABSTRACT i

LIST OF TABLES v

CHAPTER

I. INTRODUCTION 1

Statement of the Problem
Hypothesis
Delimitations
Assumptions
Definition of Terms
Justification for the Study

II. REVIEW OF RELATED LITERATURE 8

Achievement
  Language Achievement
  Math Achievement
  Gender and Achievement
Background of Gifted Education
Intelligence
Identification of Gifted Students
Gifted Underachievers
Instructional Practices and Gifted Education
Gender and Achievement Issues of Gifted Students
Gifted Identification Instruments

III. METHODS 32

Participants
Instruments
Analysis

IV. FINDINGS 37

V. DISCUSSION 49

Implications of the Study
Limitations of the Study
Suggestions for Further Research

APPENDIXES.......... 58

REFERENCES.......... 60

LIST OF TABLES

Table

1. Count and Percentage of Gender in Gifted and Non-Gifted Groups 38

2. Reading Achievement in Grades Three Through Seven for
Gifted and Non-Gifted Students 39

3. Math Achievement in Grades Three Through Seven for
Gifted and Non-Gifted Students 41

4. Language Achievement in Grades Three Through Seven
For Gifted and Non-Gifted Students....................42

5. Gifted Female Versus Gifted Male Reading Achievement
Scores from Grades Three Through Seven....................43

6. Gifted Female Versus Gifted Male Math Achievement
Scores from Grades Three Through Seven....................44

7. Gifted Female Versus Gifted Male Language Achievement
Scores from Grades Three Through Seven....................45

8. Non-Gifted Female Versus Non-Gifted Male Reading
Achievement Scores from Grades Three Through Seven 46

9. Non-Gifted Female Versus Non-Gifted Male Math
Achievement Scores from Grades Three Through Seven 47

10. Non-Gifted Female Versus Non-Gifted Male Language
Achievement Scores from Grades Three Through Seven....................48

CHAPTER I

INTRODUCTION

The term *gifted student* is applied to children capable of high performance (McLeod & Cropley, 1989). The perception of what giftedness is, and how it should be measured has been debated for many decades. If current practices for identifying gifted children had been in effect throughout history, Einstein would probably not have been identified, as he did not speak until he was four, and was seven before he could read. Isaac Newton would not have made it through the referral process, because he did poorly in grade school, and when Thomas Edison was a boy, his teachers told him he was too stupid to learn anything. Winston Churchill might have been removed from a gifted program, because he failed the sixth grade (Rhode Island State Advisory Committee on Gifted and Talented Education, n.d.). Obviously, identification of the gifted is far from perfect. Giftedness is defined by culture, and cultures change through time. Indeed, the very definition of giftedness, for the purpose of identification, is a controversy in itself and varies across time, nations and even from state to state (National Association for Gifted Children, *Giftedness and high ability*). Identification procedures and requirements for designating students as gifted also vary from district to district within a state.

Eligibility for gifted programs in public schools typically depends on an intelligence quotient, or IQ score. Minimum IQ values for gifted eligibility is one element that varies from state to state. For example, in Louisiana, the minimally acceptable IQ score for gifted program eligibility is 130. In Mississippi, the minimum IQ score is generally 120. Moreover, even though the State of Mississippi provides guidelines for gifted identification, local districts have flexibility in choosing which instruments and guidelines they use. The school district examined for this study uses a combination of achievement scores, group IQ scores, and a checklist to screen children for referral to the gifted program. However, a neighboring school district includes grades in determining eligibility for gifted placement. Although, an IQ of 120 is the state minimum, but districts may choose to set a higher standard for gifted eligibility (Mississippi Department of Education, 1994).

Students may also be identified as gifted through an alternative process that sets different criteria for students who are found to be environmentally, economically or culturally disadvantaged. The underachieving, disabled, and those with behaviors that may influence classroom performance are also covered in this provision (Mississippi Department of Education, 1994).

Regardless of the definition or exact criteria, it is to be expected that these students, who have been identified and placed in gifted programs, will be able to succeed in most measured areas of achievement. It is also a reasonable assumption that students who score at or above the 90th percentile on a standardized test in second or third grade, will have the ability to maintain this level throughout the school years. The evidence that school districts do adhere to this assumption is confirmed by the fact that students in gifted programs are not reevaluated for eligibility in the gifted program in grades 2 through 8. Rather, they are allowed to remain in a gifted program throughout school unless they have been voluntarily dropped from the program or moved to another state.

Children identified as gifted are known to exhibit many characteristics beyond what achievement tests can measure, traits that allow them to maintain their achievement advantage and assist in identifying them as gifted. Typical intellectual characteristics of gifted children include large vocabularies, an early ability to read, greater comprehension abilities, the ability to learn new skills more quickly, greater divergent thinking abilities, and an unusual sense of humor (Webb, Meckstroth, & Tolan, 1994).

Gifted achievement has been a popular topic in research with respect to gender, subject, and ethnic differences. Indeed, comparison studies within these topics have been the primary focus of gifted research. However, an area that has been sorely neglected is the longitudinal, archival study of gifted achievement in the elementary grades.

Statement of the Problem

The purpose of this research is to analyze and compare the achievement test scores of gifted and nongifted students to determine the gain, loss, or maintenance of achievement levels from third to eighth grade. The following related questions were asked:

1. Do achievement test scores vary significantly from third to eighth grade for students identified as gifted or nongifted?

2. If significant differences exist, which achievement areas (reading, language and math) are affected?

3. Is there a significant difference between the variance of achievement scores of male and female students designated gifted and nongifted?

Hypotheses

H_1: There are significant declines in reading achievement test scores from third to eighth grade between students identified as gifted and those designated as nongifted.

H_2: There are significant declines in math achievement test scores from third to eighth grade between students identified as gifted and those designated as nongifted.

H_3: There are significant declines in language achievement test scores from third to eighth grade students identified as gifted and those designated as nongifted.

H_4: Female students identified as gifted demonstrate more significant declines in achievement scores in reading, math, and language from third to eighth grade than male gifted students.

H_5: Female students designated nongifted demonstrate more significant dcelines in achievement scores in reading, math, and language from third to eighth grade than male students designated as nongifted.

Delimitations

1. Participants in this study are limited to students in the selected school district who have at least 5 years of available achievement scores from third through eighth grade.

2. The variables in this study are limited to (a) gifted eligibility, (b) gender, (c) achievement test type, (d) grade level, and (e) IQ.

3. Gifted eligibility in the selected school district is restricted to those students who have had an achievement score in the 90th percentile or above in reading, math or language, scored at the 90th percentile or above on the Otis Lenon Test, and received an IQ score at least 120 on a state approved IQ test in one or more areas.

4. Two different types of achievement tests used to gather scores. This is necessary due to testing changes made at the state level. Mississippi switched from the Stanford Achievement Test to the Iowa Test of Basic Skills in 1993, and scores from both will be included.

5. IQ scores are only available for students who have been referred to the gifted program. IQ scores for regular education students are not available.

6. Students eligible for Special Education services will not be included in this study due to a lack of achievement test scores in past years.

Assumptions

1. Students with IQs of 120 or above (identified as gifted) have the ability to maintain achievement levels in standardized achievement tests throughout the elementary years.

2. Standardized test scores are a measurement of achievement.

Definition of Terms

1. Gifted – students identified as having an IQ of 120 or above, and placed in a program for gifted students within a school.

2. Achievement test – any state-required standardized test used to measure achievement levels of students: Iowa Test of Basic Skills and the Stanford Achievement Test.

3. Underachievement – the performance of those individuals who demonstrate well above average intellectual or academic ability on intelligence and aptitude tests, but fail to perform in school-related tasks at an equally high level (Hall, 1983).

4. Significant variance of achievement a. any change in achievement that would render a) gifted student ineligible for referral to the gifted program if reevaluated. b) a ten- percentage point change in achievement scores at any time from grades three to eight in any of the measured areas of achievement.

Justification for the Study

It is a common misconception that a child identified as gifted will succeed regardless of the educational setting. The idea of giftedness is linked so soundly to IQ (which is thought never to change) that students in this study are not reevaluated while in a gifted program. Once a student has been ruled eligible for gifted services, the student will remain eligible through the elementary school years. As a result, the achievement of gifted students is seldom monitored for change.

The Mississippi Student Achievement Improvement Act of 1999 mandated the use of annual performance standards for each district in the state. Student growth and performance were designated as the measures by which districts would be evaluated and accredited. This legislation was modified in 2000 to put increased accountability at each individual school, rather than at the district level. It also linked accreditation to two factors: a) schools must now meet an annual growth expectation in student achievement and b) the level of accreditation is linked to the percentage of students proficient at grade level (Mississippi Department of Education, 2001). Consequently, the current increased emphasis on accountability for individual student achievement, coupled with the lack of longitudinal studies of students identified as gifted, necessitates a close examination of the achievement patterns of these students. It is the purpose of this study to analyze such patterns in order to test the hypotheses offered above.

CHAPTER II

REVIEW OF RELATED LITERATURE

Crucial to providing a theoretical foundation for this study is an examination of the pertinent literature about academic achievement and achievement-related issues that affect all students in the areas of reading, math, and language. This examination must necessarily include the issue of gender and achievement as it applies to all students. Also, of use to the general reader is a brief background of gifted education, outlining the events that have led to today's system. Therefore, this chapter begins with a discussion of both the concept of intelligence and the criteria for identification of the gifted—topics that have a profound effect on the reality of gifted education including underachievement, instructional practices, and gender. Since testing is the foundation upon which students are evaluated and placed, the review concludes with information concerning tests and testing.

Achievement

Achievement trends for students in the United States are collected, analyzed and summarized by the National Association of Educational Progress (NAEP). NAEP is the Federal Government's primary indicator of the nation's educational achievement, and has been monitoring student achievement in mathematics, science, reading, writing, and other subjects for nearly 20 years. It is the only organization to consistently track achievement on a national level, and thus is the primary source for reviewing achievement data and trends in the United States.

Reading Achievement

The term *Matthew Effect* has been used to describe "the phenomenon that a single unmediated deficit can have a significant impact on the development of skills that are not deficient" (Bergman, 1999, p.1). Because reading skills are recognized as a fundamental requirement of academic success, the *Matthew Effect* proposes that children who have difficulties learning to read early are likely to have reading difficulties throughout schooling and into adulthood (Southwest Educational Research Laboratory, 2002). Moreover, these reading difficulties increase over time, leading to failure and dropout for many students. Recognition of this dynamic has led to an increased emphasis on early literacy skills by federal and state educational organizations.

