

Exploration of Graduation and Algebra I Passing Rates of African-American Students
in Texas Urban Schools

by

Christopher Harvey

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APPROVAL PAGE

This dissertation was submitted by Christopher Harvey under the direction of the persons listed below. It was submitted to the College of Education and the Dean of the Graduate School and approved in partial fulfillment of the requirements for the degree of Doctor of Education at the University of Mary Hardin-Baylor.

Marlene Zipperlen, Ed.D.
Committee Chair
Director of Graduate Studies, College of Education
Dean of the College of Education

Date

Christie Bledsoe, Ed.D.
Committee Member

Date

Robert Rose, Ph.D.
Committee Member

Date

Colin Wilborn, Ph.D.
Dean of the Graduate School

Date

ABSTRACT

Exploration of Graduation and Algebra I Passing Rates of African-American Students in Texas Urban Schools. Harvey, C. 2014: Dissertation, University of Mary Hardin-Baylor, College of Education. Keywords: Math, African-American, Negro, Black, Colored, education, socio-economic status, economically disadvantage, economic status, free/reduced lunch, cohort, Texas Education Agency, at-risk, urban, high school, ninth grade, self-efficacy, self-esteem, Bandura, Maslow, dropout, graduation, Algebra I, college enrollment, low income, and college readiness.

The purpose of this quantitative, correlational study was to determine if a relationship existed between Algebra I passing rates and graduation rates, and if gender, ethnicity, and/or economic status influenced the relationship, particularly for African-American urban high school students in Texas. Participant data included 16,372 first-time ninth grade high school students from 35 high schools within three large urban school districts located in North Texas. The Texas Education Agency provided the following data for each student: gender, ethnicity, economic status (based on receiving free/reduced lunch), pass/fail indication for Algebra I, and if the student graduated by 2011, later, or became a dropout. An analysis of the results from the study indicated a statistically significant relationship between passing Algebra I and graduating on time, or within four years. Gender, ethnicity, and economic status did have an effect on the relationship between Algebra I and graduation, which resulted in rejecting the null hypothesis for each research question.

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CHAPTER 1: INTRODUCTION

“Newly released ACT scores on tests used for college admissions show that only 1 in 4 graduates of the class of 2011 who took the exam met four key benchmarks that supposedly show readiness for success in the first year of college” (Strauss, 2011b, para. 1). The national average for all high school students who took the ACT in 2011 was 21.1 out of 36 possible points. The 2011 national average score for white high school students was 22.1, African-American students average score was 17, and Hispanic students average score was 18.7. “The lack of progress is particularly worrisome because many in postsecondary education agree that improving college readiness is doable” (Spence, 2007, para. 8). “The goal of helping all students become college and career ready has become a focal point of American education” (Aldeman, 2010, para. 4).

Reflected by researchers, the majority of freshmen students that enter college are not adequately prepared to enroll in college-level mathematics courses (Conley, 2007; Orihuela, 2006). College enrollment rates are not increasing;

even in the face of increasingly demanding high school graduation requirements, [this] demonstrates how difficult it will be to achieve greater college success by simply having students take more prescribed courses without understanding what is being learned in those courses. (Conley, 2007, p. 8)

In Orihuela’s 2006 study, students who did not pass Algebra I were three times more likely not to graduate from high school.

Iceland and Wilkes (2006) concluded segregated communities create “disadvantages . . . especially [for] blacks—in terms of schooling, employment, exposure to higher crime, single parenthood, concentrated poverty, and even health and cognition

outcomes” (Iceland & Wilkes, 2006, p. 248). African-American families participate in residential segregation because of racial/ethnicity preference versus socio-economic status. Meaning, when most individuals in minority groups increase their financial status, they move to more white-dominated communities where African-Americans tend to determine their place of residence by ethnic preferences (Iceland & Wilkes, 2006). “Ever since the Coleman report in the 60s and the controversial book *The Bell Curve* by Herrnstein and Murray in the 1990’s dozens of studies keep finding the same thing: socio-economic status is correlated with student achievement” (Wiggins, 2012, para. 2). Wiggins posted the 2012 SAT average scores based on family income. The lower the family income, the lower the critical reading and mathematics scores. As shown in Table 1, the higher the family income, the higher the critical reading and mathematics scores.

Table 1

2012 SAT Averages Based on Family Income

Family Income	Critical Reading	Mathematics
\$0 - \$20,000	433	461
\$20,000 - \$40,000	463	481
\$40,000 - \$60,000	485	500
\$60,000 - \$80,000	499	512
\$80,000 - \$100,000	511	525
\$100,000 - \$120,000	523	539
\$120,000 - \$140,000	527	543
\$140,000 - \$160,000	534	551
\$160,000 - \$200,000	540	557
More than \$200,000	567	589

In California, 2013 Algebra I California Standards Test (CST) study results showed students from a family with low socio-economic status average passing rate was 28%. The non-economically disadvantaged students recorded a passing rate of 49% (Lucile Packard Foundation, 2013). When analyzing the results for the Algebra I CST by ethnicity, African Americans scored an average passing rate of 21%, the lowest in California (Lucile Packard Foundation, 2013).

This research study consists of five chapters beginning with Chapter 1 the introduction of the study, which was to determine if economic status influences the Algebra I passing rate and graduation rate for urban African-American students in Texas. A literary review of relevant research and a theoretical framework shaping the study is in Chapter 2. The research methodology is in Chapter 3. The data and data analysis are in Chapter 4. Chapter 5 consists of the summary, conclusion, and recommendations for future studies.

Evidence supporting the nature of the problem, problem statement, and purpose of the study starts the exploration. Included in Chapter 1 is a brief description of the research methodology and design, the background information about the problem, and supporting evidence. The setting of the study, research questions and hypotheses, and preliminary theoretical framework follows. To have a better understanding of the study, definition of key words and the scope of the study which includes limitations, delimitations, and assumptions, provides clarity.

Nature of the Problem

In 2010, 101,887 Texas high school students took the Algebra I end-of-course (EOC) exam. Out of the 101,887 students, 37,028 were white, 44,220 were Hispanic,

and 12,527 were African-American. Only 58,031 students (57%) met the standard score. Out of the 58,031 students who met the standard score, 26,198 were white (45%), 20,932 were Hispanic (36%), and 4,989 were African-American (9%) (Texas Education Agency, 2007). This data is evidence of an academic achievement gap of 36 points between African-American students and white students. The average Algebra I EOC passing percentage for students labeled economically disadvantaged was 45%. Students at Title I designated schools rate was 53%. Title I schools have high numbers or high percentages of children from low-income families. Based on the research conducted in 2006 by Orihuela, 60% of the African-American high school students in the United States (U.S.), in 2010, who took the Algebra I EOC exam were four times more likely to not graduate on time.

Statement of Problem

In 2011, the national average for the ACT college entrance exam was 21.1. While students' scores from the White and Asian communities in the U.S. have been increasing, Hispanic and African-American student averages have shown little to no gain on reducing the gaps and continue to perform low. The scores released, according to a report in The Washington Post, suggested only 25% of the graduates from the class of 2011 were college-ready (Strauss, 2011b). The average score for African-American students was 17, 4.1 points below the national average, and 5.4 points below White students.

In the 2013 ACT score report, 48% of Texas high students taking the ACT mathematics test had a college-ready indication (Strauss, 2011b). However, only 22% of the African-American students that took the test passed and met college-ready eligibility.

The average ACT math score for African-American students, since 2009, has remained at 17.

Zigrossi (2011), from the University of Texas at Austin Dana Center, claimed traditional schools can only address one-third of the road blocks to academic success for students, the other two-thirds occur outside of the school in the community. Twenty-five percent of the children in Texas are in poverty, Duncan, the U.S. Secretary of Education, felt “very, very badly for the children” in Texas (Garofalo, 2011, para. 1). Texas ranked 10th in the country with a 7% dropout rate, and 3rd in the nation with a teen birth rate of 63 births per 1,000 females aged 15-19 (Garofalo, 2011).

These studies and others that investigate mathematical problem solving traditionally have not reported specific data for African American students. Thus, although these students makeup more than 20% of our nation’s children little research is available on problem solving by African-Americans. (Malloy & Jones, 1998, p. 143)

In 2011, 52% of the Texas students who graduated actually enrolled into college by fall following their high school graduation (Texas Higher Education Coordinating Board, 2011). Forty-seven percent of African-American students were not found in any public or private institution after high school graduation (Texas Higher Education Coordinating Board, 2011). The general problem is low high school graduation rates for Texas high school students, specifically African-American students. In 2011, the graduation rate for white high school students in Texas was 92% (Taboada & The Associated Press, 2012). In contrast, the graduation rate for African-American high school students was 74% and the percentage for low-income students was 77% (Taboada & The Associated Press,

2012). “The majority of Hispanic and African-American student schools located in central cities . . . our data indicate that Hispanics and African-Americans attend schools, and reside in areas, that are less conducive to academic success than white and Asian students” (Lofstrom, 2007, p. 8). Southworth (2006) stated “low SES students were more likely to have low math test scores than middle and high SES” students (p. 19).

Southworth concluded characteristics like female, minority, and students with a disability are negative impacts on math test scores. Three areas validate the specific problem, which is the low four-year graduation rate for African-American students at urban high schools in Texas (Texas Education Agency, 2013c). The first is the graduation rate for white high school students in 2000 was 92% contrasted with African-American high school students’ graduation rate at 77% (Taboada & The Associated Press, 2012). The second area is from a report of the National Assessment of Education Progress (NAEP) in 2002 which compared by students eligible for the National School Lunch Program. The students that qualify for this program receive free or reduced lunches. From 2003 to 2013, African-American eighth grade students performed 16.75 points lower than other students (Brown et al., 2013). The second area also included the years between 2005 and 2010 where only 35% of African-American students passed Algebra I EOC compared to 53.6% of all test takers (DeVries, 2011).

Purpose of the Study

Researchers at the National Assessment of Educational Progress (NAEP) published an article revealing a comparison between the types of Algebra I and Geometry courses in U.S. high schools (Brown et al., 2013). Some of the conclusions from the report were white graduates who took rigorous Algebra I courses earned an average

NAEP algebra score of 151, which was 17 points higher than the average score obtained by black graduates. On average, there was a 16.5 point difference between white and black students at each test level (Brown et al., 2013). Stephany (2011) conducted a research study in California and concluded

success in Algebra I is of more importance than the grade level at which Algebra I is taken . . . the nature of Algebra, and the essential fundamentals that children master through studying Algebra serve as an essential building block of further mathematical studies. (p. viii)

The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas.

The results of this research study may help motivate educators to continue to research and study various methods that may increase the high school cohort graduation rates in Texas, specifically among African-American urban students. The results could lead to the development of best practices in teaching Algebra I to students with differing backgrounds. In the Coleman Report, the two main factors listed for predicting student achievement were segregated schools and family income (Strauss, 2011a). If economic status influenced Algebra I and graduation rate, school district employees and community members could work together to remedy societal obstacles.

Research Method and Design

Creating opportunities for educational practitioners to create new strategies for interventions in mathematics may result due to the findings from this study. Williams,

Commissioner of the Texas Education Agency, is leading the implementation of a new accountability system in Texas. A new body of research was necessary for determining the new steps in education reform because of Texas' new path. Through this research design, the study results may help identify predictors indicating if a student would or would not graduate on time. The Texas Higher Education Coordinating Board, College Board, and other national education research and statistic organizations have concluded achievement in mathematics is or could be a predictor of college enrollment and academic success.

A qualitative design would not have been appropriate for this study since it would have provided a more subjective and narrative approach. "In quantitative research, the investigator relies on statistical analysis of the data, which is typically in numeric form. In qualitative research, statistics are not used to analyze data; instead the inquirer analyzes words or images" (Creswell, 2012, p. 19). The best research design for this study was an approach that would "fit the audience(s) for the research report" (Creswell, 2012, p. 19). Generally, those that fund education transformation projects, such as education practitioners and foundations, prefer a design with statistics data (Field, Supiano, & Parry, 2013). The overall structure for a quantitative design is the scientific method. Deductive reasoning helps in forming the hypothesis, and the data collected helps to prove the hypotheses is false or not false. Thus a quantitative study, which focused on a specific set of data compiled from the Texas Education Agency, was the best option.

Correlational designs measure the relationships between variables. There is no manipulation of the variables identified and studied as they occur in a natural setting.

“The degree of association, expressed as a number, indicates whether the two variables are related or whether one can predict another” (Creswell, 2012, p. 21). The best way to determine if there is a significant relationship between two variables is to conduct a correlational study.

Background of the Problem

In 2013, Texas legislators passed a law, House Bill 5, requiring Algebra I and Geometry for graduation (Mildenberg, 2013). The only currently required math state exam for graduation is Algebra I. Orihuela (2006) wrote, “Algebra I grades were an important predictor of whether students drop out or graduate” (p. v). He said “students who failed this course were 4.1 times more likely to drop out than those who passed the course” (Orihuela, 2006, p. v). Chiado (2012) executed a mixed-methods study to determine if Algebra I could predict high school completion in four years. He concluded when students receive “numerous negative sources of self-efficacy and expectancies that, when combined with the uniqueness of the high school algebra experience increased the likelihood of failing to graduate” (Chiado, 2012, p. iv). The 2010 EOC exam for Algebra I in Texas’ passing rate was 56.9% of the test takers. Only 39.8% of the African-American students passed the exam. If a student in Texas receives a label of at-risk, statistically the chance of passing the Algebra I EOC is one in four, or 25.6% (Texas Education Agency, 2007).

Evidence of the Problem

African-American students perform lower than their white counterparts in math. Sixty percent of the eighth grade white male students passed the eighth grade NAEP while African-American male students scored a passing percentage of 18% (The Urgency

Now, 2011). In 2009, one in four African-American males was incarcerated or in detention. Sum, Director of the Center for Labor Market Studies at Northeastern University, said a dropout that is incarcerated costs “taxpayers around \$292,000 over the working life of a dropout,” not including the incarceration expenses (Weathersbee, 2012, para. 15).

In 2013, Children at Risk ranked 142 high schools in Texas at-risk because the high schools had 25% or more African-American students. Four schools received an A, 16 schools received a B, 67 schools received a C, 29 schools received a D, and 25 schools received an F. Presented in quartiles in Figure 1 by campus percentage of African-American students and quantifying the letter score with a numerical value of four for an A, three for a B, two for a C, one for a D, and zero for an F, indicates a prevalent need. The data in Figure 1 & 2 illustrates the lower percentage of African-American students enrolled in a Texas high school, the higher the school rating (Children at Risk, 2013). The Quartile Grade Point Average (GPA) decreases as the percentage of African-American students increase.

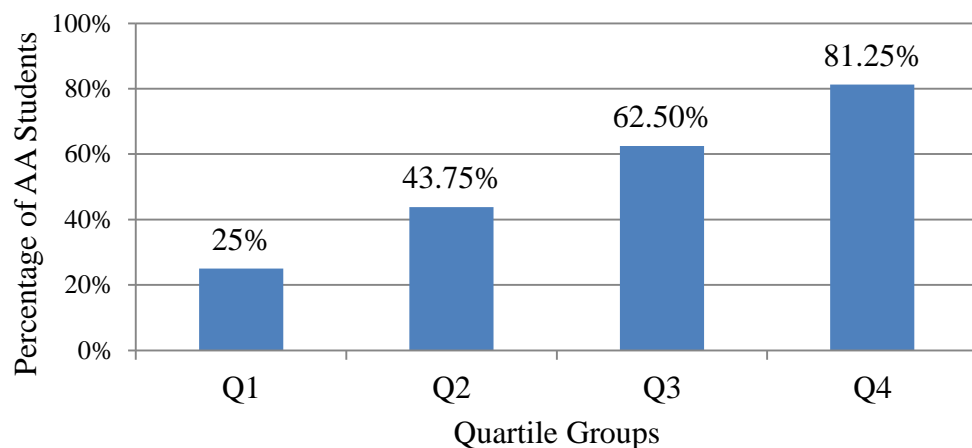


Figure 1. Average percentage of African-American student population by quartile in 2013

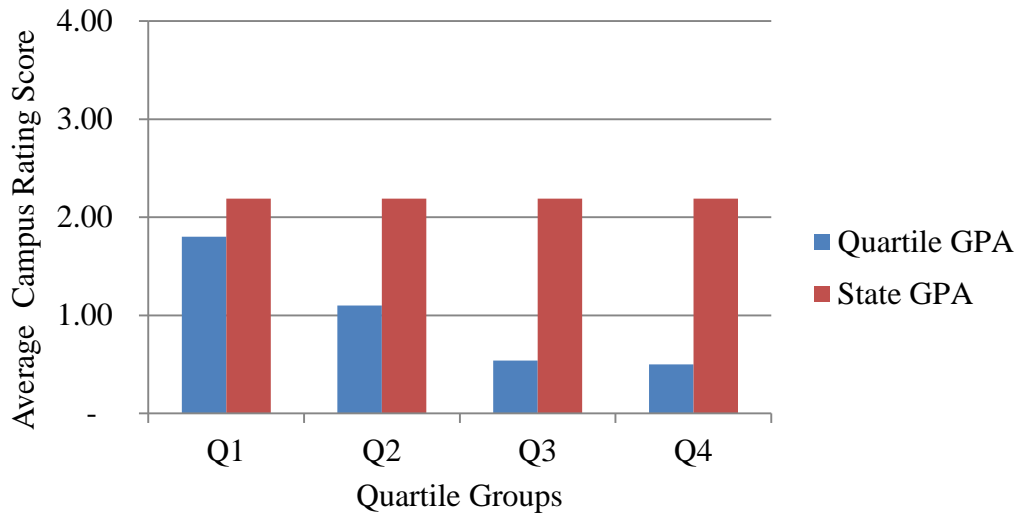


Figure 2. Average campus rating by quartile in 2013

Setting/Organizational Profile

Across the United States, many school district leaders have made an effort to increase academic success in urban at-risk communities (Blank, Jacobson, & Melaville, 2012). These communities typically have large pockets of families receiving free/reduced lunch, or communities with a high population labeled low socioeconomic (Denhardt & Glaser, 1999). Urban communities located within a city, and filled with individuals from various ethnic and economic background centers the study. This study includes data from three urban cities in Texas. A definition of urban population established a criterion to identify urban areas in Texas for the study. The definition outlined population size and ethnic demographics. Based on the definition, there was a selection of three large urban cities. Used in the study was the largest school district in each of the selected cities. The next step was determining criteria for selecting the schools in those three districts. Only four-year traditional high schools, that served

students in Grades 9-12 qualified for the study. Schools with early college high schools, magnet programs, and academies were not a part of the study.