In response to the need for students to improve academic performance and achievement, the United States Department of Education is currently supporting literacy research through the National Research Center on English Learning and Achievement (CELA), the Center for the Improvement of Early Reading Achievement (CIERA), the North Central Regional Laboratory (NCREL), the Southwest Educational Development Laboratory (SEDL), and the Northeast and Islands Regional Educational Laboratory at Brown University (NIREL) (National Center for Education Statistics, 2002). At the state level, the Mississippi Legislature passed Senate Bill 2944 to create a Reading Sufficiency Program of Instruction. This law requires every school district in Mississippi to establish and implement a program for reading reform (University of Mississippi Barksdale Reading Institute, 2002).

Despite the focus on reading skills and programs at state and federal levels, between 1992 and 2000, reading achievement levels for fourth and eighth graders did not increase significantly. In fact, the latest NAEP study concluded that fourth graders have not improved significantly since 1992 (The National Center for Education Statistics, 2002). Furthermore, while NAEP scores indicated that the number of students scoring at the 75th and 90th percentiles were higher in 2000 than in 1992, indicating that the higher-performing students have made gains, the number of students at the 10th percentile were lower in 2000 than in 1992, indicating that the lower-performing students have lost ground (Latest NAEP, 2001).

The 2000 NAEP, which studied trends in reading achievement from 1970 to 1999, found that during this period the scores of 17-year-olds rose slightly, while the average scores for 13-year-olds fluctuated, but the final average was higher. The reported scores for 9, 13 and 17 year-olds increased during the 1970s, but with no substantial improvement from 1971 to 1999 (National Center for Education Statistics, *Nation's Report Card*, 2002).

Language Achievement

The 1998 NAEP report revealed that 23% of fourth graders, 27% of eighth graders and 22% of twelfth graders were at, or above, the proficient level in writing. Over half of all students, in each grade level, were at the basic level of writing achievement (National Center for Education Statistics, *Nation's Report Card*, 2002).

Gender differences were striking. At each grade level, females scored higher than males in the writing assessment. In all three grades, 29% to 36% of females scored at the proficient level, while the range for males was 14% to 17%. Factors that correlated to student performance were socioeconomic status, level of parent's education, and organizational skills. Specifically, students eligible for the federally subsidised free or reduced-price lunch program had lower average scores than students not eligible for this program. Generally, the higher the level of parental education reported by students, the higher the average writing scores. Students who reported that they or their teachers saved their writing work in folders or portfolios had higher average scores than students whose work was not saved. Students at grades 8 and 12 who were always asked to write more than one draft of a paper had higher average scale scores than did their peers who were sometimes asked or never asked to do so (National Center for Education Statistics, *Nations Report,* 2002).

Findings for the state of Mississippi reflected this national profile. The average writing scores for Mississippi students as compiled by the NAEP revealed that the average score for males was lower than females. The average scores for both groups were the lowest in the nation. Students who were eligible for free or reduced-price lunches scored lower than students who did not qualify for such programs (U.S. Department of Education, *NAEP Writing,* 1999).

Math Achievement

Achievement in math has been studied not only on a national level, but also in terms of standards across the developed world. The Third International Mathematics and Science Study (TIMSS) compared students in eighth-grade math and science in 38 nations. The study found that U.S. eighth graders have made little gain in math achievement since 1995 (International Study Center, *TIMSS Highlights*, 2001). According to the latest NAEP study, students in grades four, eight, and twelve had higher average scores in 2000 than in 1990, fourth- and eighth-graders showed steady progress across the decade, and twelfth-graders made gains from 1990 to 1996, but their average score declined between 1996 and 2000. Again, students in Mississippi scored the lowest in the nation in grades four and eight (U.S. Department of Education, The Nations Report Card, 2000).

Math achievement differences between gifted and nongifted students were documented in a study comparing the math achievement of high school seniors of high ability who were not eligible for gifted programs in elementary school, with those students who had been placed in an elementary gifted program. The study found that many students who were denied access to the elementary program received a different secondary math education, resulting in lower math class placement by their senior year. The findings indicated significantly higher standardized test scores for the students who had been placed in the accelerated program, which included various forms of curriculum compacting, enrichment of the existing curriculum and a faster progression through the curriculum. (Chilton, 2001).

Gender and Achievement

Gender differences in achievement have been actively studied since the 1960s. Yet, one study to identify trends in gender achievement from 1960 to 1994 found that the differences have remained stable. Science and math were the only two subjects with diminishing gaps, due largely to national educational policies and programs that promoted education and awareness of the issue (Nowell, 1998). Despite any progress made, the mathematics achievement gap between male and female students in grades four and eight continues to exist. In 2000, male students had higher scores than female students in grades 8 and 12; however, the apparent difference between males and females at grade 4 was not statistically significant (National Center for Education Statistics, *Nation's Report Card*, 2002). This increasing disparity raises the questions of when and why such differentiation occurs.

New findings by the National Center for Education Statistics (NCES) may point to the beginnings of observable differences in children's reading and mathematics performance according to gender. NCES reports that, by the spring of the first grade, females are more likely to be able to read and males are more likely to be proficient at multiplication and division. In all assessment years, girls outperformed boys in reading, and in 2000 more girls than boys reached the proficient level. The 1998 NAEP language scores in grades four, eight, and twelve showed that female students had higher average scores than their male peers (*Nation's Report Card*, 2002). While a complete explanation for this phenomenon is not yet available, the type of test used to measure achievement may be a factor in achievement gender differences. (Barboza, 1999).

Background of Gifted Education

The study of gifted children began in earnest in the early 1920s when Lewis Terman conducted a longitudinal study of 1,528 children to determine the traits of children with high IQs, and assess what kinds of adults they might become. He found that the gifted tend to maintain their superior ability, have lower mortality rates, maintain better physical and mental health, hold moderate political views, are successful in educational and vocational pursuits, and commit less crime. Because Terman followed his subjects for thirty years, his research was significant in dispelling prevalent misconceptions about giftedness (Barbe & Renzulli, 1965).

By 1950, in response to societal and educational needs after World War II, Congress had passed the National Science Foundation Act, which marked the first time the federal government provided funds specifically for the gifted and talented. This act led to the designation of specific academic aptitude as a type of giftedness (McClellen, 1985). Subsequently, the 1960s, post-Sputnik era, saw many ideas put forth concerning the complex nature of giftedness. For example, E. Paul Torrence studied and promoted the idea of the existence of several types of giftedness. Virgil S. Ward wrote about the qualities of giftedness. Other researchers were beginning to question how to identify gifted children (Barbe & Renzulli, 1965). Nevertheless, as late as the 1970s, few programs existed for gifted and talented students.

By 1990, however, 38 states served more than 2 million gifted students in K-12 (U.S. Department of Education, Office of Educational Research and Improvement, *National Excellence*, 1993), and it was in 1990 that gifted education in the United States came into greatest focus with the creation of the National Research Center on the Gifted and Talented. This organization, formed from the Javits Act Program and administered by the Office of Educational Research and Improvement, U.S. Department of Education, had as its mission of the planning and conducting of theory-driven quantitative and qualitative research. Prior to the establishment of this research center, studies on gifted education were less prevalent, less organized and less research-based; therefore, in reality, organized, gifted education research is a relatively new field (National Research Center on the Gifted and Talented, 1995).

Intelligence

In 1897, France's Alfred Binet began work on tests of individual differences, which led him to study "subnormal" children in Paris schools. Several years later, Binet and Theodore Simon recommended that an accurate diagnosis of intelligence be established for schoolchildren. The Simon-Binet Test of Intelligence is a result of that collaboration. The Simon-Binet first appeared in 1905, was revised in 1908, and then modified again in 1916 by Lewis Terman (*Controversy Follows Psychological Testing*, 1999).

IQ tests were widely used on soldiers in World War I, but controversy arose after summative results demonstrated that northern Europeans were superior to southern and eastern Europeans, and Whites were superior to Blacks. These findings fueled discriminatory practices and racial prejudice. In 1939, David Weschler developed the Weshcler Adult Intelligence Scale, which is considered one of the more stable IQ tests with respect to bias ("Controversy Follows Psychological Testing," 1999).

The debate over the nature of intelligence and the ways it can be measured continued into the late 1990's and into the 21st Century. In 1995, a task force of the American Psychological Association (APA) published an article entitled "Intelligence: Knowns and Unknowns" in an attempt to clarify the issues and controversy surrounding intelligence. This report proposed that intelligence test scores can partially predict individual differences in school achievement areas, but are not the only indicator or predictor of school achievement. External factors, such as nutrition, family background, genetics, environmental factors, and culture have significant impact as well. The article also pointed out that, according to longitudinal studies, IQ remains relatively stable after age seven (APA Task Force, 1996).

IQ tests have traditionally shown gaps between certain groups of people based on gender, race, and socioeconomic status. For example, significant differences have been shown to exist between the mean intelligence test scores of Blacks and Whites. Whereas the explanations given for these phenomena based on factors of socioeconomics, genetics and culture may be appropriate, there is little direct empirical support for them. Rather, the APA task force found that there were no important gender differences in overall intelligence test scores, but substantial differences did appear for specific abilities. Males typically scored higher on visual-spatial and, beginning in middle childhood, on mathematical skills. Females excelled on a number of verbal measures. Sex hormones and their levels were related to some of these differences, but social factors, such as gender roles and stereotypes, played a significant role as well ("APA Task Force," 1996).

Categories of giftedness based on IQ exist, but have little impact on gifted education programs. For example, students with IQ scores that range from 115 to 129 are considered mildly gifted, but are not always eligible for gifted programs in some states. Students with IQ scores of 130 to 144 fall into the moderately gifted range. Those with scores from 145-159 are considered highly gifted, while those with scores 160 and above are extraordinarily gifted (Government of British Columbia, n.d.).

Identification of Gifted Students

The term *gifted* carries with it many misguided perceptions by students, parents and educators alike. It is often assumed that gifted children will naturally experience high achievement with little or no direct intervention by educators. However, studies show that this not the case (Freeman, 1999). In some instances, gifted children with a zest for learning have been able to grow and survive without a concentrated effort to support their achievement, but in many other instances, a non-supportive environment also produces gifted children with high levels of insecurity and anxiety, turning their natural ability into a liability (McLeod & Cropley, 1989). Nevertheless, research provides evidence that the potential for higher levels of achievement is an innate characteristic of gifted children. The differences in gifted and nongifted students were noted in a study that compared the traits of gifted and average third and fourth graders. A significant difference ($p < .001$) in the areas of rate of learning, expanse of vocabulary, memory ability, perfectionism, and interest in books were found between the two groups with gifted children achieving higher scores (Silverman, 1986).

The number and percentage of students identified as gifted varies from state to state because of differences in state laws and local practices. For example, four states identify more than 10% of their students as gifted and talented, while in 21 states fewer than 5% are identified as such (U. S. Department of Education. *National Excellence: A Case for Developing America's Talent*, 1993). Gifted identification procedures and requirements vary from state to state, between school districts, and even between grade levels. Identification criteria typically involve achievement test scores, grades, leadership or creativity surveys, and group IQ tests used as measures to screen students for referral to the gifted program. Once a student has passed the referral stage, an individual IQ test may be administered, and students may enter gifted programs by attaining the identified minimum individual IQ score. A variety of IQ tests are used that can measure different areas of intelligence, such as verbal and nonverbal intelligence.

One study comparing academic achievement in students who qualified for a gifted program based on verbal IQ tests with that of students who qualified based on nonverbal or quantitative reasoning abilities found the latter had more difficulty in academic subjects (Bittker, 1991). Other studies have indicated that nonverbal instruments are not standardized enough to effectively identify cognitive ability, and so cannot necessarily predict academic achievement. Furthermore, correlations between verbal and nonverbal measures are lower than those among various nonverbal measures. Yet, despite the possible discrepancies, nonverbal and quantitative reasoning abilities are used to rule students eligible for participation in gifted programs (Baska, 1986; Nasca, 1988)

Gender inequality may be influenced not only by demographics and social perceptions, but also by identification practices. In early childhood and through the elementary school years, gifted boys and girls are roughly equal in numbers; however, by middle school, boys will outnumber girls, indicating possible gender preferences when identifying gifted students through the elementary years. This becomes increasingly evident into adulthood where society recognizes far more gifted adult men than adult women (Gurian, 2001). Failure of gifted females to reach their full potential may be related to early identification practices. Young girls are often outstanding in early childhood—girls tend to talk, read, and count earlier than boys and, in the preschool years, they score higher than boys on IQ tests. Girls are also ready for school at an earlier age than boys and earn higher grades than boys in elementary school. However, most programs do not begin identifying gifted students until second or third grade, thereby losing valuable time for gifted girls. As a result, by middle school, this early verbal, reading and math advantage possessed by gifted girls has been reversed (Gurian, 2001).

Gifted Underachievers

Both early researchers and recent authors have defined underachievement in terms of a discrepancy between a child's school performance and some ability index such as an IQ score. Hypothetically, because the goal of an IQ test is to identify learning potential, it seems reasonable to assume that comparisons of IQ scores and achievement test results should illustrate whether or not students are meeting that potential. It could be expected, for example, that a person with an average IQ of 100 would score in the 50th percentile on an achievement test (Angus, 2002). In reality, however, no such clear relationship exists. Rather, underachievement is content and situation specific (Delisle, 1990). A gifted student may be underachieving in math, but excelling in reading.

In the case of gifted underachievers, it is assumed that they have exceptional potential but are not demonstrating the abilities suggested by this potential. Studies have indicated that more than half the nation's gifted students fail to achieve in school at a level commensurate with their abilities (U.S. Department of Education, National Excellence: A Case for Developing America's Talent, 1993). Moreover, a student may be gifted in one or more areas but may not excel in all subjects. The term *gifted underachiever* seems paradoxical, but in actuality, gifted students represent a disturbing portion of high school dropouts—between 10 and 20%—and as many as half of all gifted students are identified as underachievers (Ford, 1997).

Gifted underachievers do not fit the usual "at risk" categories. Grades and standardized achievement scores may stay at or above average with respect to the general population, but a closer analysis may reveal that the gifted learner is gradually achieving less because schools are not organized to analyze student achievement until the level has fallen so low that failure is eminent. Yet, were the situation changed, it is likely that gifted underachievers could be identified earlier and assisted by the information found in the cumulative school file (Peterson & Colangelo 1996).

Vecchiarelli (1998) also determined that there was a difference in the high school achievement of students who had participated in an elementary gifted resource (pullout) program as compared to a group of high school students who had not participated during their elementary school years, but who had high achievement scores. In all cases, students who participated either fully or partially in the gifted resource program had higher academic achievement in high school. Data on students' academic performance (achievement) showed an advantage in test scores and number of weighted courses for gifted students who participated fully or partially when compared with the group of students with high achievement. Participation in the elementary program ranged from one to four years and, regardless of the number of years of participation, students who participated (fully or partially) outperformed the very able group of students who had not participated at all. Students who participated in the program had higher academic achievement in high school compared with the high achievers who were enrolled in a regular elementary academic program.

These findings, supported by another study on achievement performance of gifted program students (McSheffrey & Hoge, 1999), indicated that special programs play an important role in nurturing gifted students and preventing underachievement. Yet, despite the obvious importance of educating all children to their fullest potential, gifted students remain underserved and unchallenged in many educational settings (Cohen, 1997). Indeed, a survey on classroom practices by the National Research Center on the Gifted and Talented found that third-and fourth-grade teachers make only minor modifications to the regular curriculum in order to accommodate the gifted learner (as cited in Archambault, Westberg, Brown, Hallmark, Emmons, & Zhang, 1993).

In addition to classroom practices, overall classroom environment is one of the key elements in the achievement of the gifted student. Garrison (1991) found that gifted students from low-achieving classrooms (lower than average achievement score data and classroom performance) from sixth grade through high school did not differ from gifted students in high-achieving classrooms (higher than average achievement score data and classroom performance) with respect to ability. However, the gifted students from low-achieving classrooms achieved significantly lower in individual student achievement, classroom achievement level, the number of advanced classes taken, the grade point average in advanced classes, and cumulative grade point average. Another study at the elementary level by Sheffrey (1992) also found that students in an enriched classroom outperformed those in a non-enriched classroom. It should be noted, however, that within the enriched class, (acceleration and the incorporation of topics beyond the traditional curriculum) a high level of variability in achievement scores existed.

Peterson (2000), in a study that tracked gifted achievers and gifted underachievers after high school graduation, found that more of the high-achieving gifted learners attended college, attended college longer, were involved in more college activities, and were more sure of career choices than gifted underachievers. It is clear that identifying gifted underachievers, and providing gifted learners with a learning environment to meet their needs are necessary educational strategies.

Gifted students can differ from nongifted students in these three main domains; the pace at which they learn, the depth of their understanding, and the interests that they hold (Parke, 1992). The high incidence of gifted underachievement indicates that curriculum alternatives are needed to accommodate these differences. Three types of educational strategies—supportive, intrinsic, and remedial—have been found to be effective in working with underachieving behaviors in gifted students. Supportive strategies create and use classroom techniques and designs that allow students to feel they are part of a family, rather than a factory. Supportive strategies include methods such as holding class meetings to discuss student concerns, designing curriculum activities based on the needs and interests of the children, and allowing students to bypass assignments on subjects in which they have previously shown competency (Delisle & Berger, 1990).

Intrinsic strategies incorporate the idea that students' self-concepts as learners are tied closely to their desire to achieve academically. Thus, a classroom that invites positive attitudes is likely to encourage achievement. In classrooms of this type, teachers encourage risk-taking, they value student input in creating classroom rules and responsibilities, and they allow self and peer evaluations (Delisle & Berger, 1990).

Remedial strategies are used in an attempt to reverse underachieving behaviors and create adaptive behaviors to accommodate for areas of weakness. With remedial strategies, students are given chances to excel in their areas of strength and interest while opportunities are provided in specific areas of learning deficiencies (Delisle & Berger, 1990). Overall, flexible pacing strategies are required to accommodate the accelerated pace at which gifted students learn (Daniel & Cox, 1988). This instructional provision necessitates the use of ability grouping, curriculum compacting, contracts, and other instructional methods to accommodate gifted learners.

Instructional Practices and Gifted Education

A wide variety of instructional models can be used in gifted education programs and for gifted students in regular education classes to prevent some of the negative outcomes that research has shown to occur in gifted instruction. Nevertheless, Westberg (1993), in an observational study of instructional and curricular practices used with gifted and talented students in regular classrooms, concluded that little or no differentiation in instructional and curricular practices was provided to gifted and talented students in the regular classroom. This finding held true whether the school had a gifted program or not. The study found that gifted students spend most of their time doing written assignments, listening to lectures, and being questioned in the same manner as regular students.

A study conducted by Rose (2001) on patterns of academic progress and outcomes followed 287 inner-city school students from kindergarten through high school graduation. One hundred and eighty five of the students were identified as gifted and enrolled in a self-contained gifted program for all subjects in elementary school, and for core academic subjects in secondary school. Their grades in math, reading, and science were recorded over time. Rose found that grades and standardized test scores were higher for gifted students who participated in the gifted program for any period during their school career than for general education students. Graduation rates were higher for gifted students who remained in the gifted program than for either gifted students who did not remain in a gifted education program for general education students. Factors that Rose found influenced student achievement were income, grade, program placement, race, and gender.

Nevertheless, graduation from gifted programs does not necessarily guarantee higher levels of success in college. A study by Grayson (2001) followed graduates of regular and gifted programs for over 4 years of undergraduate studies at York University in Toronto. The results suggested that having participated in a gifted program in high school does not result in increased levels of university achievement, although self-assessed thinking, reasoning, and problem-solving skills are slightly higher, and credit completion is somewhat faster.

Gifted students spend most of their day in a regular, heterogenous classroom setting (Cox, & Daniel, 1988), yet research has demonstrated that homogenous grouping, or ability grouping, has a significant, positive effect on the academic achievement of gifted learners. In 1987, Kulik and Kulik found that 19 of 25 studies of grouping for gifted learners reported higher levels of achievement (as cited in Shields, 1995). On the other hand, heterogeneous grouping of gifted learners puts them at risk of failing to learn and work to their potential, thereby underachieving. Under these circumstances, it is not uncommon for gifted students to produce achievement scores that are below expectations.