Research Questions and Hypotheses

The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. The research topic in this quantitative study was about relationships. Questions dealing with what, where, or when focused the research. This quantitative study was a mathematical analysis of the research topic guided by research questions and hypothesis:

R1: What is the relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas?

H₀₁: There is no relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas.

R2: What is the difference between male and female Algebra I passing rates and graduation rates amongst students in urban high schools in Texas?

H₀₂: There is no difference between male and female Algebra I passing rates and graduation rates amongst students in urban high schools in Texas.

R3: What is the difference between Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas?

H₀₃: There is no difference between Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas.

R4: What is the difference between male and female Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas?

H₀₄: There is no difference between male and female Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas.

R5: What is the difference between Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas?

H₀₅: There is no difference between Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas.

R6: What is the difference between male and female Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas?

H₀₆: There is no difference between male and female Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas.

R7: What is the difference between African-American students and economically disadvantaged African-American students in regards to Algebra I passing and graduation rates in urban high schools in Texas?

H₀₇: There is no difference between African-American students and economically disadvantaged African-American students in regards to Algebra I passing graduation rates in urban high schools in Texas.

R8: What is the difference between male and female African-American students and economically disadvantaged African-American students in regards to Algebra I passing and graduation rates in urban high schools in Texas?

H₀₈: There is no difference between male and female African-American students and economically disadvantaged African-American students in regard to Algebra I passing graduation rates in urban high schools in Texas.

The questions were relationship-based questions, designed to provide answers for the research study. Correlational research attempts to determine whether and to what degree a relationship exists between two or more quantifiable variables (Creswell, 2012).

Theoretical Framework

Searching for rationales for the academic patterns and trends in the mathematical deficiencies of urban African-American students, included in this study was an exploration of the Gestalt theory, social cognitive theory, and Maslow's hierarchy of needs. The focus of the study was to address the problem and purpose statements, answer the research questions, and to provide quantitative research for other researchers interested in finding the connection between the learning deficiencies and such theories.

There has been many education reform movements for math in the U.S. but "the content and instruction of mathematics did not substantially improve" (Schmidt, 2005, p. 57). There are still "conflicting interests on how math should be taught, for what, to whom and at what level" (Schmidt, 2005, p. 57). Gestalt psychologists believe "the existing conflict in secondary-school mathematics . . . is a consequence of altered social conditions and changed educational attitudes" (Hartmann, 2007, pp. 16-17). Blosser wrote "insight forms the basis of this way of thinking . . . has an effect on the [individual's] behavior" (as cited in Akbar, 2012, p. 10).

Often associated with the social cognitive theory is the theorist Bandura (1989). The foundation of the social cognitive theory is based on the premise learning takes place

through the reciprocal interaction of a person's thoughts/cognition, behavior, and environment. Bandura believed learning was based on empirical observation and there was not "a natural tendency for humans to imitate what they see others do" (as cited in Olson & Hergerhahn, 2009, p. 325). Bandura believed the observer gathered information from observations and used it towards an advantage (as cited in Olson & Hergerhahn, 2009). Tolman wrote behavior is purposeful, or goal-directed, and "the searching behavior of a rat in a maze will persist until food is found; therefore, it looks 'as if' its behavior is . . . purposive" (as cited in Olson & Hergerhahn, 2009, p. 301). Tolman (as cited in Hauser, 2005) and Bandura (1971) both worked toward developing cognitive theories and neither theory involved reinforcement for a desired behavior. With the belief behavior is influenced by internal motivation, Tolman and Bandura believed learning never ended and action, or evidence, took place only when there was a need, or purpose; learning did not necessitate a performance (as cited in Olson & Hergerhahn, 2009).

Chappell (2012) believed there were many reasons students in high school do not succeed academically and end up dropping out of high school. Chappell believed attributes associated with an individual needing evaluation to determine if the individual is at-risk of becoming a dropout. These attributes may include family background, environment, academic achievement, engagement, and motivation. If students' interactions were positive in these areas, there was a positive correlation to high school graduation (Chappell, 2012).

Maslow's (1965) hierarchy of needs consisted of five categorical areas similar to Chappell's (2012) five attributes: physiological needs, safety, love, a healthy esteem, and

self-actualization. “This hierarchy suggests people are motivated to fulfill [their] basic needs before moving on to other needs” (Cherry, 2011, p. 1). The top of the hierarchy chart is self-actualization. All students must be able to understand who they are and what they are capable of doing, thus a need to pursue self-actualization, or self-awareness (Maslow, 1965). Maslow defined self-actualization stating it is the “desire for self-fulfillment . . . to become more and more what one is, to become everything that one is capable of becoming” (Cherry, 2011, p. 1). Cherry wrote the characteristics of self-actualized people are acceptance and realism, problem centering, spontaneity, autonomy and solitude, continued freshness of appreciation, and peak experiences. Acceptance and realism and problem-centering are necessities for student success (Cherry, 2013). After students’ needs no longer remain as an obstacle to education, students will want to become successful when they know their capabilities and are motivated to maximize their potential (Mitchell-Yellin, 2014).

Significance of the Study

If a correlation exists between Algebra I and high school graduation for urban African-American high school students then this study would prove to be significant for education scholars, policy makers, school leaders, and parents (Darling, 2010). Results from the study may lead to an understanding of the decline in African-American student academic performance in math and the lack of pursuit in math related majors and careers (Johnson, 2006). Education policy makers and school leaders in Texas could consider revamping the scope and sequence for math to require Pre-Algebra and Algebra I, with necessary resources and supplements, so students can increase their probability of passing the course the first time (Chiado, 2012; Nelson, 2006).

Definition of Terms

African-American came to mean people with any known black African ancestry. Mulattoes are racially mixed, to whatever degree, while the terms black, Negro, African-American, and colored include both mulattoes and unmixed blacks (Davis, 1991).

Broad Foundation indicates

a team of education experts and professionals dedicated to strengthening public school systems, believing our work matters and are committed to providing an excellent education to all children. Our culture is built on the professional values of high expectations, drive, continuous improvement, innovation, collaboration and community. (Knight, 2013, para. 1)

Children at Risk, a non-profit organization for change in Texas, focused on strategic research, public policy, analysis, and education, collaboration, and advocacy. Each year they report school rankings for Central, Southeast, and North Texas school districts. Each high school is graded (A-F) based on performance indicators like the percentage of students commended in TAKS math and reading, percentage of graduates on the recommended program, percentage of students taking advanced courses, attendance rate, graduation rate, SAT/ACT statistics, and percentage of students economically disadvantaged (Children at Risk, 2013).

Cohort

is a four-year longitudinal rates show the percentage of students from a class of beginning ninth graders who graduate or drop out of high school by their anticipated graduation date. The four-year longitudinal graduation rate for the class of 2012, for example, is the percentage of students who began ninth grade in

2008-09 and graduated by August 31, 2012. (Texas Education Agency, 2013b, para. 3)

Intersectionality “means the examination of race, sex, class, national origin, and sexual orientation, and how their combination plays out in various settings” (UCLA, 2009, para. 3).

Live model has an “actual person demonstrating a behavior” (Cherry, 2012, para. 5).

Modeling “means doing what others do. There are different types of models: live models, symbolic models, and imitation” (Bandura, 1978, p. 344).

Nonprobability Sampling is a “quantitative sampling procedure in which the researcher chooses participants because they are available, convenient, and represent some of the characteristics the investigator seeks to study” (Creswell, 2012, p. 624).

Purposive Behaviorism “is the behavior approach that studies purposive behavior as such and does not attempt to reduce such behavior into smaller elements for further analysis” (Olson & Hergerhahn, 2009, p. 458).

Reciprocal Determinism “is a continuous reciprocal interaction between behavioral, cognitive, and environmental influences” (Olson & Hergerhahn, 2009, p. 336).

Self-efficacy “means learners self-confidence towards learning. People are more likely to engage in certain behaviors when they believe they are capable of implementing those behaviors successfully, this means that they have a high self-efficacy (Bandura, 1978, p. 4)

Self-regulation “occurs when an individual has his own ideas about what is appropriate or inappropriate behavior and chooses actions accordingly. There are three aspects of self-regulation: self-observation, judgment, and self-response (Bronson, 2000, p. 33)

Symbolic models are a “person or character portrayed in a medium such as a television, videotape, computer program, or book” (Cherry, 2012, para. 5).

Urban School Districts is a school district that meets the Broad Foundation criteria of urban, “based on size, low-income enrollment, minority enrollment, and urban environment” (Broad Foundation, 2013, para. 1).

Variables are “a characteristic or attribute of an individual or organization that can be measured or observed by the researcher and that varies among individuals or organizations” (Creswell, 2012, p. 630).

Vicarious reinforcement means behavior is acceptable (Bandura, 1978).

Vicarious punishment means behavior is unacceptable (Bandura, 1978).

Scope of the Study

Class of 2012 graduation rate for African-American students was 83.5%. The dropout rate for African-American students equaled three times the white students. The specific problem is low four-year graduation rates for African-American students at urban high schools in Texas (Texas Education Agency, 2013c). The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. The function

of limitations and delimitations permits full disclosure about anything that could influence the results of the study.

Limitations

A limitation is defined as the “characteristics of design or methodology that impacted or influenced the application or interpretation of the results of a study” which the researcher cannot control (Labaree, 2013, para. 1). One of the limitations of this study was the accuracy of the data secured from a public domain website housed at the Texas Education Agency. Another limitation to the study was the ability to pinpoint external and internal variables that could override the natural progression of passing or failing grades.

Delimitations

Delimitations “are choices made by the researcher which should be mentioned” because they include “the things a reader might expect . . . but . . . for clearly explained reasons” the researcher has not done (Howie, 2010, para. 5). Using only urban districts for the study, and limiting the ethnicity of those studied to African-American students are delimitations. Using only one testing standard to determine if a correlation exists between passing Algebra I and graduation in four years. The findings may not generalize to other schools due to the study involved only urban schools.

Assumptions

A basic assumption of the study was the data was true and accurate. Another assumption was the data received from the Texas Education Agency about the participating high schools in the study was true and accurate. Another assumption was the reliability of the EOC Algebra I test as valid and unbiased.

Summary

The purpose of the quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. The reoccurring discussions about African-American students' shortfall in mathematics and the achievement gap serves as the rationale for emphasis placed on the study of African-American students in urban high schools in Texas (Gomez, 2012). A brief introduction of theories may result in discovering possible rationale for the academic discrepancies with hope to influence an audience interested in connecting social learning, hierarchy of needs, and student achievement. The purpose of this study was not to test or prove a theory. The review of literature in Chapter 2 deals with an explanation of current research findings in education as it relates to African-Americans and Algebra I in the U.S. and Texas.

CHAPTER 2: REVIEW OF LITERATURE

The topic of this study was African-American students' academic achievement and graduation rates. The general problem is low high school graduation rates for Texas high school students. The specific problem is low four-year graduation rates for African-American students at urban high schools in Texas (Texas Education Agency, 2013c). The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. Chapter 2 includes a historical overview of African-American students' education in the United States and in Texas, and an exploration of the literature concerning low scores in math for African-American students, motivation, and perceptions. In addition, the literature review covers the extent to which a major problem in education exists regarding the continuing achievement gap between African-Americans and other ethnic groups.

This section contains the data, carts, and graphics that quantify the historic perspective of African-American student progress in America, specifically in Texas. The theoretical framework was a combination of well-known theories and theorists. The purpose of the framework was to shape the quantitative research design for this study, and may influence the analysis of the data, the results, and the recommendations.

Documentation

The literature reviewed came from a variety of sources, which includes national databases, peer reviewed dissertations, journal articles, textbooks, references, publications, presentations, and papers. The literature review supported the need for this study. Categorical presentations of the literature review are the history of African-

Americans in education, academic performance in U.S. and Texas education for African-American students, impact of economic status, theoretical framework, and current findings.

The foundation for this literature review included findings from 42 articles from 33 different journals. Other sources were 19 dissertations/theses, 13 internet sources, one presentation, one encyclopedia article, 20 statistical reports, and seven books. Published in the last five years were 62% of the sources. Key words used for searches were math, African-American, Negro, black, colored, education, socio-economic status, economically disadvantage, dropout, graduation, Algebra I, college enrollment, low income, and college readiness.

Historical Overview

The History of African-Americans in Education

The first recording of Africans in the United States was not until 1619, but there is evidence of Juan Garrido, a free African Conquistador, arriving in Florida in 1513 (Gates, 2012). Juan Garrido was born in West Africa in 1480 and traveled to Portugal seeking his fortune (Gates, 2012). On January 3, 1606, St. Augustine, Florida witnessed the birth of a black child. This record was found in the Cathedral Parish archives (Smith, 1994).

In the early 1620s, record keepers showed even in Jamestown Africans “were permitted to raise crops and cattle to purchase their freedom” (Hashaw, 2007, p. 63). It is important to know there were various means to educate African-Americans. “During slavery various religious organizations, slave owners, and other individuals and groups educated enslaved Africans with private funds” (Mimms, 2007, para. 2). There are

records of private schools in the north and south, created by Christian churches, educating Africans, teaching them to read and write.

The initial movement for the abolishment of slavery began in 1688 when German and Dutch Quakers published a pamphlet denouncing the practice (Lewis, 2014). Fear prevailed and leaders in states such as South Carolina and others begin to pass laws, in 1740, to prohibit educating blacks. Some states lawmakers focused more on writing versus reading. In the 1700s, schools for enslaved and free Africans begin to sprout up across the country. Not all Africans accepted slavery. The Stono Rebellion of 1739 sparked the passing of Negro Act in 1740. The belief was the Africans used military skills learned in Africa to revolt and organize. The fighting skills of the Africans were notable. Revolts continued until 1865. The developers of the Negro Act prohibited the trade of slaves directly from Africa in South Carolina. Article I, Section 9 of the Constitution postponed the ban of the Trans-Atlantic slave trade for 20 years, or until 1808 (Lewis, 2014). In the early 1800s, state legislators began outlawing educating enslaved Africans. The main fear was slaves could be writing freedom papers for other slaves or creating a revolt (Sambol-Tosco, 2004).

The 60-year period between the 1803 and 1863, dramatically changed the United States. Lewis (2014), an educator in New York City, compiled an extensive amount of history pertaining to African-Americans during this period. The major events started with the Louisiana Purchase. The concern of southern and northern states circled around the status of territories upon application to unite with the United States, would the state be a free state for slaves, a slave state, or have choice. Maine and Missouri became slave states in the Union through the Missouri Compromise of 1820; which also prohibited

slavery west of Missouri (Lewis, 2014). Slaves were still escaping for freedom in the 1840s. Williams Still, the *Father of the Underground Railroad* was escorting as many as 60 slaves to freedom each month. The United States Supreme Court ruled in *Prigg v. Pennsylvania* that states do not need to aid in capturing and returning slaves. In Georgia, South Carolina, North Carolina, and other states, lawmakers began to pass laws prohibiting slaves to carry weapons without permission, congregate in groups, own crops, read, own fine clothing, and declared them as non-citizens. Texas joined the United States in 1845 as a slave state. Missouri, between 1846 and 1847 allowed interstate slave trade and prohibited the education for freed African-Americans. In 1848, the first school segregation case took place with *Roberts v. Boston*. Roberts' case failed and lawyers argued its outcome in *Plessy v. Ferguson*. In 1849 Harriet Tubman, the *Mother of the Underground Railroad*, escaped from slavery and began to aid with guiding slaves through the Underground Railroad. Southern and northern states, having discourse over the induction of Texas, New Mexico, California, and Utah, created the 1850 Compromise. Due to the Compromise of 1850, California entered the United States as a free state, Utah and New Mexico had choice in regards to slavery, a border created between New Mexico and Texas, a stronger fugitive slave law, and slave trade abolished in Washington, D.C. (Lewis, 2014).

The Fugitive Slave Law of 1850 gave slave owners property rights to their slaves. A negative impact of this law was the abduction of freeman into slavery (Bordewich, 2006). Some states passed personal liberty laws to protect and free blacks in the north. Virginia lawmakers forced freed slaves out of the state within one year of their

emancipation by passing a law during this time. The Fugitive Slave law compels slave states to repeal laws and strengthen slavery in their states (Horton & Horton, 1992).

In 1854, Kansas and Nebraska join the union under the Kansas-Nebraska Act, the residents gained the right to vote if the state would be a free or slave state and it abolished the anti-slavery clause in the Missouri Compromise. The United States Supreme Court ruled in 1857 after hearing *Scott v. Sanford* that all African-Americans are not citizens, but property. Arizona lawmakers' legislature established a law in 1859 that African-Americans living in Arizona in 1860 would become slaves. Between 1859 and 1861, the last slave ship arrived in Mobile Bay, Alabama, where John Brown lead the Harper's ferry raid, the Democratic Party splits, Lincoln became president, and the Civil War began (Lewis, 2014).

President Lincoln signed the Emancipation Proclamation in 1862 and proclaimed slaves in rebellion states free on January 1, 1863. In 1865, 10% of the African Community was literate. Five years later, after African-Americans were assured the right to vote, "81% of African-Americans in the US were illiterate compared to 8.5% of white Americans and 9.1% of African-American children attend school compared to 50% of white Americans children;" a 100% gain in literacy (Mimms, 2007, para. 67). Enacted across the nation in 1876 were the Jim Crow laws. Jim Crow laws mandated segregation of all public facilities. In 1896, the court made a decision in regards to the *Plessey v. Ferguson* case. Seven of the justices, a majority ruling, on the United States Supreme Court found segregated *separate but equal* accommodations were legal, and those using facilities not designated for their race were criminally liable under the statutes created by states. By 1900, the literacy rates increased to 43% for African-Americans (Mimms,

2007). The increase in literacy and with the birth of the National Association for the Advancement of Colored People (NAACP), segregation supporters became fearful, thus southern states passed laws to implement literacy tests, poll taxes, grandfather clauses, and physical threats to prevent African-Americans from voting to end Jim Crow laws (Lewis, 2014).

The great migration occurred between 1910 and 1970. African-Americans moved from southern states to mid-western states, northern states, and Canada. During this time the emergence of the Ku Klux Klan, voting rights restrictions, racism, Jim Crow laws, and boll weevil bugs compelled African-Americans to relocate to New York, Chicago, Pittsburg, Detroit, Los Angeles, Oakland, San Francisco, Portland, and Seattle (Lewis, 2014). The Black Muslim group began in 1930. Elijah Muhammad took leadership from Wallace Ford Muhammad four years after he founded the group. Black Muslims held a belief nested in segregation from white people, a proud Black race, rich in culture and history. Tensions between African-Americans and whites increased between the 1930s and the 1960s. Four hundred black men unknowingly agree in 1932 to participate in an experiment, Tuskegee Experiment, received injections of the deadly disease syphilis. President Roosevelt issued Executive Order 8802, which allowed African Americans to join the US Armed Forces, in segregated facilities and units. Desegregation in the United States Armed Forces took place seven years later. In contrary to the United States Armed Forces, Detroit residents experienced race riots in 1943. The United States Supreme Court declared, in *Brown v. Board of Education*, segregation in public schools unconstitutional. The Civil Rights Act in 1964 enforced voting in the southern states (Lewis, 2014).

The history of African-Americans in the United States provides a historical perspective that explained the reason for the academic disadvantages in African-American students. Brazziel (1965) stated psychologists believed history of a people played an important role in “building the self-concepts and aspirational levels of its young” (Brazziel, 1965, p. 35). He said if correctly taught and portrayed, their heritage and achievements then build “a foundation of pride in self, respect for self, and confidence in the ability of self to prevail” (Brazziel, 1965, p. 35). Brazziel concluded that a people’s heritage and culture portrayed inaccurately creates the opposite, the opportunity for impairment, self-hate, self-doubt, and self-destruction. Indirect responses to segregation and the destruction of African-American history create perspectives of inferiority and supremacy. The “Negro” student emasculated due to systems of institutionalized racism. The increase of African-Americans receiving special education services is not because of the “retardation of the Negro,” but educational deprivation and required white-based readings (Brazziel, 1965, p. 36).

Dunbar High School

In the District of Columbia, in 1804, Congress passed an Act for white children to have free school. The free blacks could not attend that school so in 1807 schools were created by private citizens for free blacks and black slaves (Fitzpatrick & Goodwin, 2001). The Board of Trustees of the Colored Public Schools established the first primary public schools for blacks in 1864. The first public high school founded in the United States, Preparatory High School, was held in a Presbyterian Church. The school’s name changed over the years from the Colored Public School in 1877, to M Street High School in 1891, and Paul Laurence Dunbar High School in 1916 (Mitchell, 2012).

Dunbar High School is noteworthy because of the many distinguished alum and leaders associated with the school. Carter G. Woodson, the *father of Black History*, was a former teacher and Dr. Charles Richard Drew, famous for perfecting the use of blood plasma, was a former student. Another student was civil rights attorney Charles Hamilton Houston, who led known the attack that successfully ended Jim Crow laws.

The outstanding graduates are a credit to the excellent faculty and curriculum taught at Dunbar High School. Subjects of study included Latin, sciences, business, “algebra, geometry, trigonometry, astronomy, English, grammar, composition, literature, and elocution” (Mitchell, 2012, p. 6). In 1899 the principal was Robert Terrell, a graduate of Preparatory High School and Harvard College, and “the students of M Street scored higher than the white students at Eastern and Western” high schools on standardized tests for general subjects even though their resources and facilities were significantly less (Mitchell, 2012, p. 10).

Negro Education in the South

In 1947, Messick noted several of the key obstacles preventing education from thriving in the South. He noted 81% of the Negroes, or African-Americans, live in the South and made up 23% of the southern states population. Segregation flourished in 20 states and the District of Columbia. Contrary to the enactment of Jim Crow laws, between 1929 and 1940, African-Americans increasingly enroll and participate in education. The main issues for southern states’ education was financial discrepancies and geographical location (Messick, 1947).

One financial issue was the difference in per pupil expenditures for white and African-American children. In Mississippi, the expenditure was \$52 per white child and

\$7.36 per African-American child. In contrast, Oklahoma spent \$42.22 per white child and \$40.38 per African-American child. Some white leaders believed African-Americans contributed little financially to the system, thus were a burden on the system. A second financial issue stemmed from the fact the South made up 35% of the United States, but only contributed to 15% of the federal income. The majority of the South was rural, having 58.4% of its population as tenants; not permanently rooted. Fifty percent of the entire African-American population lived and worked farms in the South (Messick, 1947). A deadly bug plagued the crops during this period, making it difficult to secure adequate financial gain. In addition, many African-Americans were still migrating north or mid-west (Lewis, 2014). Messick (1947) pointed out the limit for post-secondary opportunities for all high school students and stated the need to construct more vocational programs in rural areas, particularly in African-American communities.

Religion, African-Americans, and Education

Churches in America have been able to create social and political change throughout history (Gaines, 2010). Churches began working to abolish slavery during the mid-1600s (Lewis, 2014). The church, for many African-Americans, served “as a source of hope, liberation, and material and emotional support” (Moore-Thomas & Day-Vines, 2008, p. 159). The church involvement in education made it possible for African-Americans to “transcend the limits of socialized meanings of everyday life that included domination by majority groups, oppression, and racism (Curry, 2010, p. 405). In addition to serving as a catalyst for educational opportunities, the African-American church served as the “operational center of the Civil Rights Movement” (Gaines, 2010, p. 366).

Over the last 40 years, social scientists have offered economic solutions, cultural and learning style solutions, and societal solutions for closing the achievement gap. Academic supports increased in number, yet, societal factors brought the biggest resistance. Glanville believed that “religious faith and its teaching are a tremendous source of strength for young people” (as cited in Jeynes, 2010, p. 264). In a meta-analysis study conducted by Jeynes (2010), the “religious faith variable translated into a 55-60% reduction in the achievement gap” (p. 274). Toldson and Anderson (2010) reviewed a national study about students attending religious schools. The results from the study concluded, if these five common factors are controlled, “school harmony, racial balance, lower rates of school violence, amount of homework, and level of discipline, a religious school still offers additional positive variance” (Toldson & Anderson, 2010, p. 206).

Academic Performance for African-Americans

Congress passed legislation in 1867 to create the U.S. Department of Education in Washington, D.C. Congress hired a statistician in 1872 to begin to collect data on primary and secondary school enrollment, attendance, salaries, graduation, and expenditures. In 1890, data for these areas was included for private schools. Congress required the aforementioned data collection for many years. However, after “recognizing the need to provide data on the quality of education” (Snyder & Grant, 1993, p. 3), longitudinal assessments and surveys began in 1972. Therefore, the reason for a lack of academic statistical analysis prior to the 1970s (Snyder & Grant, 1993).

The data collected in reading and mathematics between 1970 and 1990 used proficiency scores and percentage of students at or above the proficiency levels. The data

compiled categorized age and ethnicity/race. African-American students made significant gains in reading scores (see Table 2). Even with improved scores, the African-American students scored almost 20 points lower than the *all age* group.

Table 2

1969/1989 Reading Proficiency Scores for White and Black 9, 13, and 17-Year Olds

Age	Total Score		White		Black	
	1969	1989	1969	1989	1969	1989
9	208	209	214	217	170	182
13	255	257	261	262	222	242
17	285	290	291	279	239	267

Note. (Snyder & Grant, 1993)

The report also revealed five academic standards for mathematics in which African-American students were underperforming. The areas with a significant academic gap between race/ethnic groups were: Level 300 = the ability to perform reasoning and problem solving involving fractions, decimals, percent, elementary geometry, and simple algebra; Level 350 = the ability to perform reasoning and problem solving involving geometry, algebra, and beginning statistics and probability. Though the percentage of passing Level 300 doubled over the 20-year period for African-Americans, an academic gap of 31 points still existed.

Darling wrote that “high school graduates must be prepared to compete in a modern global economy that relies heavily on the development and application of science and technology” (Darling, 2010, p. 8). Darling mentioned algebra is the gateway course to help the students meet the necessary challenges of more rigorous courses. Orihuela (2006) conducted a study in Miami-Dade County Public Schools that proved, “after

conducting a multiple logistic regression involving several predictor variables . . . students failing Algebra I were 4.1 times more likely to drop out of school than those who pass the course” (p. 72).

The achievement gap in eighth grade mathematics scores decreased eight points between 1990 and 2007. When reviewing the eighth grade National Assessment of Educational Progress (NAEP) scores, Texas is one of a few states that has seen some success in reducing the gap (Vanneman, Hamilton, Anderson, & Rahman, 2009). In comparison, African-American eighth grade students experienced more academic growth than their white counter-parts (see Figure 3).

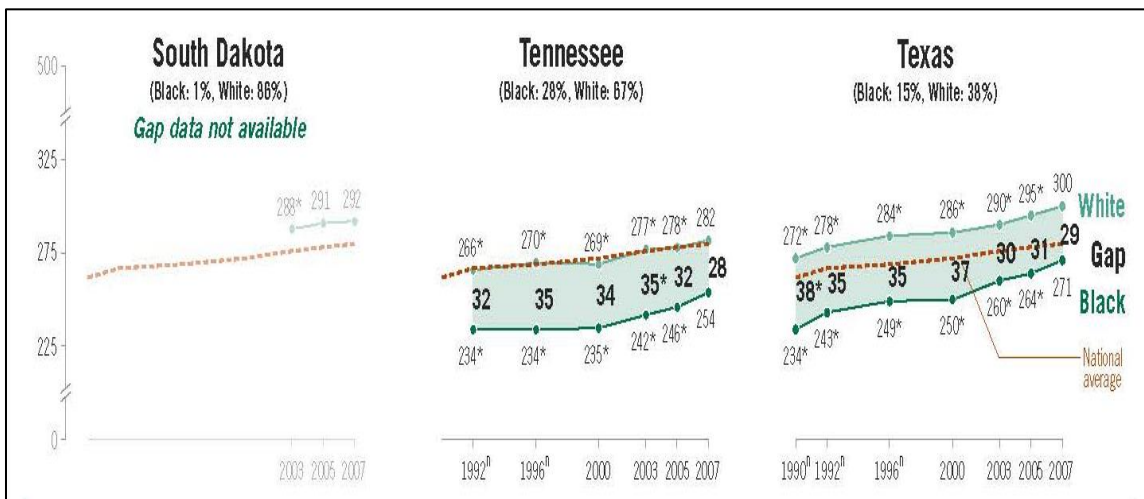


Figure 3. Eighth grade NAEP scores for Texas (1992-2007)

When reviewing the 2007 Algebra I EOC exam, a similar picture emerged. The gap between African-American students and white students in 2006 for the Algebra I EOC was 36-points (see Figure 4). African-American students achieved a 28-point gap between their white counterparts in 2007 (Texas Education Agency, 2007).

"---" = No Data Reported For Fewer Than Five Students	Number of Students Tested	Average Scale Score	Met Standard		Commended Performance	
			Number	Percent	Number	Percent
All Students	32812	1108	17291	53	2771	8
Male	16206	1104	8381	52	1449	9
Female	16603	1113	8910	54	1322	8
No Information Provided	3	---	---	---	---	---
Native American	111	1078	45	41	10	9
Asian	1069	1267	852	80	296	28
African American	4040	1024	1320	33	101	3
Hispanic	12389	1080	5844	47	709	6
White	13112	1145	8005	61	1452	11
No Information Provided	2091	1125	1225	59	203	10
Economically Disadvantaged <i>Yes</i>	13654	1058	5658	41	621	5
<i>No</i>	16556	1147	10112	61	1918	12
<i>No Information Provided</i>	2602	1122	1521	58	232	9

Figure 4. Algebra I end of course report for Texas in 2007

Figure 4 is from the 2007 Algebra I EOC report. Notice the economically disadvantage student group represents 41% of testers. Their average score exceeds the average score of African-American students. Both groups scored below the *all student* group and white student group. The data from the Texas Education Agency did not provide the ethnic breakdown in the economically disadvantage group. This information could be beneficial, however, only if economic status influenced Algebra I passing rates.

Theoretical Framework

The following theoretical frameworks for constructing the quantitative study: Gestalt theory, social learning theory, and hierarchy of needs pyramid represent the foundation of the study.

Gestalt Theory

In 1912, Wertheimer wrote an article on apparent motion, which resulted from an observation he made while riding on a train (as cited in Olson & Hergerhahn, 2009). The observed behavior of two lights cutting on and off at a constant rate gave an illusion of motion. After conducting an experiment to reproduce the effects, Wertheimer said the mind believed there was one light traveling back and forth between two fixtures though

there were actually two lights (as cited in Olson & Hergerhahn, 2009). Olson and Hergerhahn (2009) recalled that “psychological experiences result from sensory elements, they are different from sensory elements” (p. 255). The authors sparked the beginning of Gestalt theory in Germany. Gestalt, in German, means configuration or pattern. Olson and Hergerhahn (2009) wrote “we do not see isolated stimuli, but stimuli gathered together into meaningful configurations . . . we see people, chairs, cars . . . we do not see lines and contours and patches of color” (p. 256). Thus, to gain a full perspective, one must look at the entire picture, sensory and psychological interpretation. Gestalt psychologists believed whatever happens to a person influences everything else about that person (Olson & Hergerhahn, 2009). They believed learning is cognitive (Olson & Hergerhahn, 2009).