A prevalent, but controversial, method of instruction for gifted students is grouping by ability, first documented in North America in 1867, and much debated since (Hollifield, 1987). This technique involves the regrouping of a class into smaller groups based on ability. In theory, ability grouping increases student achievement by making it easier for teachers to provide meaningful instruction at the students' level (Hollifield, 1987). This instructional strategy is promoted and denounced at both ends of the learner spectrum—from learning disabled to gifted. A study on grouping practices for the gifted conducted by the National Research Center on the Gifted and Talented determined that gifted students should spend the majority of their school day with others of similar abilities and interests (Rogers, 1991) and that for all students to benefit, teachers must vary the level and pace of instruction to match the student abilities in regrouped classes (Hollifield, 1987).

In a comprehensive review of research on different types of ability grouping in the elementary school, Slavin found that some forms of grouping could result in increased student achievement (Hollifield, 1987). Ability grouping with differentiated instruction has been determined to be beneficial to all students, regardless of ability level (Allan, 1991). Looking solely at gifted and talented programs, Kulik (1989) found that these students performed significantly better than comparable students in mixed-ability classes. Nevertheless, ability grouping is a hotly debated technique. Studies performed on the strategy have been mixed, providing fuel for opponents and proponents alike. In general, ability-grouping studies have indicated that it is beneficial for gifted students and not harmful for slow learners.

One recognized technique used since 1933 to accommodate the needs of gifted learners is acceleration, a strategy used when a student has progressed through the curriculum, in one or more area, beyond his or her age level. Acceleration involves increasing the student's pace through school by, curriculum acceleration within a year, curriculum compacting, subject acceleration, and grade skipping. Therefore, it is an instructional response that recognizes and assists with appropriate level placement for gifted learners and appears to enhance motivation for academic success (Barbe, 1965).

Acceleration allows students who demonstrate previous mastery to proceed with extension and enrichment activities, while the rest of the class continues with the regular curriculum (Winebrenner & Berger, 1994). Research has shown that accelerated, gifted students outperform non-accelerated gifted students (Kulik & Kulik, 1982). In fact, studies have revealed that high ability students benefit academically and socially from acceleration, and failure to accelerate may result in poor study habits, apathy, and a lack of motivation (Feldhusen, Proctor, & Black, 1986).

As suggested by much of the research outlined above, classroom practices play a very important role in the achievement of all students. Instructional factors that have been made the focus of study include grouping, curriculum differentiation, and compacting. For example, research into heterogeneously grouped, elementary classrooms has shown that placing high achievers together in one classroom provides greater challenges for gifted learners, whereas cluster grouping aids teachers in organizing differentiated instruction and reducing the ability range within a class (Gentry, 1999).

Curriculum differentiation, the process of creating different learning experiences for individual students based on needs and abilities, alters the learning environment, the content, the processes and the products (Farmer, 1994). Compacting is an instructional strategy that may aid in gifted achievement by providing alternative activities that are challenging, based on student interests, and promote cognitive growth (Winebrenner & Berger, 1994). One study that examined the effects of curriculum compacting on the achievement test scores of 336 students found that 40%-50% of the curricula could be eliminated with no significant difference between the achievement scores of those gifted students who were compacted and those who were not (Reiss, Westberg, Kulikowich, & Purcell, 1998).

Gender and Achievement Issues of Gifted Students

Gifted females make up half of the enrollment in gifted education programs and outperform males in the same academic courses. Equal talent and ability in school does not carry forth into careers, however. Gifted females are over-represented in education and literature-associated occupations, and underrepresented in the science, math, and engineering occupations (Nelson & Smith, 2001). Such social differentiation may result from perceptions of gender fostered by teachers, and other members of the community, which may contribute to such differences by defining distinctive male and female gender roles. This involvement is suggested by the fact that during early elementary school, there are no gender differences in math achievement, but gender differences surface at the junior high level and persist through the high school years and beyond (Greene, 1999).

Gifted Identification Instruments

Intelligence, aptitude, achievement, personality, attitudes and, interests are measured by standardized tests used to produce norms—or statistical standards—that provide a basis for comparisons among individual members of the group of subjects. To be considered useful tools, such tests must be standardized, reliable (give consistent results), and valid (reproducible) (Martin 1999). However, while some well-established tests of intelligence and performance have earned wide acceptability, some measurement instruments used for gifted program placement have been challenged.

The most widely used tests of intelligence for students are the Stanford-Binet, the Wechsler Intelligence Scale for Children (WISC), and the Kaufman Assessment Battery for Children (Kaufman-ABC). Each consists of 10 or more subtests. Items on each subtest are given in order of difficulty until the person being tested misses a certain number of items. Different types of IQ tests are used to accommodate the needs and best interest of the student.

The Stanford-Binet Intelligence Scale, a standardized test that assesses intelligence, is often used as a tool in school placement, in determining the presence of a learning disability or developmental delay, in identifying gifted students and in tracking intellectual development. In addition, it is sometimes included in neuropsychological testing to assess the brain function of individuals with neurological impairments (Martin, 1999). The Stanford-Binet scale tests intelligence across four areas: verbal reasoning, quantitative reasoning, abstract/visual reasoning, and short-term memory. These areas are covered by 15 subtests, including vocabulary, comprehension, verbal absurdities, pattern analysis, matrices, paper folding and cutting, copying, quantitative, number series, equation building, memory for sentences, memory for digits, memory for objects, and bead memory (Martin, 1999).

The Wechsler Intelligence Scales are a series of standardized tests used to evaluate cognitive abilities and intellectual abilities in both children and adults. The testing tool is used to determine school placement, in special and/or gifted programs by determining the presence of a learning disability, a developmental delay, or in identifying giftedness. All Wechsler scales are divided into six verbal and five performance subtests. Verbal and Performance IQs are scored based on the results of the testing, and then a composite Full Scale IQ score is computed. The scales have a mean, or average standard score of 100 and a standard deviation of 15 (Martin, 1999).

The Kaufman-ABC is significantly and highly correlated with reading achievement (Naglieri, 2001). The test measures intelligence using simultaneous and sequential mental processes, and can be used for ages two through twelve. The subtests for the K-ABC include Global Scales (Sequential Processing, Simultaneous Processing, Mental Processing Composite, Achievement, Nonverbal)—standard scores (*M* = 100, *SD* = 15), Mental Processing subtests—scaled scores (*M* = 10, *SD* = 3), and Achievement subtests— standard scores (*M* = 100, *SD* = 15) (Martin, 1999).

The overall test has a mean, standard score of 100 and a standard deviation of 16 (subtests have a mean of 50 and a standard deviation of 8) (Martin, 1999). A comparative study on the stability of the Stanford-Binet and K-ABC for Young Children found that the mean scores were roughly equivalent, and correlation coefficients were high (Krohn & Lamp, 1999).

While the prior three tests assess IQ, the Otis Lenon School Ability Test (OLSAT), provides a variety of scores to describe the student's Total, Verbal, and Nonverbal performance, including School Ability Indexes (SAIs), percentile ranks, and stanines, based on age and grade, scaled scores, and normal curve equivalents (NCEs). The OLSAT assesses verbal and nonverbal reasoning abilities that are related to success in school. Although the Total Score is the best overall indicator of school-learning ability, a student's ability to learn in school is dependent on both types of skills. (Beloit School District, n.d.).

Referral to a gifted program typically involves acquiring certain scores on achievement tests, which are typically norm referenced. Such tests include the Terra Nova, Iowa Test of Basic Skills, and the Stanford Achievement Test. Norm-referenced tests (NRTs) are used to ascertain the rank of students. NRTs are designed to highlight achievement differences between and among students to produce a dependable rank order of students across a continuum of achievement from high achievers to low achievers. This type of information can be useful for deciding whether or not students need remedial assistance or whether a child is a candidate for a gifted program. NRTs are particularly relevant to this study because they are used in Mississippi as part of the referral process for the gifted program. Students must typically score at least at the 90th percentile for referral.

The Iowa Tests of Basic Skills, a widely administered standardized test that measures the development of basic skills needed for academic success, can be used to identify individual strengths and weaknesses, monitor a student's progress from year to year, and aid in evaluating the effectiveness of classroom instruction. It is one of the tests frequently chosen to fulfill state or locally mandated testing requirements. Areas covered include vocabulary, reading, language, spelling, capitalization, punctuation, usage, work and study skills, use of visual and reference materials, mathematical concepts, problem solving, computation, and, in some cases, listening, work analysis, science, and social studies. Test scores are reported in a number of different forms, including grade equivalents, standard scores, local and national norms (Martin, 1999).

This review of literature shows a troubled history for gifted education. From the beginning, the very concept of individuals being born with an advantage disconcerted many people. Intelligence and ways to measure it are still hotly debated issues, and yet intelligence assessment is the premise upon which gifted education programs are built. Gender differences in populations, achievement and achievement areas lend further credence to the lack of valid identification measures. Moreover, research has strongly suggested that the instruction for gifted students should be different; yet in most cases, it is not. Consequently, despite their intellectual advantage, gifted students appear to be at a definite instructional and procedural disadvantage.

CHAPTER III

METHODS

This study was developed to provide insights into those educational practices and needs that concern the achievement of gifted students. As a result of both advances in technology and the current focus on accountability, student achievement has never been more closely scrutinized than it is today. The mandate that students make yearly progress in the areas of reading, math, and language during the primary years has led to high-stakes testing that determines whether students pass to the next grade, and graduate from high school. This study hopes to produce data that will help educators identify students at risk of not progressing, thus reducing the negative impact of high-stakes testing for all students, not only those in gifted programs.

Even though a few studies pertaining to gifted learners specifically address achievement, a substantial body of the research—particularly in the areas of identification, minority and gender issues, differentiation of curriculum, and the psychological needs of gifted learners—are comparative studies. There is a marked lack of empirical research that tracks, or even reevaluates, the achievement levels of individual gifted students through the school years, or that explores the subsequent reevaluation of students once they have been ruled eligible.

Participants

The participants identified as eligible for the study were those students who had continuous and at least five years of achievement test scores for grades three through seven. These participants were divided into two groups: a) those with a gifted eligibility ruling at any time from grades two through eight and, b) nongifted students. The comparison group of nongifted students consisted of a randomly selected group of elementary students who had not been identified as gifted nor had received special education services. These selections represented children in the primary grades who had five years of achievement score data. The collection of this data was approved by The University of Mississippi Human Subjects Protection Review Committee.

The selected sample population was composed of students from fifteen separate elementary schools with grades ranging from Kindergarten through twelfth grade. The district from which the sample population was chosen had a total student body of over 12,000 students and a graduation rate of 65%. The demographic composition of the district consisted of 72% white, 23% black, two percent Asian, and less than one percent Hispanic. Males made up 52% of the population and females 47%. Over 42% of the student population was eligible for the free lunch program. Special education students comprised twelve percent of the population and five percent of the student population was identified as gifted (Mississippi Department of Education, *Mississippi Report Card for 2000-2001*).