Observational Learning

Now, “the belief that humans learn by observing other humans goes back as least to such early Greeks as Plato and Aristotle” (Olson & Hergerhahn, 2009, p. 325). Several noted scholars tried to prove the theory. In 1898, Thorndike created an experiment to study observational learning (as cited in Olson & Hergerhahn, 2009). In 1908, Watson replicated the experiment, but with a different subject (as cited in Olson & Hergerhahn, 2009). Both Thorndike and Watson tested the hypothesis and concluded learning only took place because of an individual’s direct interaction, or experience, with his or her environment and not because of observations (as cited in Olson & Hergerhahn, 2009). In 1941, Miller and Dollard stated imitation learning is possible with special variables and conditions (as cited in Olson & Hergerhahn, 2009). They “also pointed out that imitation itself could become a habit” (as cited in Olson & Hergerhahn, 2009, p.

325). Skinner analyzed observational learning and concluded it to be a discriminative operant (as cited in Olson & Hergerhahn, 2009). He mentioned the modeled behavior was not more than a discriminative stimulus, which clued the observer to imitate the modeled behavior for reinforcement. Thus, reinforcing that learning only took place with reinforcement.

In 1965, Bandura made a distinction between imitation and observational learning. Bandura believed that “observational learning may or may not involve imitation” (as cited in Olson & Hergerhahn, 2009, pp. 328). For example, a driver witnesses the car in front of him hit a pothole, but he decides swerve to miss the pothole. Bandura believed, “You learned from your observation, but did not imitate what you had observed. What you learned . . . was information, which was processed cognitively and acted upon in a way that advantageous” (as cited in Olson & Hergerhahn, 2009, pp. 328-329). Bandura (1965), often confused as a behaviorist, believed the “importance of distinguishing between learning and performance and the need for a systematic study of whether reinforcement is primarily a learning-related or a performance-related vehicle” (p. 590).

Social Learning Theory

Bandura created social cognition theory (Cherry, 2013). In 1961, Bandura conducted the Bobo Doll Study (Cherry, 2013). In this study, an adult was filmed yelling and physically abusing a plastic, air-filled doll. The children who viewed the film next individually entered into a room with the plastic doll where they began to mimic the behaviors observed. Bandura, who began as a behaviorist, gathered all behavior is not directed by reinforcement and rewards (Cherry, 2013). In 1977, Bandura constructed the

social learning theory (SLT) (Cherry, 2013). SLT involves an individual, or group of individuals participating in observational learning, imitation, and/or modeling. For successful observational learning, one must ensure to follow the four steps of the modeling process: attention, retention, reciprocation, and motivation.

The attention process was written to communicate that exposure to a model did not mean the individual would know it was a model or even identify the necessary components of the model (Bandura, 1971). The model would need to grab the attention of the observer. Thus, attention process is successful when the observer's attention is locked into the model, like the television does (Bandura, 1971).

The retention process is when a person cannot remember the observed behavior, thus influence towards or learning a behavior is not possible (Bandura, 1971). Memory of the observed behavior must last, for sustainability, past the time of observation for learning or influenced behavior to occur. Bandura (1971) said "if one is to reproduce a model's behavior when the latter is no longer present to serve as a guide, the response patterns must be represented in memory in symbolic form" (p. 7).

The ability to reproduce or reciprocate the observed behavior, called the reproduction or reciprocate model, would be next in the four steps of the modeling process. It is important to note Bandura (1971) believed an observer did not have to immediately exhibit a change in behavior or provide a behavioral response to prove learning occurred. However, such time would come when the observer believed demonstrating such behavior would prove advantageous (Cherry, 2012).

As previously mentioned, motivation precedes the imitation of the observed model. A perceived reward or a punishment for imitating observed behaviors shapes,

whether intrinsic or external, motivation. An individual does not have to experience reward or punishment directly to imitate the model. “For example, if you see another student rewarded with extra credit for being . . . on time, you might start to show up a few minutes early each day” (Cherry, 2012, para. 12).

The social learning theory integrates a continuous interaction between behaviors, cognitions, and the environment. There is a three-way interaction called reciprocal determinism. Reciprocal determinism describes the influential interaction between the person’s cognition, their environment, and their behaviors (Olson & Hergerhahn, 2009). The illustration in Figure 5 shows how the person’s cognition can influence his or her behavior and environment, how a person’s behavior can influence a person’s cognition and environment, and how a person’s environment can influence his behavior and cognition (Bandura, 1986).

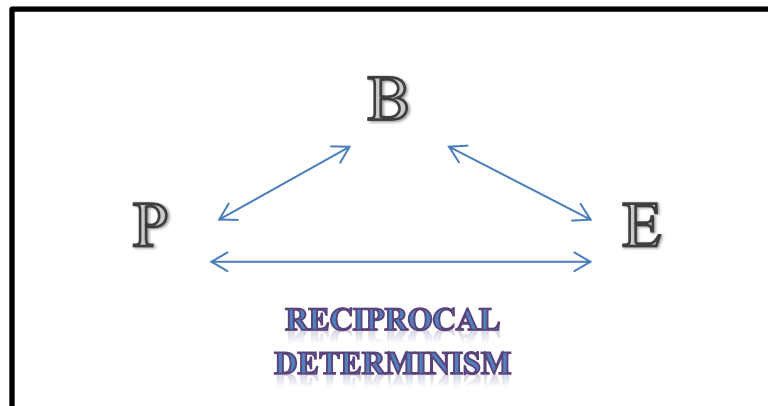


Figure 5. Reciprocal determinism

Now, a “model can be anything that conveys information, such as a person, film, television program, demonstration, picture, or instructions” (Olson & Hergerhahn, 2009, p. 329). In 1965, Bandura’s (Bobo Doll Experiment) observed children who made observations of model through sensory senses, or an empirical observation, and noted

such an observation brought about a change in behaviors of the children. The children cognitively processed the observation as they observed the model, or behavior. Not all the children reproduced the behavior, but were still able to describe the behavior observed (Bandura, 1965). This supports the reciprocal determinism model personal cognition, behaviors, and the environment are influential interchangeably.

There are three basic models of observation learning. A researcher can use a live model, a verbal instructional model, or a symbolic model (Cherry, 2012). A live model is demonstrating or acting out a behavior. The verbal instruction model utilizes details and audio imagery of behaviors. A symbolic model is comprised of fake or real characters and their behaviors as displayed on TV, a book, film, etc. (Cherry, 2012). The children learned through a film of an adult modeling a behavior.

Bandura said when an individual perceives learning as an internal reward because of pride, satisfaction, and sense of accomplishment, his or her mental state is optimal for learning (as cited in Cherry, 2012). For example, when a student enrolled or participated in a scholarly program or discussion because he/she believed the outcomes to be advantageous. This “emphasis on thoughts and cognitions connects social learning theory to cognitive development theories” (Cherry, 2012, para. 8). The social learning theory persisted that learning does not mean a change in behavior. For instance, when a smoker continues to smoke after acknowledging the link to cancer, or when a car driver continues to break traffic laws after receiving a traffic citation. “People can learn new information without demonstrating new behaviors” (Cherry, 2012, para 9).

Research studies show that instructional strategies based on social learning theories are far more effective . . . scaffolding, reciprocal teaching, cooperative

learning, Socratic dialogues, problem-solving, culturally relevant materials, place based learning, and guided instruction are all strategies that have been effective . . . with diverse groups of students. (Schmidt, 2008, p. 11)

Purposive Behaviorism and Empirical Observations

Another Gestalt theorist, Tolman, believed that learning was a purposive behavior, or goal-directed (as cited in Olson & Hergerhahn, 2009). Tolman said, Behavior will look as if it is goal directed as long as the organism is seeking something in the environment. . . . We know many things about our environment but act on this information only when we need to do so . . . knowledge . . . lies dormant until a need. (as cited in Olson & Hergerhahn, 2009, pp. 301-304)

The concept of purposive behavior is an important topic in social cognitive theory because it supports what Bandura believed about motivation being a key factor in differentiating learning and performance (as cited in Olson & Hergerhahn, 2009).

Determinism vs. Freedom

Some believed that reciprocal determinism suggested that human behavior is self-regulated, thus humans have complete freedom to do whatever they please. However, Bandura stated this is not altogether true. Bandura defined freedom as the “number of options available to people and their opportunities to exercise them” (Bandura, 1986, p. 42). Bandura, in 1989, wrote “Human agency in social cognitive theory” and insisted that personal freedom had roadblocks, which could be discrimination, fears, incompetence, and prejudice.

Given the same environment conditions, persons who have developed skills for accomplishing many options and are adept at regulating their own motivation and

behavior are more successful in their pursuits than those who have limited means of personal agency. It is because self-influence deterministically on action that some measure of self-directedness and freedom is possible (Bandura, 1989, p. 1182).

Creating equal learning requires more than sharing the same facilities. Olsen and Hergenbahn (2009) marked, “in the same environment some individuals are freer [to learn] than others” (p. 341).

Hierarchy of Needs

Maslow confirmed there could be roadblocks to learning (Brown & Cullin, 2006). In fact, his hierarchy of needs theory supports the second core concept in social learning theory, that mental state is important. Maslow believed that a person has a priority, or hierarchy of needs. When needs are met, Maslow said an individual moves up the pyramid to master a new set of needs. Figure 6 provides a visual and description of each level and the progression as described by Maslow (Brown & Cullen, 2006).

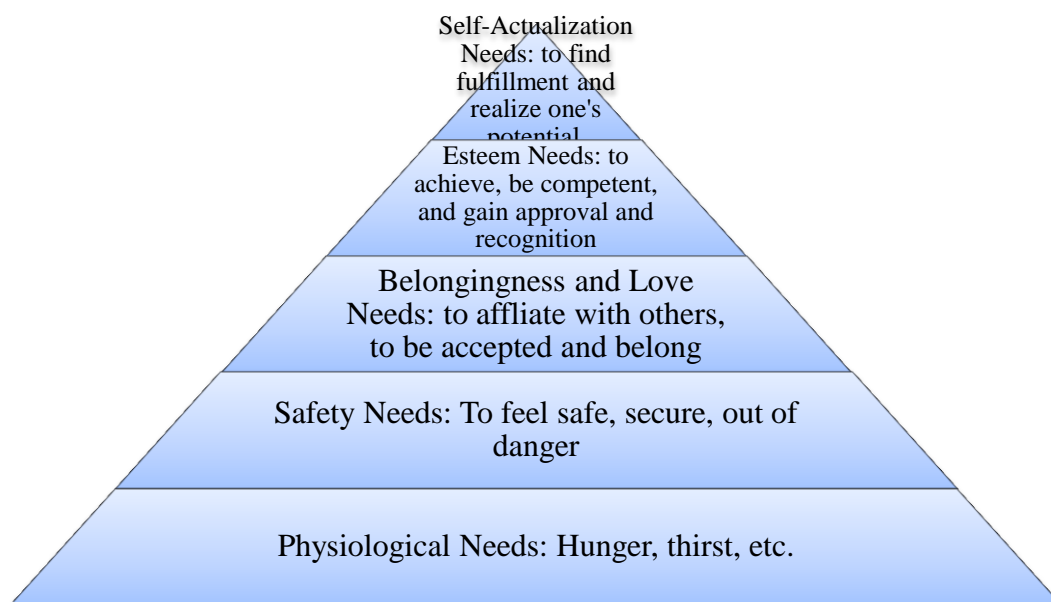


Figure 6. Maslow’s hierarchy of needs

Parents typically provided the basic needs for their child in the United States. Impoverished communities exist where families struggle to meet these basic needs. However, the issue at hand with families in the United States is safety, love-belonging, and esteem (Cunningham & Wakefield, 1975). Deficiencies in these categories diminish the self-efficacy of an individual.

Humans must have basic needs such as social needs in order to advance to the highest level, self-actualization . . . the belongingness need . . . can activate when a student is in an environment with teachers/staff that are highly qualified and supportive. (Kee-Smith, 2006, p. 40)

Learning at the fourth level related to education and personal achievement is the esteem level. Thus, to ensure the mental capacity for learning, an individual, according to Maslow, would need to have their basic needs met, feel safe, loved, and accepted (as cited in Cherry, 2001). When the basic needs are deprived, the individual will suffer unpleasant feelings and negative reactions (Cherry, 2011). Students need to have confident in their ability to learn, meet challenges, and problem solve. There is a “direct correlation between the level of a student’s self-efficacy and the level of his or her achievement” (Gilpin, 2010, p. 22). Students are motivated and make decisions in learning based on their perception of their ability to be successful (Bandura, 1986). There is a direct link between the efforts a student invests in a difficult learning task and his or her self-efficacy (Gilpin, 2010). Kee-Smith’s (2006) research concluded students with a low socio-economic status, receiving free or reduced lunch, also had a larger physiological need and performed lower than students with a lower physiological need.

Economic Status and Student Achievement

Engle and Black (2008) define poverty as capability deprivation. Poverty is a deficiency in income, health, capabilities, culture, respect, dignity, and education. Children and families in poverty experience chronic stress that “may interfere with successful adjustment to developmental tasks, including school achievement . . . as well as poor health and well-being, which can in turn undermine educational achievement” (Engle & Black, 2008, p. 244). Cameron and Heckman (2001) claimed family composition, parental education, and family income “explained all of the black-white gap in high school graduation rates” (Cameron & Heckman, 2001, p. 455). African-American students receiving free or reduced lunch stand to drop out of school at a higher rate than other African-American students (Lofstrom, 2007). “High poverty communities and families [have] a significant influence on academic outputs” (McLeod, 2011, p. 31).

“Children living in large inner cities and rural areas often experience chronic environmental risks . . . substandard living conditions . . . that impacts stress in the home” (Miller, Votruba-Drzal, & Setodji, 2013, p. 1454). Many of these communities experience isolation from social service providers, support networks, resources, employment opportunities, etc., that increase the stress for the family over basic needs (Miller et al., 2013). “The effects of poverty . . . on school achievement are likely to be statistically significant” (Brooks-Gunn & Duncan, 1997, p. 62).

Self-Efficacy and Student Achievement

Self-efficacy is defined as the confidence a person has about a task or ability, which directly influences their motivation to attempt and their ability to overcome an obstacle that is preventing goal obtainment (Obeidat, 2007). “Bandura claims that the

mechanism of self-efficacy has the most pervasive influence, especially for people who want to stimulate change in self and situations on their own” (Noble, 2009, p. 4). Radday (2010) noted self-efficacy predicts a student’s level of achievement because self-efficacy is instrumental to the individual deciding to do, and/or how to do (Radday, 2010).

“Generally, success increases a person’s sense of efficacy while failure lowers it” (Radday, 2010, p. 23). Bandura (2000) stated a person’s performance, experiences, physical reactions, and societal influence shapes self-efficacy. Noble (2009) also discussed the influence television has on increasing the focus of African-American males’ desire to participate in athletics and/or entertainment. Based on the theory of observational learning, if exposure to mathematics increases with African-American males, their desire to pursue math courses and careers potentially increase as well (Noble, 2009). Students watching other students, with the perceived same academic level, have success increases their motivation to attempt the task. A negative attempt can also negatively impact student motivation (Silvernail, 1985).

A student’s self-efficacy can change as he/she progresses through school. Schools with poor transitions from grade level to grade level, or that do not focus on the whole student could be indirectly negatively impacting a student’s self-efficacy (Obeidat, 2007). Stramel reported in her study that a relationship did exist “between attitudes toward mathematics and mathematical self-efficacy beliefs . . . conversely, high mathematical self-efficacy beliefs and good attitude toward mathematics are highly related . . . and students’ mathematics self-efficacy beliefs impact their attitudes toward mathematics” (Stramel, 2010, p. 9). Stramel concluded that increasing self-efficacy increases student achievement, especially if the math teacher uses an above average

percentage of hands-on activities, produces a low stress classroom environment, provides opportunities for small successes, reduces confusion, and provides praise and encouragement (Stramel, 2010).

Butler (2008) argued many low-SES students develop an interdependent self-concept, a self-concept constructed by one's relationship with others in his/her social group. Language for this social group is mostly oral. "By contrast, many Western, European-American, and middle- and upper-income populations are socialized to develop an independent self-concept" and mostly literal in language (Butler, 2008, p. 6). Schiro (2004) stated in more oral cultures, "learning takes place through personal involvement with contextualized culturally based everyday experiences and knowledge is verbally constructed from . . . firsthand experiences with concrete physical objects, images, events, and activities" (Schiro, 2004, p. 215).

Current Findings

"Although slavery and oppression were responsible for the astronomical gap in the Black-White literacy rate in the 1800's, African-Americans continue to struggle to close the major achievement gap well beyond slavery" (McLeod, 2011, p. 30). The Children's Defense Fund said in 1998, concerning African-Americans, that every day:

Two youth under twenty-five die from HIV, six are murdered, seven are killed by firearms, one-hundred-twenty-one babies are born to mothers who received late or no prenatal care, twenty-five babies die, seven-hundred-twenty-seven babies are born into poverty. Five-thousand-seven-hundred-twenty-five students are suspended, six-hundred-and-six students drop out, and nine-hundred-sixty-one high school graduates do not go on to college. (as cited in Reese, 2001, p. 22)

Today, the dropout statistics in the United States are still alarming. In their 2012 report on Black Graduation Rates, the Urgency of Now (2011) reported in 2009-2010 the national graduation rate for blacks was 52%, and whites was 78%. This graduation rate is calculated by the number of first-time ninth graders divided by the number of those same students finishing high school with a diploma in four years (The Schott Foundation for Public Education, 2012).

On the contrary, the 2013 National Center for Education Statistics (NCES) report lists the 2010 national dropout rate for all African-American students, male and female, as 5.5% (Digest of Education Statistics, 2013). The dropout rate listed for Texas African-American students in the same NCES report was 4.2% (Digest of Education Statistics, 2013). The Texas Education Agency reported in their 2011 Academic Excellence Indicator System (AEIS) report that 78.8% of Texas African-American high school students completed high school in four years compared to 91.6% of white students. Out of the 78.8% that graduated, only 34% received the appropriate curriculum and categorized college-ready (Texas Education Agency, 2011).

In the National Academy of Education Progress (NAEP) report in 2002, African-American students age 17 were on the same math level as 13-year old white students (Education Trust, 2003). In Texas, the African-American student population decreased from 14.4% to 14.1% between 1998 and 2008. Yet, the African-American representation in special education programs has increased from 15.5% to 18%. “Nationally, African-American students are 2.7 times more likely of being identified as having Emotional & Behavioral Disorder (EBD) than other children” (McLeod, 2011, p. 30). In 2010, African-American students represented the “highest demographic to drop out of high

school as only 70% of the student population in Texas graduated. Out of that 70% that graduated, only 40% had a chance of completing a college program (McLeod, 2011, p. 33).

From 2003 to 2013, when comparing recent scores of eighth graders in Texas to eighth graders in the United States, Texas students perform higher than the national average (National Center for Education Statistics, 2013). When reviewing the same data across the same timetable, but looking at gender, Texas male students on average score 1.5 points higher than females. The NAEP report also compares the scores by students eligible for the National School Lunch Program and students not eligible. Students that qualify for this program receive free or reduced lunch. Students not eligible for free or reduced lunch, from 2003 to 2013, on average score 22.5 points higher than students eligible for the National School Lunch Program. From 2003 to 2013, Texas African-American eighth grade students with a NAEP test report indicating their ethnicity as African-American perform on average 16.75 points lower than students that are not African-American. These African-American students also scored 28.25 points below white students, and 15 points below the total eighth grade student group in Texas (NCES, 2013).

In 2005, the Texas Education Agency issued the first Algebra I EOC exam. From 2005 to 2010, the average scores for all students in Texas and the African-American students each increased (see Table 3). The overall Texas average increased from a score of 1087 to 1127, a 40-point increase. The African American score increased from 1018 to 1047, a 29-point increase. Between 2005 and 2010, on average, only about 35% African-American students pass the Algebra I EOC compared to 53.6% of all test takers.

There are two distinct achievement gaps. Students classified as African-American or economically disadvantaged perform lower than white students on the exam. The economically disadvantaged students achieved higher test score averages than the African-American students. These students on average pass the EOC exam at 41.8%. White students on average pass at 65.3%. The 5-year achievement gap average between white students and African-American students was 30.3 points.

Table 3

Texas Algebra I EOC Results by Ethnicity and Economic Status (2005-2010)

	2005		2006		2007		2008		2009		2010	
	Avg.	%	Avg.	%	Avg.	%	Avg.	%	Avg.	%	Avg.	%
All	1,087	49	1,093	50	1,108	53	1,117	56	1,133	57	1,127	57
White	1,133	61	1,159	64	1,145	61	1,163	66	1,183	69	1,189	71
AA	1,018	30	995	28	1,024	33	1,041	39	1,052	40	1,047	40
EOC	1,035	37	1,037	38	1,058	41	1,058	43	1,072	43	1,070	49

Conclusion

Reviewing historical and current literature concerning African-Americans in the U.S. provided background information for possible reasons for student achievement differences between African-Americans and the dominant American culture. When reviewing the historical data, most of the history regarding educational opportunities consists of legislation and conflicts over African-Americans having access, and equal access to educational opportunities like white students. The most recent equity and access case regarding education and ethnicity was *Fisher v. University of Texas at Austin* in 2013.

The theoretical framework covers ideas of how learning takes place as a rationale for possible deficiencies institutionalized in the African-American community. Learning occurs through observation (Bandura, 1971). African-American students receive poor examples of behavior modeled daily via music, music videos, television, movies, in communities, home, and in school. The communities in which African-Americans currently reside, and have lived historically, typically are deficient in resources and services. Families in these communities must manage chronic stress over providing basic needs and safety. In these typical households, children have very few imitation models that stimulate motivation towards education. How can African-American students overcome poor models and focus in math class? Purposive behaviorism and social learning theory stipulates the student will model the behavior observed when learning and acting become beneficial. When there is only stress and withdrawal in the home when difficult challenges arise, students will meet mathematical problem-solving with the same skills indirectly taught (Shields, 2006).

If students from urban school districts face poverty and issues related to poverty thereof, Maslow (1965) stated deficiencies in basic needs could prevent learning. Thus, the goal of the literature review was to create a body of literature to compare to the outcome of the study for further research possibilities. Can the African-American students receiving free or reduced lunch achieve at the academic success levels of other African-American students in the same urban Texas high school environment?

There has been a steady increase in the achievement of all student groups in academics. Mathematics is on a steady incline for all students. However, a gap remains between white students and African-American students (Weathersbee, 2012). The

federal government has committed billions of dollars to decreasing the achievement gap between minority and majority student groups. Gains made are not significant to prove a narrowing of the gap within the next 10 years.

Summary

Achievement in math continues to plague the African-American community (The Urgency Now, 2011). In the current quantitative, correlational study, the researcher analyzes if economic status influences Algebra I and graduation rate for African-American students in urban Texas high schools. If there is a significant statistical connection, the theoretical framework is the basic reference to possibly explain the failure of students to pass Algebra I and/or graduate in four years.

Chapter 3 includes the methodology used to conduct this study, the purpose of the study, research design, participants, setting, demographics, data collection, and data analysis. In Chapter 3, the researcher provides the basic operationalized process that may apply to future study reproduction.

CHAPTER 3: METHOD

The general problem was the low four-year high school graduation rates. The specific problem is low four-year high school graduation rates for African-American students at urban high schools in Texas (Lake & Powell, 2013). The purpose of the quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. The rationale used for choosing the research method and design, as well as the explanation for how the design accomplishes the goal, is in Chapter 3. A description of the participants, participant selection model, research instrument, procedures for data collection, and analysis is also in Chapter 3.

Research Method, Purpose, and Design

A quantitative research design was appropriate because the data set was numerical in value. The preferred study required completing a statistical analysis of the data in order to draw a conclusion. A comparison or association of one group of individuals to various variables, which constitutes a correlational design, was required to achieve the purpose of the study. The comparison may result in an evolving significant pattern about student achievement and graduation rates for African-American students. A qualitative approach, if surveying African-American students, could have given depth to what African-American students perceived was the reason for low graduation rates. This approach was subjective. The best approach for this study was a quantitative research design because it was objective and statistical. The quantitative design does not find causal relationships between variables, but only associations or trends.

Participants

Participants for this study were African-American high school students in urban districts located within three large metropolitan cities in the state of Texas with a population percentage of African-American residents totaling 12% or more. The definition of an urban city and urban high school was from the combination of definition from the National Center for Education Statistics (NCES) and the Broad Foundation. The NCES (2013) described three types of urban cities: large (250,000 people or more), mid-sized (100,000 to 250,000 people), and small (less than 100,000 people). The focus of the study was only on large metropolitan cities. According to the U.S. Census Bureau (2010), the location of the three selected metropolitan cities in Texas that meet the size and ethnic percentage requirements was North Texas. The Broad Foundation (2013) described an urban district based on location, poverty, size, and minority enrollment. A school district qualified as urban based on its location in a designated large urban populated city, had more than 42,500 students, 40% or more students eligible to receive free or reduced lunch, and 40% or more minority enrollment.

School districts within the selected cities had their high schools categorized in quartiles by their percentage of African-American students. High schools with higher concentrations of African-American students were of particular interest as the African-American population in the United States struggles relatively in achieving academic success to other races (Barton & Coley, 2010). An exploration of the relationship between ethnicity, graduation rate, and Algebra I was the focus of the research study. Gender, within ethnicity, was another variable for determining if a correlation existed between academic performance and four-year graduation. The final variable was socio-

economic status. The emphasis of this study was on determining if a relationship existed between the variables.

Setting or Organizational Profile

The geographical location of interest was the state of Texas. The three large metropolitan cities with more than 250,000 people and more than 12% of the population being African-American was the setting for the study. The Independent School Districts of focus were in these three metropolitan cities. All three of the school districts were in the northern region of Texas. The districts were A, B, and C. District A had 6 high schools available, District B had 11 high schools available, and District C had 18 high schools available for the study. There were 35 high schools eligible for study. The criterion for selection was an urban district in an urban city, with a traditional high school (Grades 9-12), and at least 12% of the ethnicity was African-American.

Population Demographics

The following data, from the U.S. Census Bureau (2010), expresses the three metropolitan city's total population and percentage of African-American residents: City A: 365,438/18.8%; City B: 741,206/18.9%; and City C: 1,197,816/25%. Within the listed metropolitan cities, the qualifying urban school districts were District A, District B, and District C. Districts met the selection criteria because the minority student population equaled 40% or more, Hispanic and African-American, and 40% or more of the student population were eligible to receive free or reduced lunch. Qualifying high schools had to have a traditional education model, serving students in Grades 9-12. High schools that were or had academies, magnets, and gender specific schools were not a part of the study. The primary ethnic group of study was African-American high school

students. The focus was to determine if economic status influenced Algebra I scores and the four-year graduation period. There was a focus on gender differences within the race and a comparison between African-American students to the entire student cohort group. Students in the study entered high school for the first time during the 2007 fall semester and took Algebra I in ninth grade for the first time. Information for this study is archived data. The participants were students who attended the selected schools in District A, B, and C during the fall semester of 2007 as first time ninth grade students and took Algebra I for the first time. The Texas Education Agency collected this data in 2008 and thus allowed for a convenient participant selection process.

Participant Selection Method

The 35 high schools met the geographical and demographical requirements. Only urban high schools in Texas qualified for the study. The Broad Foundation (2012) provides support in education reform with urban school districts all over the United States. The Broad Foundation evaluators use specifics to identify urban school district, such as percentage of minority student enrollment, education model, grade levels served, and student enrollment receiving free/reduced lunch. Three school districts met the criteria of an urban school district and the ethnic demographic criteria. After eliminating the traditional schools hosting small magnet programs, 35 high schools in three school districts met the final criterion for inclusion in the study. The total student participant population was 16,372, of which, 4,713 students qualified from six schools in District A. From the 11 schools in District B, 4,327 students qualified, and 7,332 students qualified from 18 schools from District C. The Texas Education Director, or AskTED, was the

database system that provided data about each school district and high school in Texas, and which schools in each school district had a regular school program classification.

Research Instruments

The Texas Education Agency collected the data needed from each campus through the annual data submission process using the Public Education Information Management System (PEIMS) database system. This database system “encompasses all data requested and received by TEA about public education, including student demographic and academic performance, personnel, financial, and organizational information” (Texas Education Agency, 2013a, para. 1). TEA provided online resources for free, downloadable access to data needed for the study. The download excluded identifying student data. Subsequently, the schools that participated in the study submitted their data relevant to the study in 2008. The data needed includes student ethnicity, Algebra I credit, year of graduation, gender, and economic status. TEA exported the data from their database as a Microsoft Excel CVS file via email for the researcher’s use in this study.

Procedures for Data Collection

The data necessary for the study was available through the Texas Education Agency (TEA) public domain website. The data request was very large, thus contact with TEA was necessary to gain access to the data in the period selected for this study. An open record request was necessary; the data requested was sent in a compatible field arrangement as an excel file. The data download excluded data that could identify a student.

After receiving permission from the UMHB Internal Review Board (see Appendix A), an information session with TEA was the next step. TEA requested an email notification of the data needed and the format and preferred method for export. The TEA website indicated a possible fee for large data research jobs. A fee was charged for the download and email delivery of the data. For each of the 35 high schools selected, the data requested of the 2007 first time ninth grade students was Algebra I credit, graduation year, gender, ethnicity, and economic status.

Procedures for Data Analysis

After receiving the data, the next step involved running a series of statistical tests on the data collected. The research application used to analyze data was SPSS, Version 21. SPSS software contains built-in mathematical expressions to conduct various tests such as comparative means, descriptive tests, independent t-tests, frequency, and descriptive statistics.

The research questions guided the study and steps for data analysis. Data collected for each question pertained to the pertinent ethnic and/or socio-economic group. The researcher disaggregated the data set by gender. The answers to the research questions resulted from the data analysis. The research questions and hypotheses were:

R1: What is the relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas?

H_{01} : There is no relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas.

R2: What is the difference between male and female Algebra I passing rates and graduation rates amongst students in urban high schools in Texas?

H₀₂: There is no difference between male and female Algebra I passing rates and graduation rates amongst students in urban high schools in Texas.

R3: What is the difference between Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas?

H₀₃: There is no difference between Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas.

R4: What is the difference between male and female Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas?

H₀₄: There is no difference between male and female Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas.

R5: What is the difference between Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas?

H₀₅: There is no difference between Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas.

R6: What is the difference between male and female Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas?

H₀₆: There is no difference between male and female Algebra I passing rates and graduation rates amongst economically disadvantaged students in urban high schools in Texas.

R7: What is the difference between African-American students and economically disadvantaged African-American students in regards to Algebra I passing and graduation rates in urban high schools in Texas?

H₀₇: There is no difference between African-American students and economically disadvantaged African-American students in regards to Algebra I passing graduation rates in urban high schools in Texas.

R8: What is the difference between male and female African-American students and economically disadvantaged African-American students in regards to Algebra I passing and graduation rates in urban high schools in Texas?

H₀₈: There is no difference between male and female African-American students and economically disadvantaged African-American students in regard to Algebra I passing graduation rates in urban high schools in Texas.

Descriptive statistic tests were the best for nominal data. A frequency test provided the number and percentage of occurrences for each variable. A cross tabulation test ran in SPSS provided numbers and percentages for the nominal data categories. The cross-tabulation analysis allowed presentation of the nominal categorical data through a table, with options to layer other nominal variables.

A chi-squared test of independence analysis was an appropriate test as the data was categorical. The chi-squared tests for the “independence of two categorical variables” (Stern, 2010, p. 213). Comparing male and female passing rates based on ethnicity was an example of the data produced in this study.

Correlation research described “the degree of association between two or more variables . . . it does not imply causation (cause and effect)” (Creswell, 2012, p. 356). The phi coefficient used was to determine degree and direction of association between the variables (Creswell, 2012). If the data from the phi coefficient causes the researcher to reject the hypothesis, then a relationship exists between the variables. Effect size

determines the significance of the conclusion, or relationship. The phi coefficient measures the effect of the relationship, or association, as small (.10), medium (.30), and large (.50). If the data results in failure to reject the hypothesis, a relationship does not exist.

Summary

The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. The data collected in this study was from three of the largest urban districts in the state of Texas, with more than 12% of its total population being African-American students. The results from this study may provide an opportunity to develop interventions to serve under-performing African-American student population.

Chapter 4 includes the visual representation and summarization of the research data. The statistical analysis results and interpretations follow. Charts and summaries in Chapter 4 report descriptive statistics, frequency distribution, and bivariate correlation test. Summation of the major findings include a description of the findings, answers to the research questions, responds to the hypotheses, and summarizes the major findings.

CHAPTER 4: ANALYSIS OF DATA

The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. Passing Algebra I and graduating within four years, or by 2011, were two types of the variables collected. Other data collected was ethnicity, gender, and economic status for each student. The Texas Education Agency (TEA) did not release the name of the school districts nor school campuses. Instead, districts and campuses within each district received an alphabet letter in ascending order to create a distinction.

This chapter includes a description of the student population used in the research. Statistically addressed are the research questions and the hypothesis for each research question. The information within Chapter 4 includes the participant demographics, the research questions, and an analysis of the findings.

Demographic Characteristics of Study Subjects

The study included 16,732 students from 35 high schools within three school districts. There are four main ethnic groups represented in this study: Hispanic, White, African-American, and other. The *other* student group is comprised of various ethnic groups that are not White, Hispanic, or African-American, and these students were clustered together to prevent identification of the students. As shown in Table 4, the majority of the students were Hispanic. Hispanic students represented 52.6%, African-Americans 27.2%, and Whites 15.8% of the population.