The selected district used the enrichment model for gifted programming in the elementary grades. This involved removing the students from the regular classroom for a minimum of five hours per week to participate in ability-grouped instruction with a gifted education teacher. Instruction in the gifted classroom focused on the interests and strengths of the students and was intended to enrich the regular classroom instruction

The ages of the students in the sample ranged from seven to fifteen years. Both the experimental group of students identified as gifted and the control group of students not identified as gifted were composed of approximately equal percentages of males and females. However, the experimental group was limited in equitable distribution due to the smaller number of subjects.

The experimental and control groups (identified as gifted and nongifted, respectively) were tracked from grades 3 through 8 according to achievement test scores, grade level, and gender. The results were analyzed to assess performance as measured by achievement test scores in reading, math, and language through at least five years of achievement scores.

Fifty students for each group (gifted and nongifted) were selected for the study. Selection of the nongifted students was performed by randomly selecting every third cumulative folder at a high school in the district. If the third cumulative folder did not contain at least five years of achievement data, the next file was chosen. Gifted students were randomly chosen using every other cumulative folder. This method was used until it became apparent that there were not enough gifted students with five years of achievement data from which to gather data. An attempt was made to use older achievement data to increase participant numbers, but the amount of missing data was even larger for years prior to 1993. The available population did not support the inclusion of fifty members for each group and so smaller numbers were used. The Total *N* could have been increased but it would have meant including older data from students who had taken the ITBS and Stanford at different years than the original population. The advantage of using data from high school students is that the tests used during that time period were more consistent, only two were used from 1993 to 1998, and will have a larger pool of students to choose from. The disadvantage is that these data were at least two to five years old and are not in current use. Achievement score results for the year 1998 were extremely limited causing the eighth grade to be dropped from the study. The results of the study are based on grades 3 through 7.

The gifted population during these years was the limiting factor for the study. The small percentage of students available, coupled with missing achievement score data reduced the Total N for each test to below 50.

Instruments

IQ test scores and standardized test scores were gathered for students in the study. IQ scores were not gathered from the control group, nongifted, due to a lack of scores for this population. IQ scores were harvested for the gifted students. The primary IQ test used for the students in this study was the Weschler. The standardized test scores consisted of the Iowa Test of Basic Skills (ITBS), and the Stanford Achievement Test. The student cumulative folders were the primary source of information for achievement test scores, IQ scores, and demographic information.

The Wechsler Intelligence Scale for children (ages 6 through 16) is commonly used to identify gifted students in the selected district. This test of intellectual abilities is divided into two scales: a verbal scale, composed of six subtests, and a nonverbal/performance scale, composed of seven subtests. Each scale has five designated standard subtests that are used to compute Verbal IQ (VIQ), Performance IQ (PIQ), and Full Scale IQ (FSIQ) (Chin, 2001).

Analysis

The focus of the analysis was to observe achievement score fluctuation for each variable, over the course of five years of achievement data. The data was analyzed to look for patterns, predictors and variance of achievement scores using the General Linear Model. Means and standard deviations were used to test all hypothesis. The .05 level of rejection was used.

These data were then used to compare students designated as gifted or nongifted in reading, math and language achievement, as well as by gender, and within groups. All students were analyzed to see if significant variance of achievement scores existed in any of the measured areas. Students identified as gifted were analyzed to see if a change in achievement scores would preclude them from the gifted program, should they be reevaluated.

CHAPTER IV

FINDINGS

To analyze the achievement trends of gifted students and determine whether significant differences exist during the period from grades three through seven in the areas of reading, math, and language, this study compiled achievement scores produced in the subject school district over a span of five years. The study sample was determined through random selection of student cumulative folders from a high school in the subject school district, and was comprised of both an experimental group of students enrolled in gifted programs, and a comparative control group of students not identified as gifted. The rationale for including the nongifted group was to identify achievement trends experienced by both groups and therefore not considered relevant to giftedness.

The analysis addressed the variables of grade level, gender, and gifted or nongifted status as they relate to reading, math, and language achievement scores. All students in the study were graduates from either the 2000-2001 or the 2001-2002 school year. For each student, five years of achievement score data were collected in the areas of reading, math, and language, during which time period the achievement tests used were the Stanford Achievement Test and the Iowa Test of Basic Skills. Data for all students were collected for each grade three through eight, but due to the large body of data missing from all eighth-grade scores, only scores from grades three through seven have been used in this statistical analysis. The total sample included fifty gifted students and fifty nongifted students ($N = 100$), with a reasonably equitable distribution of male and female subjects for each group (see Table 1).

Table 1

Count and Percentage of Gender in Gifted and Nongifted Groups

	Nongifted (n = 50)		Gifted Count (n = 50)	
Gender	Count	Percent	Count	Percent
Female	29	58.0	28	56.0
Male	21	42.0	22	44.0

Analysis of Scores

The following analysis reports results as they pertain to the five hypotheses outlined in Chapter 1. Data were analyzed using a general linear model with a .05 level of rejection. Descriptive statistics were used for each set of variables to reveal the mean and standard deviation for each of the two groups, and multivariate testing for the between-group measures was conducted using Pillai's trace. Lower than expected n values for sub-samples are due to missing data.

Hypothesis number one. This hypothesis assumed that there would be significant decline over time in reading achievement test scores from third to eighth grade between students identified as gifted and those designated nongifted. For reading achievement scores, standard deviations for all grades in both groups were slightly high, with most being near one third. Mean differences between groups for each grade remained fairly consistent with a range from 22% to just over 28% (see Table 2 below). As could be expected, multivariate tests indicated a significant difference between gifted and nongifted students in reading achievement during grades three through seven, $F(1,79)=104.86$, $p < .001$, and a significant difference, $F(4,76)=7.431$, $p < .001$, was also indicated across the 5 years on reading achievement scores for both groups. However, the tests showed no significant interaction between gifted or nongifted students in the area of reading, $F(4,76) = 2.43$, $p = .054$, thus indicating no significantly different increases or declines over time in reading achievement scores of either gifted ($n = 41$) or nongifted students ($n = 40$) from third through seventh grade. Thus, this first hypothesis is rejected.

The significant differences across the five years revealed a similar pattern for both gifted and nongifted. Scores for both groups were higher in third grade than in fourth and fifth grades, in which both groups experienced a slight decline in scores.

Table 2

Reading Achievement in Grades Three Through Seven for Gifted and Nongifted Students

	Nongifted ($n = 40$)*		Gifted Count ($n = 41$)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	47.73	13.84	76.66	13.17
Four	44.55	12.48	72.93	13.45
Five	43.08	13.17	72.54	16.07
Six	49.88	16.42	72.15	13.66
Seven	51.05	18.62	78.10	11.95

*The lower *n* value is due to missing data.

Moreover, during sixth grade, nongifted students demonstrated an increase in reading achievement that was also seen in the seventh, while scores for gifted students remained relatively stable during the period from fourth through sixth grade but increased in seventh grade.

Hypothesis number two. According to this assumption, there will be significant declines in math achievement test scores over time from third to eighth grade between students identified as gifted and those designated nongifted. For math achievement scores, standard deviations for nongifted students in all grades were found to be slightly high, with most being near one third, whereas standard deviations for gifted students in all grades were within acceptable ranges, with most being near one fourth. Mean differences between groups for each grade remained fairly consistent with a range from 20% to just over 28% (see Table 3). Again, multivariate tests indicated a significant difference in math achievement between gifted and nongifted students, $F(1,80) = 81.90$, $p<.001$, and a significant difference, $F(4,77) = 6.84$, $p<.001$ was also indicated across the five years on math achievement for both groups. However, these tests showed no significant interaction between gifted or nongifted students in the area of math, $F(4,77) = 1.27$, $p=.29$, indicating no significantly different increases or declines over time in math achievement scores of gifted ($n = 41$) or nongifted (n=41) from third through seventh grade. Therefore, the second hypothesis is rejected.

The significant differences across the five years revealed a similar pattern for both gifted and nongifted. The math achievement scores of both gifted and nongifted students were highest in the third grade, but both groups experienced a decline in scores in fourth and fifth grades. Nongifted students demonstrated an increase in achievement during the sixth grade that was also seen in the seventh, whereas math achievement scores for gifted students remained relatively stable from fourth through seventh grade (see Table 3).

Table 3

Math Achievement in Grades Three Through Seven for Gifted and Nongifted Students

	Nongifted (n = 41)*		Gifted Count (n = 41)	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	55.51	15.96	77.37	14.07
Four	50.31	15.12	73.63	12.36
Five	43.85	16.68	71.56	15.69
Six	45.19	18.51	71.61	12.28
Seven	49.27	18.26	71.15	14.22

*The lower *n* value is due to missing data.

Hypothesis number three. This hypothesis expected significant declines in language achievement test scores over time for students identified as gifted and those designated nongifted. For language achievement scores, standard deviations for gifted and nongifted students in all grades were slightly high with most being near one third. Mean differences between groups for each grade ranged from 10% to just over 29% (see Table 4). As with the previous two hypotheses, multivariate tests for this hypothesis indicated a significant difference in language achievement between gifted and nongifted students, $F(1,80) = 84.36$, $p<.001$, a difference that was also indicated across the five years on language achievement scores for gifted and nongifted students, $F(4,77) = 7.16$ $p < .001$. These tests showed no significant interaction between gifted or nongifted students in the area of language, $F(4,77) = 2.41$, $p = .056$, indicating no significantly different increases or declines over time in language achievement scores of gifted (n = 41) and nongifted students (n = 41). Consequently, this third hypothesis is rejected.

The significant differences across the five years revealed a similar pattern for both gifted and nongifted. The language achievement scores of nongifted students remained stable in the third and fourth grades followed by a small decline in the fifth and sixth grades; however, mean scores in the seventh grade exhibited an increase of 5%. Gifted students attained their highest score in the third grade, followed by a decline in the fourth grade of 4%, and a similar decline in the fifth grade of 5%. In seventh grade, this decline was recouped with an almost 5% increase (see Table 4).

Table 4

Language Achievement in Grades Three Through Seven for Gifted and Nongifted Students

	Nongifted (n = 41)*		Gifted Count (n = 41)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	48.98	16.40	79.68	11.94
Four	48.66	17.80	75.76	13.08
Five	47.56	15.97	70.31	14.23
Six	46.85	16.65	70.51	14.54
Seven	51.61	16.39	74.85	15.74

* The lower n value is due to missing data.

Hypothesis number four. Hypothesis four set out to determine whether female students identified as gifted would demonstrate a more significant decline in achievement scores in reading, math, and language from third to eighth grade than did male gifted students. For these scores, standard deviations for gifted females and gifted male students in all grades and subjects were in the acceptable range, with most being less than one fourth. Mean differences for each grade between groups ranged from one to six percent (see Tables 5, 6, and 7 below).

Table 5

Gifted Female Versus Gifted Male Reading Achievement Scores from Grades Three Through Seven

	Female (n = 25)*		Male (n = 16)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	77.28	13.32	75.69	13.03
Four	74.52	12.69	70.44	14.63
Five	74.76	16.83	69.06	14.64
Six	72.04	13.9	72.31	13.71
Seven	77.24	12.58	79.44	11.17

*The lower n value is due to missing data.

Overall, reading achievement scores for gifted female and male students showed no significant differences, $F(4,36)=1.35$, $p=.272$. From grades three through seven the mean difference ranged from .26 % to 4.7%, with the greatest difference being in fifth grade where females scored 4.7% higher than males. Females scored slightly higher than males in all years except grade seven (see Table 5).

Math achievement scores for gifted female and male students also revealed no significant differences, $F(4,36)=.873$, $p=.490$. From grades three through seven, the mean difference ranged from 2.6% to 5.1%, with the greatest difference occurring in fourth grade where females scores 5.1% higher than males. Females scored slightly higher than males in all years except grade three (see Table 6).

Table 6

Gifted Female Versus Gifted Male Math Achievement Scores from Grades Three Through Seven

	Female (n = 25)*		Male (n = 16)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	76.96	14.83	78.00	13.23
Four	75.60	11.19	70.56	13.80
Five	73.28	14.80	68.88	17.14
Six	72.60	10.34	70.06	15.07
Seven	73.44	14.80	67.56	12.89

*The lower n value is due to missing data.

Language achievement scores for gifted female and male students also showed no significant differences, $F(4,36)=.425$, $p=.789$. From grades three through seven, the mean difference ranged from .8% to 4.1%, with the greatest difference occurring in sixth grade where females scored 4.1% higher than males. Females scored slightly higher than males in all years except grade five (see Table 7). Overall, differences were minor for all five years of data and the hypothesis was rejected.

Table 7

Gifted Female Versus Gifted Male Language Achievement Scores from Grades Three Through Seven

	Female (n = 25)*		Male (n = 16)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	80.80	11.55	77.94	12.71
Four	76.08	12.65	75.25	14.14
Five	69.84	14.45	71.06	14.30
Six	72.16	13.86	67.94	15.64
Seven	75.60	17.52	73.69	12.93

*The lower n value is due to missing data.

Hypothesis Number Five: Hypothesis five sought to compare the achievement of female and male nongifted students, stating that female nongifted students would demonstrate more significant declines in achievement scores in reading, math, and language from third to eighth grade than did male students designated as nongifted. For these scores, standard deviations for nongifted females and nongifted male students in all grades and subjects were slightly high, with most being around one third. Mean differences between groups for each grade ranged from one to five percent (see Tables 8, 9, and 10 below).

Reading achievement scores for nongifted female and nongifted male students showed no significant differences, $F(4,35)=.834$, $p=.513$. From grades three through seven, the mean difference ranged from 1.2 % to 5%, with the greatest difference being in seventh grade where males scored 5% higher than females. Females scored slightly higher than males in grades four, five, and six (see Table 8).

Table 8

Nongifted Female Versus Nongifted Male Reading Achievement Scores from Grades Three Through Seven

	Female (n = 24)*		Male (n = 16)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	47.04	12.00	48.75	16.60
Four	45.33	12.70	43.38	12.42
Five	43.54	13.68	42.38	12.78
Six	50.58	17.93	48.81	14.35
Seven	49.46	19.57	53.44	17.44

*The lower n value is due to missing data.

Achievement scores in math for nongifted female and nongifted male students revealed no significant differences, $F(4,36)=.596$, $p=.668$. From grades three through seven, the mean difference ranged from .04% to 4.4%, with the greatest difference occurring in fifth grade where males scores 4.4% higher than females. Females scored slightly higher than males only in grade three (see Table 9).

Table 9

Nongifted Female Versus Nongifted Male Math Achievement Scores from Grades Three Through Seven

	Female (n = 24)*		Male (n = 17)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	56.13	11.25	54.65	21.30
Four	50.04	13.72	50.71	17.34
Five	42.04	14.00	46.41	20.06
Six	43.62	18.34	47.41	19.09
Seven	49.25	15.59	49.29	22.00

*The lower n value is due to missing data.

Language achievement scores for gifted female and male students also showed no significant differences, $F(4,36)=2.16$, $p=.093$. From grades three through seven, the mean difference ranged from 2.6% to 5.2%, with the greatest difference occurring in third grade where females scored 5.2% higher than males. Females scored slightly higher than males in grades three, five, and six (see Table 10). Summative differences between genders were found to be minimal and the hypothesis was rejected.

Table 10

Nongifted Female Versus Nongifted Male Language Achievement Scores from Grades Three Through Seven

	Female ($n = 24$)*		Male ($n = 17$)*	
Grade	Mean	Standard Deviation	Mean	Standard Deviation
Three	51.13	14.99	45.94	18.24
Four	47.33	13.07	50.53	23.25
Five	47.33	14.25	47.88	3.92
Six	47.96	15.31	45.29	18.75
Seven	49.92	17.65	54.00	14.61

*The lower *n* value is due to missing data.

In summary, all hypotheses were rejected. No significant differences were found to exist in gifted achievement for grades three through seven in the areas of reading, math and language when compared to the achievement patterns of nongifted students. There were also no significant difference in the achievement of males and females in both groups in the areas of reading, math, and language.

CHAPTER V

DISCUSSION

Because of the current increased emphasis on accountability for individual student achievement, student achievement has never been more important at either the state or national level than it is today. The implications and consequences of low achievement, or underachievement, for students has a significant impact on states, districts, schools, parents, educators, and the students themselves. Students are now subjected to high stakes tests that have the potential to hold students back at each grade level and delay or even prevent graduation. The emphasis on accountability is also felt at the school level where educators are held responsible for student performance on achievement tests. The jobs of teachers and administrators have become dependent upon student achievement. This focus on student achievement causes changes in curriculum, instruction and assessment.

The state of Mississippi implements an accreditation model that includes high-stakes achievement testing in which students must demonstrate a year of academic growth for each grade level. The purpose of this study was to determine whether gifted students were experiencing decreasing achievement scores through the elementary school years. While this study does not provide evidence of a significant decline in achievement for either gifted or nongifted students, it does provide data upon which to guide instructional decisions, by administrators and teachers, at the elementary level. The trends in achievement scores for gifted and nongifted students reveal grades and ages where achievement problems may arise.

Implications of the Study

It was initially assumed that students with IQs of 120 or above (gifted) should have the ability to maintain achievement levels in standardized achievement tests throughout the elementary years. The gifted students in this study all had at least one IQ score of at least 120, and an achievement score at or above the 90th percentile on a nationally normed achievement test, in reading, math or lanaguage. In fact, the mean IQ score for the gifted group was 121.8. It is unfortunate that IQ scores were not available for all students, as these would have provided a more detailed look at the relationship between IQ and achievement. This assumption was supported by the results of the data analysis in which no significantly different increases or declines in achievement were found for gifted students in grades three through seven in the areas of reading, math, and language.

It was also expected that there would be significant differences in the achievement scores of gifted and nongifted students. What was not known was how significant these differences would be in each year and in each of the three subjects. The data showed that in grades three through seven the mean achievement scores in reading, math, and language for gifted students tended to be 20-30% higher than for nongifted students. That is, the means for gifted achievement in reading, math, and language achievement scores were consistently in the 70th-80th percentile, while means for nongifted ranged from the low 40s to the 50th percentile. Moreover, the achievement levels of nongifted students were probably improved by the exclusion of special education students from the study. Had these scores been included, the percentiles could have been even lower.

Overall, the results of the study suggest that the achievement scores of gifted and nongifted students remain relatively level from grades three through seven. No significant increases or declines were found between the groups in any subject throughout the five-year time span. These findings are reflective of NAEP scores which also did not exhibit any significant increases or decreases in reading and math achievement scores in grades four and eight. It should be noted, however, that while the study did not find significant differences in the achievement of gifted students and nongifted students through the school years, it did identify some trends in the data that bear closer examination.

In all three subjects—reading, math, and language—gifted students exhibited a small decline in achievement scores in the fourth and fifth grades. Reading and language achievement scores rose gently in sixth and seventh grades, but math scores continued to decline. This trend is also true for the nongifted students whose fifth-grade scores exhibited a slightly steeper decline than did those of their gifted counterparts. In general, the trends in achievement for both groups maintained similar increases and decreases at similar times. These patterns of achievement imply a link between gifted and nongifted curriculum, instruction, and age-related cognitive growth.

The similar achievement trends for both groups also suggest that ability, as reflected by IQ, is not an independent factor but is possibly related to other issues such as curriculum, type of instruction, or cognitive development. The chronological age of a student may also play an important part in these trends, since both groups experienced similar rises and falls in achievement scores during the same time periods. The influence of this variable is made even more likely by the fact that the students in the sample attended any one of at least ten different elementary schools in the subject district and were not subjected to the same school environment; rather, they had been impacted by a variety of curriculum formats and instruction.

The results of this study also have implications for gifted education. Although current practices do not require that gifted students be re-evaluated for eligibility, the data showed that 38% (19 out of 50) of the students would have lost eligibility status from grades three through five had they been re-evaluated. This suggests that a closer examination of gifted education regulations, curriculum and the impact on achievement, is needed. The underlying assumption of gifted programming is that students will be able to maintain an advanced level in the regular classroom without advanced instruction, and so, special gifted programs are necessary to enhance the student's education. Since the achievement trends of gifted students were very similar to the non-gifted students, and no significant differences were found to exist when compared to them, the issues of underachievement and the influence of curriculum for gifted students becomes apparent. There appears to be a disconnect between gifted education and regular education curriculum that may hamper the ability of gifted programs to address underachievement in gifted students. Increased tracking and the use of targeted curriculum interventions should be explored to provide more explicit data regarding gifted and achievement.