Table 4

Ethnicity of Total Student Population

Ethnicity	Number of Students	Percentage
White	2,580	15.8
Hispanic	8,610	52.6
African-American	4,447	27.2
Other	735	4.5
Total	16,372	100.0

The National School Lunch Program provides a reduced or free breakfast and lunch each school day for students who qualify based on family income. Based on Table 5, 44.5%, or 7,283 students, of the students in the study participated in the National School Lunch Program, or received free/reduced lunch. Of the total student population studied, 48.6% was female and 51.4% was male (see Table 6).

Table 5

Total Student Economical Status by Free/Reduced Lunch Program Enrollment

Variable	Number of Students	Percentage
Free/Reduced Lunch	7,283	44.5
No Free/Reduced Lunch	9,089	55.5
Total	16,372	100.0

Table 6

Total Student Population by Gender

Gender	Number of Students	Percentage
Male	8,416	51.4
Female	7,956	48.6
Total	16,372	100.0

As shown in Table 7, about 2.6% of the students from cohort 2011 graduated after 2011. Students that received a label of dropout totaled 30.7% of the students in the study. The graduating percentage of cohort 2011 students from District A, B, and C equaled 66.7%. The ranks of the districts with the highest graduation rate were: District B with 70.9%, District A with 69.3%, and District C with 62.4%. The passing rate for Algebra I in the study equaled 57.9% of the students as indicated in Table 8. District A had 51.8% of the students pass Algebra I, District B students who passed Algebra I was 59.1%, and District C students who passed Algebra I was 61.1%.

Table 7

Number of 2011 Cohort Graduates, Dropouts, and Continuers by District

Status	District			Total
	A	B	C	
Graduated	3,268	3,071	4,578	10,917
Dropout	1,328	1,196	2,505	5,029
Graduated After 2011	117	60	249	426
Total	4,713	4,327	7,332	16,372

Table 8

Number of 2011 Cohort Students Passed or Failed Algebra I by District

Algebra I	District			Total
	A	B	C	
Passed	2,443	2,560	4,484	9,487
Failed	2,270	1,767	2,848	6,885
Total	4,713	4,327	7,332	16,372

One of the qualifications for a district to qualify for eligibility, as listed in Chapter 3, was to serve 40% or more students receiving free/reduced lunch. Though each school district met the free/reduced lunch qualification, not all schools in District B met the percentage requirement, which resulted in selecting 11 schools (see Table 9). About 45% of the students in the three districts combined received free/reduced lunch. The total student population receiving free/reduced lunch was 14% White, 53% Hispanic, and 47% African-American. Table 9 shows the percentage of students that received free/reduced lunch by ethnicity in District A was: 14% White (209), 57% Hispanic (850), and 45% African-American (571). In District B, 5% (36) of the White students, 10% (244) of the Hispanic students, and 10% (120) of the African-American students received free/reduced lunch. The ethnic breakdown for free/reduced lunch in District C was: 29% White (124), 72% Hispanic (3,441), and 70% African-American (1,411).

Table 9

Total School District Student Population by Free/Reduced Lunch and Ethnicity

District	Free/Reduced Lunch				No Free/Reduced Lunch			
	White	Hispanic	African-American	Other	White	Hispanic	African-American	Other
A	209	850	571	165	1,288	646	700	284
B	36	244	120	11	621	2,137	1,039	119
C	124	3,441	1,411	101	302	1,292	606	55
Total	369	4,535	2,102	277	2,211	4,075	2,345	458

The student population in District A is included in Table 10 along with the number of students in each ethnic category and the free/reduced lunch status. There were six campuses in District A. The majority of the students receiving free/reduced lunch were Hispanic (56.8%) and African-American (44.9%). Fourteen percent of the white students in District A received free or reduced lunch. Campus F is the only campus with less than 40% of the Hispanic and African-American students receiving free/reduced lunch; this campus remained in the study. About 39% of the student population from District A received free/reduced lunch.

Table 10

District A: Campus Population Breakdown by Ethnicity and Economic Status

Campus	Free/Reduced Lunch	White		Hispanic		African American		Other	
		Count	%	Count	%	Count	%	Count	%
A	Yes	36	12.7	115	50.0	106	41.7	10	15.6
	No	247	87.3	115	50.0	148	58.3	54	84.4
B	Yes	20	18.0	67	48.2	83	42.3	32	43.8
	No	91	82.0	72	51.8	113	57.7	41	56.2
C	Yes	51	16.0	149	60.6	58	44.3	19	36.5
	No	267	84.0	97	39.4	73	55.7	33	63.5
D	Yes	30	21.9	122	55.5	150	42.7	62	53.4
	No	107	78.1	98	44.5	201	57.3	54	46.6
E	Yes	25	36.2	368	67.8	140	63.1	31	60.8
	No	44	63.8	175	32.2	82	36.9	20	39.2
F	Yes	47	8.1	29	24.6	34	29.1	11	11.8
	No	532	91.9	89	75.4	83	70.9	82	88.2
Total	Yes	209	14.0	850	56.8	571	44.9	165	36.7
	No	1,288	86.0	646	43.2	700	55.1	284	63.3

There are 11 campuses in District B. The schools in District B did not include a large number of students that receive free/reduced lunch (see Table 11). The percentage of Hispanic students receiving free/reduced lunch totaled 10.2%, and the percentage of African-American students receiving free/reduced lunch was 10.4%. About 9.4% of District B students received free/reduced lunch.

Table 11

District B: Campus Population Breakdown by Ethnicity and Economic Status

Campus	Free/Reduced Lunch	White		Hispanic		African American		Other	
		Count	%	Count	%	Count	%	Count	%
A	Yes	6	2.9	30	8.8	5	11.1	3	13.0
	No	201	97.1	312	91.2	40	88.9	20	87.0
B	Yes	1	33.3	3	12.5	20	9.0	0	0.0
	No	2	66.7	21	87.5	201	91.0	5	100.0
C	Yes	3	27.3	49	12.7	1	20.0	0	0.0
	No	8	72.7	337	87.3	4	80.0	2	100.0
D	Yes	3	2.6	10	8.8	16	10.6	0	0.0
	No	113	97.4	103	91.2	135	89.4	20	100.0
E	Yes	1	4.3	18	8.2	1	5.9	0	0.0
	No	22	95.7	202	91.8	16	94.1	15	100.0
F	Yes	0	0.0	8	2.2	9	9.5	0	0.0
	No	11	100.0	362	97.8	86	90.5	7	100.0
G	Yes	5	23.8	27	10.3	6	12.5	3	21.4
	No	16	76.2	235	89.7	42	87.5	11	78.6
H	Yes	3	20.0	35	17.9	12	14.5	1	14.3
	No	12	80.0	161	82.1	71	85.5	6	85.7
I	Yes	5	15.2	21	15.4	27	10.5	1	7.7
	No	28	84.8	115	84.6	230	89.5	12	92.3
J	Yes	5	41.7	21	13.0	14	9.5	2	33.3
	No	7	58.3	140	87.0	133	90.5	4	66.7
K	Yes	4	2.0	22	12.9	9	10.0	1	5.6
	No	201	98.0	149	87.1	81	90.0	17	94.4
Total	Yes	36	5.5	244	10.2	120	10.4	11	8.5
	No	621	94.5	2,137	89.8	1,039	89.6	119	91.5

Table 12 contains data for the 18 schools eligible for the study in District C.

Seventy percent of the African-American students in District C received free/reduced

lunch compared to 72% of Hispanic students. Less than 30% of the White students received free/reduced lunch.

Table 12

District C: Campus Population Breakdown by Ethnicity and Economic Status

Campus	Free/Reduced Lunch	White		Hispanic		African American		Other	
		Count	%	Count	%	Count	%	Count	%
A	Yes	2	28.6	49	71.0	193	66.1	1	100.0
	No	5	71.4	20	29.0	99	33.9	0	0.0
B	Yes	7	50.0	171	77.4	108	73.5	16	84.2
	No	7	50.0	50	22.6	39	26.5	3	15.8
C	Yes	1	100.0	64	80.0	106	75.7	3	60.0
	No	0	0.0	16	20.0	34	24.3	2	40.0
D	Yes	5	41.7	250	76.0	57	67.1	11	73.3
	No	7	58.3	79	24.0	28	32.9	4	26.7
E	Yes	1	50.0	24	66.7	107	72.3	0	0.0
	No	1	50.0	12	33.3	41	27.7	0	0.0
F	Yes	2	66.7	62	72.1	180	69.5	7	70.0
	No	1	33.3	24	27.9	79	30.5	3	30.0
G	Yes	12	29.3	244	68.5	68	68.0	23	79.3
	No	29	70.7	112	31.5	32	32.0	6	20.7
H	Yes	0	0.0	252	76.6	13	81.3	0	0.0
	No	2	100.0	77	23.4	3	18.8	2	100.0
I	Yes	1	50.0	144	70.6	129	75.0	1	100.0
	No	1	50.0	60	29.4	43	25.0	0	0.0
J	Yes	22	22.4	320	70.8	51	57.3	7	38.9
	No	76	77.6	132	29.2	38	42.7	11	61.1

(continues)

Campus	Free/Reduced Lunch	White		Hispanic		African American		Other	
		Count	%	Count	%	Count	%	Count	%
K	Yes	0	0.0	153	70.8	71	77.2	3	60.0
	No	0	0.0	63	29.2	21	22.8	2	40.0
L	Yes	7	11.7	171	60.4	29	59.2	6	50.0
	No	53	88.3	112	39.6	20	40.8	6	50.0
M	Yes	1	20.0	324	80.0	20	71.4	3	50.0
	No	4	80.0	81	20.0	8	28.6	3	50.0
N	Yes	4	36.4	437	71.6	6	50.0	7	100.0
	No	7	63.6	173	28.4	6	50.0	0	0.0
O	Yes	4	66.7	273	72.8	153	75.0	4	57.1
	No	2	33.3	102	27.2	51	25.0	3	42.9
P	Yes	5	71.4	262	77.5	13	76.5	2	40.0
	No	2	28.6	76	22.5	4	23.5	3	60.0
Q	Yes	33	39.8	126	73.7	48	76.2	5	100.0
	No	50	60.2	45	26.3	15	23.8	0	0.0
R	Yes	17	23.6	115	66.5	59	56.7	2	22.2
	No	55	76.4	58	33.5	45	43.3	7	77.8
Total	Yes	124	29.1	3,441	72.7	1,411	70.0	101	64.7
	No	302	70.9	1,292	27.3	606	30.0	55	35.3

Research Questions

This quantitative study addressed eight research questions. Research Question 1 was to determine if a relationship existed between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas. The null hypothesis statement was there is no relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas. The data analysis needed for this research question included the total number of students passing or failing Algebra I and the total number of students graduating or not graduating, whether they passed Algebra I or not.

Research Questions 2 through 6 related to the total data of Algebra I passing and graduation rates by ethnicity and economic status. To answer Research Questions 3 and 5, the researcher examined the same aspects of Research Questions 2, 4, and 6, but without the variable gender. The purpose of the questions focused around determining if differences existed when considering ethnicity or economic status and student success in Algebra I or graduation. To answer Research Questions 2, 4, and 6, the researcher examined the difference between male and female Algebra I passing rates and graduation rates. To answer Research Question 2, the researcher compared the data for all students. In order to answer Research Question 4, the researcher disaggregated the male and female data by ethnicity. Research Question 6 added another dimension to Research Question 4, economically disadvantage status, or students receiving free/reduced lunch. The investigator analyzed the data to determine if gender differences existed within the study. The null hypothesis was there would be no difference for gender, ethnicity, and economic status when determining the difference between Algebra I passing rates and graduation rates.

To answer Research Questions 7 and 8, the researcher examined the difference between African-American students and economically disadvantaged African-American students. Both research questions required the researcher to analyze the same data set, but Research Question 8 also included separated results by male and female. The null hypothesis was there is no difference between African-American students and economically disadvantaged African-American students.

Findings

The analysis of the data to answer the eight research questions included a chi-square test of independence and a phi coefficient when appropriate. Using a chi-square analysis enabled the researcher to compare the Algebra I passing rates and graduation rates against gender, ethnicity, and economic status. The phi coefficient tested the results from the chi square for association, or relationship. The method to present the data results of the research question included tables and charts. Graduation data received from the Texas Education Agency represented three categories: graduated, dropped out, and graduated after 2011. The latter two categories were used together to calculate a cohort graduation and dropout rate. The data analyzer will reject or fail to reject the null hypothesis for each research question.

Research Question 1

A cross-tabulation analysis, which included Algebra I passing rates by graduation rates, was the best statistical approach to answer Research Question 1: What is the relationship between Algebra I passing rates and graduation rates amongst students in urban high schools? For all three school districts, 58% of the total student population passed Algebra I and 67% of the total student population graduated within four years. Table 13 shows the students who passed Algebra I in ninth grade, 65.8% (7,190) also graduated within four years. However, 54% (3,727) of the students that failed Algebra I in the ninth grade still graduated by 2011. For the students who did not graduate by 2011, 58% (3,158) of the students had failed Algebra I, and 24% (2,297) had passed Algebra I (see Figure 7).

Table 13

Cross-tabulation of Students Graduated and Passed Algebra I

Algebra I	Graduated	Dropped Out	Total
Pass	7,190	2,297	9,487
Fail	3,727	3,158	6,885
Total	10,917	5,455	16,372

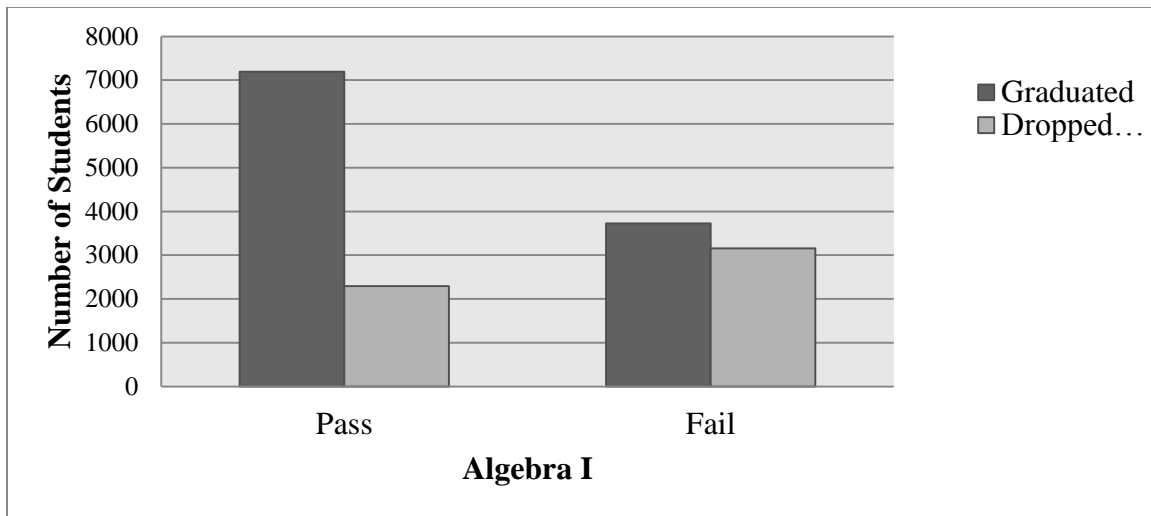


Figure 7. Number of students graduated/dropped out by pass/fail Algebra I

The chi-square test of independence indicated statistical significance that graduating from high school within four years definitely depended on passing Algebra I, $\chi^2(1, N = 16,372) = 842.137, p < .01, \phi = .277$ (see Table 14). The phi coefficient test suggests passing Algebra I in the ninth grade creates a near medium effect on graduation (see Table 15).

Table 14

Chi-Square Tests for Cross-tabulation of Students Graduated and Passed Algebra I

Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	842.137 ^a	1	.000
N of Valid Cases	16,372		

Table 15

Phi Coefficient for Chi-Square Test: Cross-tabulation of Students Graduated and Passed Algebra I

Test	Value	Approx. Sig.
Phi	0.277	.000
N of Valid Cases	16,372	

The results of this data lead to the rejection of the null hypothesis, which states there is no relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas. Students who pass Algebra I in the ninth grade have more of a chance to graduate within four years.