Of the 19 students who would have lost eligibility, 58% (11 out of 19) were female. The data analysis revealed no significant differences in female and male achievement scores in reading, math, or language over the five-year span. This finding suggests that gender issues for this population do not mirror the findings of studies conducted by the National Center for Education Statistics and reported in the *Nations Report Card,* 2002, nor in the report by the U.S. Department of Education, NAEP Writing: State Report for Mississippi, 1999. Gender results also showed no significant difference in the achievement scores of gifted males and females during the five-year span. This reflects the results of a study that found no significant differences in math achievement between gifted females and males during the elementary years, (Green, 1999). Further research into underachieving females is needed to adequately address the trends found in this data.

The gifted students in the study were ruled eligible for gifted services at any time from second to seventh grade and may have been in the gifted program from one to five years. State regulations for gifted education mandate that gifted programs offer students learning opportunities that are in addition to or different from the regular curriculum. This mandate forces gifted programs out of content and skills that would promote higher academic achievement in reading, math and language. Since the data analysis revealed no significant increases or decreases in achievement when compared to the nongifted population, it may be speculated that while enrichment programs for gifted students in this study do not appear to have any negative effects, they also do not imply any positive effects, as measured by achievement tests.

General achievement trends for gifted students were reflective of the achievement trends for nongifted students. This similarity of achievement patterns suggests that gifted students are not receiving a markedly different curriculum than their counter-parts. If instructional practices had included compacting, acceleration, or consistent differentiation, gifted students would have been more likely to have different achievement patterns than nongifted.

Underachievement issues for gifted students appear to be a factor in this population. The analysis revealed achievement declines that were large enough to prohibit nearly half of the gifted students from further eligibility if reevaluations were conducted. Due to the similar achievement patterns exhibited by gifted and nongifted students, the contributing factors that may have lead to underachievement may be related to curriculum and instruction and the inability of regular education teachers to meet the educational needs of gifted students.

Limitations of the Study

The study included and encountered several limitations that had direct or indirect influences on the data and analysis. One of the biggest limitations of the study concerned the use of two different achievement tests from which data was gathered. The subject data included achievement scores from the Stanford Achievement Test and the Iowa Test of Basic Skills. The Stanford Achievement Test was given to students in this study in 1993 and 1994. The Iowa Test of Basic Skills was implemented in 1994 and used exclusively until the introduction of the Terra Nova in 2000. The study was limited in current applicability by the inability to use the latest test data. The Terra Nova Test data would have shown this data, but was not used due to the limited number of years it has been in use. The use of one achievement test would have yielded data that was more conclusive, but this was not a possibility due to the change in tests required by the state. The use of two achievement tests in this study did not affect the results because no significant differences were found, but they are a factor in the study.

Missing data reduced the total *N* for the analysis and the small sample size limited the applicability of the results to the general population. The missing data was due to missing test information in the cumulative folders of the students. This could have been due to student absences during testing through the years. Randomly locating cumulative folders that do not have any missing data for grades three through eight was difficult, even with a large subject population. Eliminating special education students further reduced the pool of potential subjects. Since no significant differences were encountered in any of the hypotheses, the missing data did not significantly affect the results.

Many of the gifted students were identified at the end of first grade. These students were given the Stanford Achievement Test as a part of the gifted referral process. These second grade scores were not used in the data collection due to the fact that the general population of students was not given an achievement test until third grade, and so the second grade year could not be included in the study. Therefore, the achievement data of gifted students who were identified prior to third grade was not available. This lack of early achievement data may have influenced results of gender comparisons among the gifted students as mentioned in the study by Gurian (2001), which found that gifted females have an academic and IQ advantage over males in the early grades. This lack of early achievement data may have influenced the data analysis between gifted females and males.

Suggestions for Further Research

As yet, several factors whose importance is implied by the findings of this study have not been sufficiently explored: 1) the relationship between ability, as currently measured by IQ, and the effects that curriculum, type of instruction, and/or cognitive development may have on achievement; 2) the role that chronological age plays in student achievement score trends, and 3) the effects of gifted programs on student achievement.

Consequently, further research on achievement trends could provide a more comprehensive picture of student achievement by examining these issues. Such studies should also extend the population to include grades eight through twelve. The Terra Nova achievement test was adopted for use in Mississippi schools in the year 2000 and should provide five years of comparable data by the year 2005.

Overall, this study, by examining only the quantitative results of student achievement, addressed the "what" of achievement but not the "why." Therefore, future studies are needed to delve further into curriculum issues, instructional methods, student attitudes, and the role of cognitive growth in order to create a more comprehensive picture of student achievement and what educators can do to assist in student academic success. Meanwhile, this study has provided data and research evidence to support greater attention to the achievement of gifted and nongifted students alike. A follow-up study with Terra Nova achievement data would provide additional insight into the relationship between achievement tests and student achievement. The study has also provided a needed look into the achievement levels and trends of gifted students and a glimpse of the relationship between IQ, ability and achievement.

APPENDIX A

RESEARCH PERMISSION FORM I

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Event Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **22041701**
PROJECT TITLE: **Analysis of Achievement Trends in Gifted Students**
PROPOSED PROJECT DATES: **05/01/02 to 06/30/02**
PROJECT TYPE: **Dissertation or Thesis**
PRINCIPAL INVESTIGATORS: **Sharon Cato**
COLLEGE/DIVISION: **Education & Psychology**
DEPARTMENT: **Educational Administration**
FUNDING AGENCY: **N/A**
HSPRC COMMITTEE ACTION: **Exempt-Approval**
PERIOD OF APPROVAL: **04/20/02 to 04/19/03**

Lawrence A. Hosman

Lawrence A. Hosman, Ph.D.
HSPRC Co-Chair

4-23-02
Date

INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
Box 5147 · Hattiesburg, MS · 39406-5147
Phone (601) 266-6820

Hattiesburg · Long Beach · Ocean Springs · Biloxi · John C. Stennis Space Center

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

TO: Sharon Cato
127 Edmund Circle
Long Beach, MS 39560

FROM: Lawrence A. Hosman, Ph.D.
HSPRC Co-Chair

PROTOCOL NUMBER: 22041701
PROJECT TITLE: Analysis of Achievement Trends in Gifted Students

Enclosed is The University of Southern Mississippi Human Subjects Protection Review Committee Notice of Committee Action taken on the above referenced project proposal. If I can be of further assistance, contact me at (601) 266-4279, FAX at (601) 266-4275, or you can e-mail me at Lawrence.Hosman@usm.edu. Good luck with your research.

INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
Box 5147 · Hattiesburg, MS · 39406-5147
Phone (601) 266-6820
Hattiesburg • Long Beach • Ocean Springs • Biloxi • John C. Stennis Space Center

REFERENCES

Allan, S. D. (1991). Ability-grouping research reviews: what do they say about grouping and the gifted? *Educational Leadership*, 48(6), 60-65.

American Guidance Service. (n.d.). *K-ABC: Kaufman assessment battery for children*, Retrieved March 24, 2002, from http://www.agsnet.com/group.asp?nGroupInfoID=a2100

Angus, B. (June, 1996). Using achievement tests, diagnostic (achievement) tests, and tests of intelligence with ESL populations. *Angus & Associates Ltd.* Retrieved March 12, 2002, from http://www.psychtest.com/ESLtest.htm

APA task force examines the knowns and unknowns of intelligence. (1996). *APA Online.* Retrieved March 22, 2002, from http://www.apa.org/releases/intell.html

Archambault, F. X., Westberg, K.L., Brown, S.W., Hallmark, B.W., Emmons, C.L., & Zhang,W. (1993). *Regular classroom practices with gifted students: Results of a national survey of classroom teachers*, The National Research Center on Gifted and Talented, University of Connecticut at Storrs.

Barboza, H. C. (1999). Comparing the achievement of eighth-grade boys and girls on norm referenced and performance tests in language arts, reading and mathematics. *Dissertation Abstracts International*, 60/08. (No: 9945191).

Baska, L. (1986). Alternatives to traditional testing. *Roeper Review*, 8(3), 181-184.

Barbe, W., & Renzulli, J. (1965). *Psychology and education of the gifted: Selected readings*, New York, New York, Meredith Publishing Company.

Barksdale Reading Institute (n.d.). University of Mississippi Barksdale Reading Institute Web Page. Retrieved March 28, 2002, from http://www.mde.k12.ms.us/barksdale.html

Beloit School District, (n.d.). *Review of the Standardized Test Used to Assess Student Achievement.* Retrieved March 1, 2002, from http://www.sdb.k12.wi.us/research/reviewof.htm

Bergman, O. (1999). Wait for Me! Reader Control of Narration Rate in Talking Books, *Reading Online, Retrieved from,* www.readingonline.org September 1999, p1.

Bittker, C. M. (1991). Patterns of academic achievement in students who qualified for a gifted program on the basis of nonverbal or abstract reasoning abilities *Roeper Review*, Dec91, Vol. 14 Issue 2.

Chilton, C. M. (2001). The math achievement, experiences, and attitudes of gifted and promising math students. *Dissertation Abstracts International*, 62 (02), (UMI No. 3004101).

Chin, C. (2001). Relation between Kaufman Brief Intelligence Test and WISC-III scores of children with RD. *Journal of Learning Disabilities*, Vol. 34, (Issue 1), p2. Retrieved March 25, 2002, from EBSCO Masterfile database.

Cohen, C. S. (1997). The effectiveness of peer coaching on classroom teachers' use of differentiation for gifted middle school students. *Dissertation Abstracts International*, 58 (6-A), 2158. (No. AAG 97-37400).

Controversy follows psychological testing. (1999, December). *APA Monitor Online 30*(11), December 1999. Retrieved March 23, 2002 from http://www.apa.org/monitor/dec99/ss4.html

Daniel, N., & Cox, J. (1988). Flexible pacing for able learners. *Council for Exceptional Children*. Reston, VA (Eric Digest No. 298725).

Delisle, J., & Berger, S. L. (1990). Underachieving gifted students. *ERIC Clearinghouse on Handicapped and Gifted Children (*Eric Digest No. 321483). Retrieved January 13, 2002 from EBSCO Masterfile database.

Fair Test Examiner. (Fall, 1999). *No safety in numbers*. Retrieved March 2, 2002, from http://www.fairtest.org/examarts/fall99/No_Safety_in_Numbers.html

Farmer, D., (1994). *Meeting the needs of gifted students in the regular classroom.* NSW Association for Gifted and Talented Children Commonwealth of Australia. Retrieved from http://www.austega.com/gifted/provisions/curcompact.htm on June 12, 2001.