Research Question 2

A statistical analysis using a layered cross-tabulation answered Research Question 2: What is the difference between male and female Algebra I passing rates and graduation rates amongst students in urban high schools in Texas? A layer cross-tabulation measures a variable against other variables in the cross-tabulation. The variable in the layered cross-tabulation was gender. Table 16 illustrates the difference between male and female students regarding Algebra I passing rates. It also shows the differences between male and female students in regards to graduation. Indicated in Table 16 are the

numbers who participated in the study, 8,416 (51.4%) males, and 7,956 (48.6%) females. Fifty-six percent (4,712) of the males passed Algebra I in ninth grade, and 64% (5,374) of the males graduated in four years compared to 60% (4,775) of the females who passed Algebra I, and 70% (5,543) who graduated in four years. Seventy-four percent (3,513) of the males that passed Algebra I in the ninth grade also graduated in four years while 77% (3,677) of the females that passed Algebra I graduated. The chi-square test for independence indicated that passing Algebra I as a male was significantly related to graduating from high school within four years, $\chi^2(1, N = 8,416) = 531.06, p < .01, \phi = .251$. The phi coefficient test suggests passing Algebra I as a male has a less than medium effect on graduation. The findings indicate the need to reject the null hypothesis, which states there is no relationship between Algebra I passing rates and graduation rates amongst males students in urban high schools in Texas. The chi-square test for independence indicated that passing Algebra I as a female was significantly related to graduating from high school within four years, $\chi^2(1, N = 7,956) = 304.04, p < .01, \phi = .195$. The phi coefficient test suggests passing Algebra I as a female has a less than a medium effect on graduation. Indications from the findings resulted in failure to reject the null hypothesis, which stated there was no difference between Algebra I passing rates and graduation rates amongst male and female students in urban high schools in Texas. For males, a significant relationship exists between passing Algebra I and graduating in four years. Two out of three male students who passed Algebra I in the ninth grade graduated within four years compared to male students that failed Algebra I in the ninth grade and graduated one out of three within four years. Female students, which have 460

fewer students in the study than the males, exceeded their male counterparts in four-year graduation rate and passing Algebra I in ninth grade.

Table 16

Cross-tabulation of Graduation, Algebra I, and Gender

Gender		Algebra I		Total
		Pass	Fail	
Male	Graduate	3,513	1,861	5,374
	Dropout	1,199	1,843	3,042
	Total	4,712	3,704	8,416
Female	Graduate	3,677	1,866	5,543
	Dropout	1,098	1,315	2,413
	Total	4,775	3,181	7,956

Research Question 3

To answer Research Question 3, the researcher examined ethnicity against Algebra I passing rates and graduation rates. Table 17 is a layered cross-tabulation of Algebra I, graduation, and ethnicity. The study, by ethnicity, included 2,580 White students, 8,610 Hispanic students, 4,447 African-American students, and 735 students from other ethnicities. Fifty-eight percent of the total student population passed Algebra I and 67% of the total population graduated within four years. Forty-four percent of the total student population passed Algebra I in the ninth grade and graduated. Seventy-five percent of the White students graduated, 47% passed Algebra I, and 38% passed Algebra I and graduated. Sixty-four percent of Hispanic students graduated, 62% passed Algebra I, and 45% passed Algebra I graduated. Sixty-five percent of the African-American

students graduated, 59% passed Algebra I, and 46% passed Algebra I and graduated. Sixteen percent of white students failed Algebra I and did not finish high school in four years compared to 20% of Hispanic students and 22% of African-American students. A major difference existed within the data for White and *Other* ethnicities when reviewing students who failed Algebra I and graduated. Forty-nine percent of white students and 52% of the “Other” students graduated by 2011 but failed Algebra I. On the contrary, only 29% of Hispanic and 30% of African-American students failed and graduated.

The chi-square test for independence computed a p -value lower than the alpha level .05 for each group. For white students, ethnicity resulted in a small effect on passing Algebra I and their graduation rate, $\chi^2(1, N = 2,580) = 46.76, p < .01, \phi = .135$. For Hispanic students, ethnicity results in less than a medium effect on passing Algebra I and their graduation rate, $\chi^2(1, N = 8,610) = 527.36, p < .01, \phi = .247$. The effect of ethnicity on passing Algebra I and graduation rate for African-Americans resulted in a medium effect, $\chi^2(1, N = 4,447) = 434.36, p < .01, \phi = .313$. The results indicate a necessity to reject the null hypothesis that there is no difference between Algebra I passing rates and graduation rates for students with ethnicity differences. Table 17 shows White and *Other* students do not pass Algebra I and graduate at a proportionally significant level as Hispanic and African-American students (see Figure 8).

Table 17

Cross-tabulation of Graduation, Algebra I, and Ethnicity

Ethnicity		Algebra I		Total
		Pass	Fail	
White	Graduate	986	950	1,936
	Dropout	228	416	644
	Total	1,214	1,366	2,580
Hispanic	Graduate	3,904	1,626	5,530
	Dropout	1,404	1,679	3,080
	Total	5,305	3,305	8,610
African-American	Graduate	2,028	857	2,885
	Dropout	595	967	1,562
	Total	2,623	1,824	4,447
Other	Graduate	272	294	566
	Dropout	73	96	169
	Total	345	390	735
Total	Graduate	7,190	3,727	10,917
	Dropout	2,297	3,158	5,455
	Total	9,487	6,885	16,372

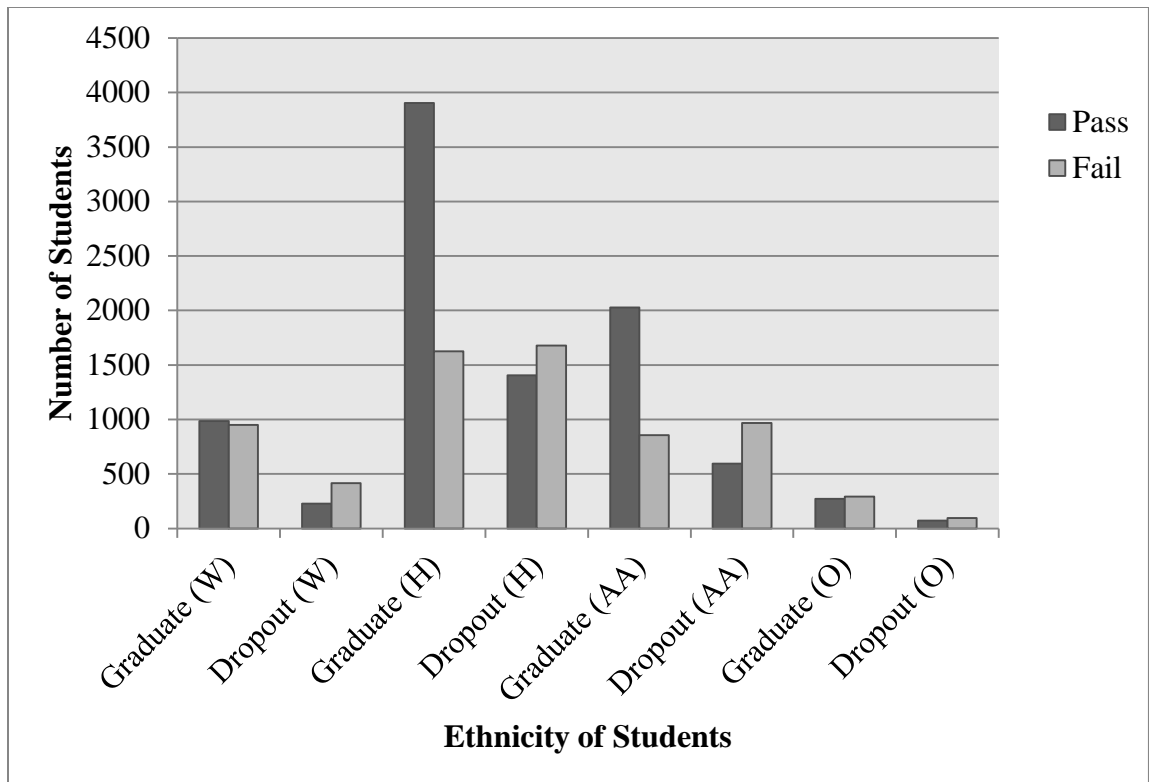


Figure 8. Number of students per ethnic group that graduated or dropped out and passed or failed Algebra I

Note. (W) = White; (H) = Hispanic; (AA) = African-American; (O) = Other

When disaggregating the data by ethnicity, passing Algebra I increased the probability of graduating within four years for Hispanic and African-American students. However, there was no significant difference for white and *other* students.

Research Question 4

Research Question 4 includes ethnicity and gender, demographic variables. The data in Table 18 result from using a cross-tabulation table layering gender and ethnicity. Fifty percent of white males that graduate within four years also passed Algebra I in the ninth grade, compared to 70% for Hispanic males, and 70% for African-American males. Fifty-two percent of white females that graduated within four years also passed Algebra I in the ninth grade, compared to 70% for Hispanic females, and 70% for African-

American females. Seventy-one percent of White males that failed Algebra I did not finish high school in four years, compared to 56% for Hispanic males, and 65% for African-American males. Fifty-six percent of white females that failed Algebra I did not finish high school in four years, compared to 52% for Hispanic females, and 58% for African-American females. The chi-square test for independence computed for each gender group in each ethnic group. Each ethnic group registered a p -value lower than the alpha level .05. The effect on passing Algebra I and their graduation rate for white male students equaled a small effect, $\chi^2(1, N = 1,317) = 48.04, p < .01, \phi = .185$. The effect on passing Algebra I and their graduation rate for white female students equaled a less than small effect on, $\chi^2(1, N = 1,263) = 6.09, p < .02, \phi = .069$. The effect on passing Algebra I and their graduation rate for Hispanic male students equaled a less than medium effect on, $\chi^2(1, N = 4,414) = 300.77, p < .01, \phi = .261$. The effect on passing Algebra I and their graduation rate for Hispanic female students equaled a less than medium effect on, $\chi^2(1, N = 4,196) = 219.99, p < .01, \phi = .229$. The effect on passing Algebra I and their graduation rate for African-American male students equaled a more than medium effect, $\chi^2(1, N = 2,336) = 274.49, p < .01, \phi = .343$. The effect on passing Algebra I and their graduation rate for African-American female students equaled a less than medium effect on, $\chi^2(1, N = 2,111) = 157.77, p < .01, \phi = .273$. The data resulted in the rejection of the null hypothesis, there is no difference between male and female Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas.

Table 18

Cross-tabulation of Graduation, Algebra I, Ethnicity, and Gender

Ethnicity (Gender)		Algebra I		Total
		Pass	Fail	
White (M)	Graduate	471	475	946
	Dropout	109	262	371
	Total	580	737	1,317
Hispanic (M)	Graduate	1,897	815	2,712
	Dropout	743	959	1,702
	Total	2,640	1,774	4,414
African-American (M)	Graduate	1,019	433	1,452
	Dropout	311	573	884
	Total	1,330	1,006	2,336
White (F)	Graduate	515	475	990
	Dropout	119	154	273
	Total	634	629	1,263
Hispanic (F)	Graduate	2,007	811	2,818
	Dropout	658	720	1,378
	Total	2,665	1,531	4,196
African-American (F)	Graduate	1,009	424	1,433
	Dropout	284	394	678
	Total	1,293	818	2,111

Note. M = Male, F = Female

Passing Algebra I in the ninth grade significantly increases the probability for a four-year graduation for Hispanic and African-American students. However, Hispanic and African-American female students had more students pass Algebra I and graduate within four years compared to Hispanic and African-American male students. There is no significant difference between white male and female students.

Research Question 5

The data collected for Research Question 5 relates to the influence of economic status on graduation or Algebra I passing rates (see Table 19). Forty-four percent of the student population received free/reduced lunch. Approximately 66% of the students receiving free/reduced lunch graduated within four years and 62% passed Algebra I in the ninth grade. Sixty-seven percent of students not receiving free/reduced lunch graduated within four years and 55% passed Algebra I in the ninth grade. Eighteen percent of the students receiving free/reduced lunch failed Algebra I and did not finish high school within four years. Twenty percent of the students that did not receive free/reduced lunch failed Algebra I and did not finish high school within four years. The chi square test for independence produced a $p < .05$, $\chi^2(1, N = 7,283) = 414.66$, $p < .01$, $\phi = .239$. Adding the variable free/reduced lunch created a less than medium effect on passing Algebra I and graduating in four years. The null hypothesis, there is no relationship between Algebra I and graduation when dissecting by economically disadvantage, must be rejected. Table 19 shows though there are more students who do not receive free/reduced lunch, students that received free/reduced lunch have a higher percentage of students pass Algebra I and graduate within four years; 70% compared to 63%. Passing Algebra I in

the ninth grade is significant for a higher probability to graduate within four years for students receiving free/reduced lunch and for students not receiving free/reduced lunch.

Table 19

Cross-tabulation of Graduation, Algebra I, and Free/Reduced Lunch

Free/Reduced Lunch		Algebra I		Total
		Pass	Fail	
Yes	Graduate	3,378	1,447	4,825
	Dropout	1,118	1,340	2,458
	Total	4,496	2,787	7,283
No	Graduate	3,812	2,280	6,092
	Dropout	1,179	1,818	2,997
	Total	4,991	4,098	9,089
Total	Graduate	7,190	3,727	10,917
	Dropout	2,297	3,158	5,455
	Total	9,487	6,885	16,372

Research Question 6

Research Question 6 includes economic status and gender as variables. In Table 20, 56% of the male students and 56% of the female students do not receive free/reduced lunch. Forty-five percent of all the male students receiving free/reduced lunch passed Algebra I and graduated within four years, while 21% of the same male student population failed Algebra I and did finish high school within four years. Thirty-nine percent of males not receiving free/reduced lunch graduated and passed Algebra I compared to the 23% of the same male student population that failed Algebra I in the

ninth grade and did not finish high school within four years. Forty-eight percent of the female students that received free/reduced lunch graduated and passed Algebra I. Sixteen percent of female students receiving free/reduced lunch failed Algebra I and did not finish high school within four years. Forty-five percent of female students not receiving free/reduced lunch graduated and pass Algebra I. Seventeen percent of the females not receiving free/reduced lunch failed Algebra I and did not graduate from high school within four years. A cross-tabulation descriptive statistic resulted in all variable p -values less than alpha at .05. The chi square test of independence for male free/reduced lunch equaled, $\chi^2 (1, N = 3,708) = 288.20, p < .01, \phi = .279$. The male free/reduced lunch variable created a near medium effect. The chi square test of independence for male non-free/reduced lunch equaled, $\chi^2 (1, N = 4,708) = 253.42, p < .01, \phi = .232$. The male non-free/reduced lunch variable created a less than medium effect. The chi square test of independence for female free/reduced lunch equaled, $\chi^2 (1, N = 3,575) = 131.2, p < .01, \phi = .192$. The female free/reduced lunch variable created a more than small effect. The chi square test of independence for female non-free/reduced lunch equaled, $\chi^2 (1, N = 4,381) = 172.26, p < .01, \phi = .201$. The female non-free/reduced lunch variable created a less than medium effect. The data results in the rejection of the null hypothesis, which stated there is no relationship between Algebra I and graduation when dissecting by economically disadvantage and gender. When considering economic status, passing Algebra I increased the probability of a four-year graduation more for students receiving free/reduced lunch than for students not receiving free/reduced lunch.

Table 20

Cross-tabulation of Graduation, Algebra I, Free/Reduced Lunch, and Gender

Free/Reduced Lunch (Gender)		Algebra I		Total
		Pass	Fail	
Yes (M)	Graduate	1,660	694	2,354
	Dropout	571	783	1,354
	Total	2,231	1,477	3,708
No (M)	Graduate	1,853	1,167	3,020
	Dropout	628	1,060	1,688
	Total	2,481	2,227	4,708
Yes (F)	Graduate	1,718	753	2,471
	Dropout	547	557	1,104
	Total	2,265	1,310	3,575
No (F)	Graduate	1,959	1,113	3,072
	Dropout	551	758	1,309
	Total	2,510	1,871	4,381

Note. M = Male, F = Female

Research Question 7

To answer Research Question 7, the researcher examined the relationship between African-American students in regards to economic status by analyzing the effect on Algebra I passing rates and graduation rates. As shown in Table 21, 59% of the African-American students passed Algebra I in the ninth grade regardless of financial status compared to 61% of the African-American students receiving free/reduced lunch. Forty-eight percent of the African-American students received free/reduced lunch. Of that

population, 48% passed Algebra I in the ninth grade and graduated by 2011 and 20% failed Algebra I in the ninth grade and did not graduate by 2011. Forty-four percent of the student that did not receive free/reduced lunch passed Algebra I and graduated by 2011 and 23% failed Algebra I and did not graduate by 2011.

Table 21

Cross-tabulation of Graduation, Algebra I, and Free/Reduced Lunch for African-American Students

Free/Reduced Lunch		Algebra I		Total
		Pass	Fail	
Yes	Graduate	1,000	400	1,400
	Dropout	280	422	702
	Total	1,280	822	2,102
No	Graduate	1,028	457	1,485
	Dropout	315	545	860
	Total	1,343	1,002	2,345
Total	Graduate	2,028	857	2,885
	Dropout	595	967	1,562
	Total	2,623	1,824	4,447

The chi-square test of independence outcome, $\chi^2(1, N = 2,102) = 195.35, p < .01$, $\phi = .305$, produced a more than medium effect when applying the free/reduced lunch variable to African-American students (see Table 22). The findings indicate the need to reject the null hypothesis which states there is no relationship between African-American students and economically disadvantaged African-American students in regards to Algebra I passing rates and graduation rates in urban high schools in Texas. Passing

Algebra I in the ninth grade significantly increased the four-year graduate rate for students receiving free/reduced lunch. Students receiving free/reduced lunch pass Algebra I in the ninth grade and graduate within four years is slightly higher when comparing to the total African-American student population. The phi coefficient test suggests passing Algebra I in the ninth grade creates a more than medium effect on graduation (see Table 23).