Feldhusen, J. F., Proctor, T. B., & Black, K. N. (1986). Guidelines for grade advancement of precocious children. *Roeper Review*, 9(1), 25-27. Retrieved October 3, 2001, from EBSCO Masterfile Database.

Ford, D.Y. (1995). *A Study of Achievement and underachievement among gifted, potentially gifted, and average African-American students* National Research

Center on the Gifted and Talented, University of Connecticut. Storrs, CT (Research Monograph 95128).

Ford, D.Y. & Thomas, A. (June 1997). *Underachievement among gifted minority students: problems and promises*. ERIC Clearinghouse on Disabilities and Gifted Education. Retrieved October 3, 2001, from EBSCO Masterfile Database.

Freeman, J. (1999). *Teaching gifted pupils*. Journal of Biological Education, Autumn99, Vol. 33 Issue 4, p185. Retrieved March 26, 2002, from EBSCO Masterfile Database.

Garrison, L. L. (1991). An evaluation of the academic performance of gifted students from high and low-achieving schools. *Dissertation Abstracts International*, 51 (11), pg. 3697-A. (No. 91-09892).

Gentry, M. L (1999). *Promoting student achievement and exemplary classroom practices through cluster grouping: a research-based alternative to heterogeneous elementary classrooms*. The National Research Center on the Gifted and Talented, University of Connecticut at Storrs. Retrieved from http://www.ucc.uconn.edu/~wwwgt/nrcgt.html on August 3, 2001.

Government of British Columbia, Gifted Education - A Resource Guide for Teachers. (n.d.). Glossary of terms. Retrieved March 1, 2002, from Ministry of Education Web-site at http://www.bced.gov.bc.ca/specialed/gifted/glossary.htm

Grayson, P. (2001). The Performance of gifted high school students in a university. *Canadian Journal of Higher Education*, 31 (n1) 121-39. Retrieved April 1, 2002 from EBSCO Masterfile database.

Greene, B. (March 1999), Goals, values, and beliefs as predictors of achievement and effort in high school mathematics classes. *Sex Roles: A Journal of Research.* Retrieved March 15, 2002, from http://www.findarticles.com/cf_dls/m2294/5-6_40/55082331/p1/article.jhtml

Gurian, A. (2001). *Gifted girls-many gifted girls, few eminent women: why?* Retrieved July 15, 2001 from http://www.AboutOurKids.org

Hollifield, J. (1987). *Ability grouping in elementary schools.* Retrieved July 1, 2001, from ERIC Clearinghouse on Elementary and Early Childhood Education Urbana IL Web-site at http://ericae.net/edo/ED290542.htm (Eric Digest No. 290 542).

Howell, P.M. (2001). A study designed to compare the differences in mathematical performance among elementary school children across genders, *Dissertation Abstracts International*, (No. 3015513)

International Study Center (2001). TIMSS benchmarking highlights: A bridge to school improvement. Boston College, Lynch School of Education. Retrieved March 1, 2002 from http://isc.bc.edu

Krohn, E. J., & Lamp, R. E. (1999). Stability of the SB:FE and K-ABC for young children from low-income families: A 5-year longitudinal study. *Journal of School Psychology*, 37 (3), 315-32, Fall 1999. Retrieved March 24, 2002 from EBSCO Masterfile database.

Kulik, C.L., & Kulik, J.A. (1982). Effects of ability grouping on secondary school students: A meta-analysis of evaluation findings. *American Educational Research*

Journal 19, 415-28. Retrieved November 15,2001, from EBSCO Masterfile database.

Latest NAEP sees little change in past eight years *(2001,* June/July). Reading Today, 18, (6), 1, No 4603384. Retrieved March 1, 2002 from http://www.reading.org/publications/rty/archives/naep_0601.html

Martin, P. (1999). Wechsler Intelligence Test, Gale Encyclopedia of Medicine. *Gale Encyclopedia of Psychology*, Retrieved July 23, 2001 from http://www.findarticles.com/cf_dls/g2699/0003/2699000329/p1/article.jhtml

McClellan, E. (1985). *Defining Giftedness*, ERIC Clearinghouse on Handicapped and Gifted Children Reston VA. (Eric Document No. 262519)

McLeod, J. & Cropley, A. (1989). *Fostering Academic Excellence*, Pergamon Press.

McSheffrey, R., & Hoge, R. D.(1992). Performance within an enriched program for the gifted. *Child Study Journal*, June 1992, Vol. 22 Issue 2, p93. Retrieved January 5, 2001 from EBSCO Masterfile database.

Mississippi Department of Education. (2001). *Mississippi public school accountability standards*. Retrieved June 2, 2002 from http://www.mde.k12.ms.us/accred/MPSAS.doc.

Mississippi Department of Education. (n.d.). *Mississippi report card for 2000-2001*. Retrieved June 2, 2002 from http://www.mde.k12.ms.us/account/rc02/PDF/RC022400.PDF

Mississippi Department of Education (1994). *Regulations for gifted education programs (GEP)*, July 19, 1994.

Naglieri, J. (2001). Do ability and reading achievement correlate?, *Journal of Learning Disabilities*, Jul/Aug2001, Vol. 34, Issue 4, p304.

Nasca, D. (1988). *The use of non-verbal measures of intellectual functioning in identifying gifted children*. Brockport, NY: State University College at Brockport (Eric Document No. 296 551).

National Association for Gifted Children (n.d.). *Giftedness and high ability*. Retrieved June 2, 2002, from http://www.nagcbritain.org.uk/giftedness/definitions.html

National Center for Education Statistics, National Assessment of Educational Progress. (2002). *The Nations Report Card*. Retrieved March 21, 2002, from http://nces.ed.gov/nationsreportcard/

National Center for Education Statistics (2002). *NCES Electronic Catalog*. Retrieved March 20, 2002, from http://nces.ed.gov/pubsearch/surveylist.asp

Nelson, M. A. & Smith, S. W., (2001). External factors affecting gifted girls' academic and career achievements. *Intervention in School & Clinic*, 37 (1), 19. Retrieved March 24, 2002, from EBSCO Masterfile Database.

Nowell, A., (1998). *Sex roles: A journal of research*. Retrieved February, 20, 2002, from http://www.findarticles.com/cf_0/m2294/n1-2_v39/21136459/print.jhtml

Parke, B. (1989). *Gifted students in regular classrooms*. Allyn & Bacon, Boston.

Parke, B. (1992). *Challenging gifted students in the regular classroom*. Arlington, VA: Council for Exceptional Children (Eric Digest No. E513).

Peterson, J. S., & Colangelo, N. (1996). Gifted achievers and underachievers: A comparison of patterns found in school files. *Journal of Counseling and*

Development, 74 (4). Retrieved September 12, 2001 from EBSCO Masterfile Database.

Peterson, Jean Sunde (2000). A follow-up study of one group of achievers and underachievers four years after high school graduation. *Roeper Review*, Jun2000, Vol. 22 Issue 4.

Reaching the destination. (1995). University of Connecticut, Storrs, CT, The National Research Center on the Gifted and Talented. Retrieved from http://www.ucc.uconn.edu/~wwwgt/nrcgt.html on August 3, 2001

Reis, S., Westberg, K., Kulikowich, J., & Purcell, J., (Spring 1998). Curriculum compacting and achievement test scores: what does the research say? *Gifted Child Quarterly* ,42, (2).

Rhode Island State Advisory Committee on Gifted and Talented Education (n.d.). *Characteristics and behaviors of the gifted.* Retrieved June 2, 2002 from http://www.ri.net/gifted_talented/character.html

Rogers, K.B. (1991). *The relationship of grouping practices to the education of the gifted and talented learner.* University of Connecticut at Storrs. The National Research Center on the Gifted and Talented, Retrieved July 1, 2001 from http://www.ucc.uconn.edu/~wwwgt/nrcgt.html

Rose, E. A., (2001). A longitudinal study of the course of academic achievement of urban and minority gifted and general education students. *Urban Education.* Retrieved April 1, 2002 from EBSCO Masterfile database.

Shields, C. (1995). A comparison study of student attitudes and perceptions in homogenous and heterogeneous classrooms. *Roeper Review*, 17, (4). Retrieved March 1, 2002, from EBSCO Masterfile Database.

Silverman, L. K., Chitwood, D. G., & Waters, J. L. (1986). Young gifted children: Can parents identify giftedness? *Topics in Early Childhood Special Education*, 6(1), 23-38. Retrieved Oct 14, 2001 from EBSCO Masterfile Database.

Southwest Educational Development Laboratory (n.d.). *The cognitive foundations of learning to read: research evidence.* Retrieved March 28, 2002, from http://www.indiana.edu/~eric_rec/www/indexwr.html

Stanovich, K. E. (1986). Matthew effect in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*(4), 360-406.

U.S. Department of Education. (n.d.). *NAEP Writing: State report for Mississippi.* Retrieved March 5, 2002, from http://nces.ed.gov/naep3/pdf/stt1998/99463ms.pdf

U.S. Department of Education. (n.d.). *The nation's report card.* Retrieved March 5, 2002, from http://nces.ed.gov/nationsreportcard/mathematics/.

U.S. Department of Education. (2001).*Digest of education statistics.* Retrieved March 20, 2002, from http://nces.ed.gov/pubs2002/2002130.pdf

U.S. Department of Education, Office of Educational Research and Improvement, (1993). *National excellence: a case for developing America's talent*. Retrieved February 2,2002, from the U.S. Department of Education Web site: http://www.ed.gov/pubs/DevTalent/index.html

Vecchiarelli, M. J. (1998). A longitudinal study of the effects of the MESA Public School elementary gifted resource program. 168 pages. *Dissertation Abstracts International*, 59 (12-A), 411. (No. AAG 98-25779).

Westberg, K. L., Archambault, F. X., Jr., Dobyns, S. M., & Salvin, T. (1993). *An observational study of instructional and curricular practices used with gifted and talented students in regular classrooms* (Research Monograph 93104). The National Research Center on the Gifted and Talented, University of Connecticut at Storrs.

Winebrenner, S & Berger, S (1994). Providing curriculum alternatives to motivate gifted students. (Eric Digest No. 372 553). Retrieved from the ERIC Clearinghouse on Elementary and Early Childhood Education Urbana IL Web-site at http://ericae.net/ericdb/ED372553.htm