Table 22

Chi-Square Test for Cross-tabulation of Graduation, Algebra I, and Economically Disadvantaged for African-American Students

Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square (FR)	195.348	1	.000
N of Valid Cases	2,102		
Pearson Chi-Square (NFR)	236.482	1	.000
N of Valid Cases	2,345		

Note. FR = Free/reduced lunch; NFR = No Free/reduced lunch

Table 23

Phi Coefficient for Chi-Square Test: Cross-tabulation of Graduation, Algebra I, and Economically Disadvantaged for African-American Students

Test	Value	Approx. Sig.
Phi (FR)	.305	.000
N of Valid Cases	2,102	
Phi (NFR)	.318	.000
N of Valid Cases	2,345	

Note. FR = Free/reduced lunch; NFR = No Free/reduced lunch.

Research Question 8

Research Question 8 included ethnicity and gender as variables in the layered cross-tabulation between passing Algebra I in the ninth grade and graduation within four years. There were 1,092 African-American males and 1,010 African-American females that received free/reduced lunch, which totaled at 47% of the African-American student population in the study. Sixty-three percent of all males and 69% of all females in the study receiving free/reduced lunch graduated in four years. Sixty-four percent of the African-American males and 69% of the African-American females that received free/reduced lunch graduated compared to 60% of the males and 67% of the females that did not receive free/reduced lunch. Out of all the students receiving free/reduced lunch, 23% of the males and 17% of the females failed Algebra I and dropped out. In Table 24, for students not receiving free/reduced lunch, 19% of the males and 20% of the females failed Algebra I and dropped out. The chi-squared test of independence resulted in a medium effect for the variable Algebra I on graduation for African-American males receiving free/reduced lunch, $\chi^2(1, N = 1,092) = 139.08, p < .01, \phi = .357$. The chi-squared test of independence resulted in a medium effect for the variable Algebra I passing rate on graduation rates for African-American males not receiving free/reduced lunch, $\chi^2(1, N = 1244) = 134.44, p < .01, \phi = .329$. The chi-squared test of independence resulted in a less than medium effect for the variable Algebra I on graduation for African-American females receiving free/reduced lunch, $\chi^2(1, N = 1010) = 59.53, p < .01, \phi = .243$. The chi-squared test of independence resulted in a medium effect for the variable Algebra I on graduation for African-American females not receiving free/reduced lunch, $\chi^2(1, N = 1101) = 98.80, p < .01, \phi = .300$. The relationship between Algebra I and

graduation remains as indicated in Research Question 1. There is a difference between gender and economic status when observing the relationship between Algebra I and graduation for African-American students so the researcher rejected the null hypothesis. Students with a low socio-economic status are more likely to graduate within four years if they passed Algebra in ninth grade.

Table 24

Cross-tabulation of Graduation, Algebra I, Gender, and Free/Reduced Lunch for African-American Students

Free/Reduced Lunch (Gender)		Algebra I		Total
		Pass	Fail	
Yes (M)	Graduate	507	196	703
	Dropout	138	251	389
	Total	645	447	1,092
No (M)	Graduate	512	237	749
	Dropout	173	237	749
	Total	685	559	1,244
Yes (F)	Graduate	493	204	697
	Dropout	142	171	313
	Total	635	375	1,010
No (F)	Graduate	516	220	736
	Dropout	142	223	365
	Total	658	443	1,101

Note. M = Male, F = Female

Summary

The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. Texas Education Agency provided the nominal data used in the study. The data represented the cohort 2011 and included ethnicity, gender, graduation by 2011, 2007 pass/fail status for Algebra I, and economical status. The economic status category indicated if a student received free/reduced lunch. The study included eight research questions used to determine the relationship between Algebra I and graduation, and if economic status, gender, and ethnicity influenced the results.

It was determined a significant relationship exists between passing Algebra I and graduating. The data results showed passing Algebra I in the ninth grade increased student probability for graduating within four years. When disaggregating the data by ethnicity, gender, and economic status, the effect size determined by the phi coefficient was small to medium. For each of the eight research hypothesis the chi-square test resulted in a p -value less than alpha .05, which resulted in rejection of the null hypothesis in all eight questions.

In Chapter 5, the researcher's summary of the study connects the results with the literature review included in Chapter 2. Chapter 5 also contains recommendations, implications, and ideas for future research. In closing Chapter 5, the researcher includes a summary and conclusions about the study.

CHAPTER 5: RECOMMENDATIONS AND IMPLICATIONS

Commissioner Williams of the Texas Education Agency, in 2014, reduced the number of state mandated tests for high school students in Texas to graduate. In particular, the only mandated test in high school for mathematics is Algebra I. Students must still successfully master 70% or more of the Texas Essential Knowledge and Skills by passing three or more math classes, but Algebra I is the official graduation gatekeeper.

African-American students in Texas and in the United States have consistently performed lower than other students in math. In March 2014, Haag wrote how the Texas Education Agency used ACT and SAT scores to determine college readiness. Haag (2014) reported, based on data from Dallas ISD that academic achievement decreased as the percentage of students enrolled receiving free/reduced lunch increased. He concluded that a correlation existed between economic status and student achievement (Haag, 2014). The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas.

The next section consists of a summary of the findings in the study. The summary includes an analysis of the results from the eight research questions. Recommendations, based on the summary, follow in order to provide possible action steps for practitioners. The inclusion of future research ideas provides researchers with possible topics and direction to add to the body of research and support practitioners with sound solutions designed to reduce the achievement gap. Chapter 5 also includes a summary and conclusion based on the hypotheses and researchers professional stance.

Summary of the Study

African-American students continue to achieve less than any other ethnic sub-population in reference to state and federal achievement in mathematics. When reviewing data from NAEP, ACT, and the Texas Education Agency, no difference existed when identifying the lowest ethnic group (DeVries, 2011; NCES, 2013; Sanchez, 2013). In 2010, 60% of the African-American students did not pass the Texas EOC Algebra I examination compared to 29% of white students, and 53% of Hispanic students that did not pass. In 2013, 68% of the African-American students met the mathematics phase-in standard for the state mandated exams, compared to 81% for white students, and 72% for Hispanic students. The state average equaled 79%.

In Figure 9, graduation rates increased for each ethnic group, however, African-American students still graduated with the lowest rate. Students labeled as economically disadvantaged, or receiving free/reduced lunch graduated with a higher rate than African-American students. The problem is the low graduation rates for African-American students.

This quantitative study contained data collected from the Texas Education Agency. The investigator made an open records request for the data regarding the population of interest. The data categories included generic labels for the three school districts and their corresponding high schools, 35 total schools. Each row in the data represented a student. The data collected per student included ethnicity, gender, indication of passing or failing Algebra I in the ninth grade, and if the student graduated with cohort 2011 in four years, after cohort 2011, or did not graduate.

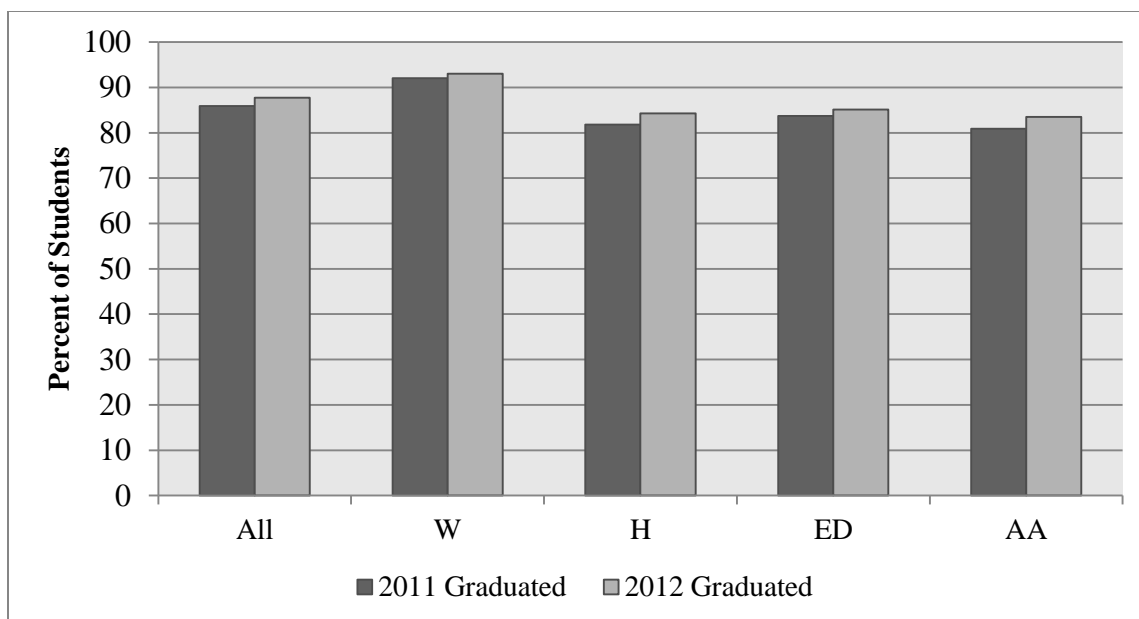


Figure 9. Percentage of students graduated in Texas in 2011 and 2012 by ethnicity

Data compiled from the Texas Education Agency Division of Performance Reporting 2013 State Accountability Summary Report. *Note:* All – All students; W – White students; H – Hispanic students; ED – economically disadvantaged students (students receiving free/reduced lunch); AA – African-American students

The study included three large urban school districts in the North Texas. The 16,732 high school participants attended 35 traditional high schools from within the three large urban school districts. Each district resided in a large city with over 250,000 residents with 12% or more of the population African-American. Each district served 40% or more minority students, Hispanic and African-American, and 40% or more students receiving free/reduced lunch. The data collected was to answer the eight research questions:

R1: What is the relationship between Algebra I passing rates and graduation rates amongst students in urban high schools in Texas?

R2: What is the difference between male and female Algebra I passing rates and graduation rates amongst students in urban high schools in Texas?

R3: What is the difference between Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas?

R4: What is the difference between male and female Algebra I passing rates and graduation rates for students with different ethnicities in urban high schools in Texas?

R5: What is the difference between Algebra I passing rates and graduation rates amongst Economically Disadvantaged students in urban high schools in Texas?

R6: What is the difference between male and female Algebra I passing rates and graduation rates amongst Economically Disadvantaged students in urban high schools in Texas?

R7: What is the difference between African-American students and Economically Disadvantaged African-American students in regards to Algebra I passing and graduation rates in urban high schools in Texas?

R8: What is the difference between male and female African-American students and Economically Disadvantaged African-American students in regards to Algebra I passing and graduation rates in urban high schools in Texas?

In answering Research Question 1, the researcher discovered a significant relationship between passing Algebra I and graduating on time. Two out of three graduates passed Algebra I. Previous research by Orihuela (2006) indicated one out of four students that do not pass Algebra I, graduate. Results from the study concluded three-fourths of the students that pass Algebra I graduated.

To answer Research Questions 2 through 6, the researcher determined differences between Algebra I passing rates and graduation rates by variables such as gender, ethnicity, and economic status. The cross-tabulation for gender showed a small effect on

the relationship between Algebra I passing rates and graduation rates. Female students, though a smaller population, achieved higher passing percentages of Algebra I and higher graduation percentages. The results indicated female gender had less than a medium effect on passing Algebra I and graduating. However, male gender had a new medium effect on passing Algebra I and meeting cohort graduation.

The cross-tabulation for Research Question 3 and 4 included gender and ethnicity. The African-American ethnic designation resulted in a medium effect on the graduation and passing Algebra I rate. African-American students passed Algebra I at 59% compared to the entire student group at 65.8%. After adding gender and ethnicity in the cross-tabulation, 56.9% of male African-American students passed Algebra I compared to 61.2% of female African-American students. African-American male students drop out 4% more than African-American female students. In contrast, passing Algebra I for African-American males and females increased graduation probability, as 70% of the African-American males and females that graduated passed Algebra I. When measuring the effect of gender and ethnicity together, designation as male and African-American resulted in an above medium effect on passing Algebra I and graduating by 2011; designation of female and African-American resulted in a near medium effect on passing Algebra I and meeting cohort graduation.

To answer Research Questions 5 and 6, the researcher used economic status and gender to determine if an impact existed on the relationship between Algebra I passing rates and graduation rates. Graduation percentage was 70% for students receiving free/reduced lunch that pass Algebra I. Sixty-three percent of the students not receiving free/reduced lunch graduated and passed Algebra I. However, the dramatic ethnic and

economic differences between District B and District A and C, as displayed in Table 12-14, can explain the differences. Free/reduced lunch created a less than medium effect on passing Algebra I and meeting cohort graduation.

To answer Research Questions 7 and 8, the researcher compared African American students and economically disadvantaged African-American students by their Algebra I passing rate and graduation rate. African-American students receiving free/reduced lunch graduated 67% of that population compared to 63% of the African-American student population not receiving free/reduced lunch. The data analysis for economic status proved a medium effect on passing Algebra I and meeting cohort graduation. After adding gender, the cross-tabulation resulted in a medium effect for ethnicity, gender, and economic status. African-American female students performed better than male students in Algebra I regardless of economic status. The data concerning free/reduced lunch versus non-free/reduced lunch may have disparities because of low average percentage of free/reduced lunch students in District B.

The literature review suggested historical, economical, and psychological reasons for disparities in student achievement between ethnic groups. The historical context of African-Americans in the United States provided an overview of the harsh living and learning environment, over time that African-Americans lived within. Maslow's hierarchy of needs concluded deprivation of needs and opportunities diminishes self-efficacy (Cherry, 2011). Social learning theory confirmed environment, thoughts, and behavior interact interchangeably, or with reciprocal determinism. Thus, the behavior of poor student achievement remains the result of a poor living and learning environment/community coupled with low self-perception, or efficacy.

Recommendations

House Bill 5, in 2013, was a step toward education reform in the state of Texas. One of the major elements within the bill reduced standardized testing in high school from 15 EOC examinations to five. House Bill 5 designated Algebra I EOC exam as the math requirement for graduation. The new minimal graduation plan required Algebra I and two other math courses, with Algebra I as the prerequisite. The recommendations in this section resulted from the analysis of the data from this study and the graduation requirements in Texas. The targeted population for the recommendations equals urban high schools with 40% or more minority students, Hispanic and African-American, and free/reduced lunch student population.

Research Question 1 asked if a relationship existed between passing Algebra I and meeting cohort graduation. Research Questions 5 layered Research Question 1 with economic status and Research Question 7 determined the difference between African-American students receiving free/reduced lunch and not receiving free/reduced lunch. The researcher's analysis of the data concluded passing Algebra I for students at urban high schools in Texas increased cohort graduation percentages, even when considering ethnicity and economically disadvantaged students, or students receiving free/reduced lunch. School districts must reconsider the scope and sequence of math courses and content prior to high school. It is necessary to consider implementing Pre-Algebra within the middle school and work towards increasing Algebra I enrollment in the middle school for capable students (Ma & Wilkins, 2007). Offer summer transition programs or math camps between grades levels to ensure students with learning challenges or skill deficiency in math receive time to recover. A ninth grade academy is another approach.

An academy allows for a smoother transition by reducing anxiety and increasing academic instructional methodology to support the concentrated group of students (Pokorski, 2011).

In regards to gender differences between passing Algebra I rates and cohort graduation rates, the data analysis for Research Questions 2, 4, 6, and 8 indicate a need for gender specific interventions for male students across all variables. The data from the study illustrated female students, though less in population, passed Algebra I at a higher percentage than their male counter parts. School leaders serving struggling male populations should consider gender specific courses in math. Vrooman (2009) concluded “that students taught in a single-gender setting achieve a significant difference in mathematical scores” (p. 89).

The relationship between passing Algebra I and graduation remained constant when layering the cross-tabulation with ethnicity, based on Research Question 3. The phi coefficient resulted in a less than medium effect for Hispanic students and a medium effect for African-American students on passing Algebra I rates and graduation. For Hispanic and African-American students, the probability of graduation increases more when passing Algebra I. Consideration, create targeted interventions for Hispanic and African-American students to increase achievement in mathematics. Contemplate hiring teachers that understand cultural dynamics and gender differences as it relates to learning (Karp, 2009). Reflect on the possibility of a classroom setting or instruction approach that caters to the struggling ethnic population’s cultural and learning needs. Specifically, professional development for teachers covering academic and relational interventions for gender differences and ethnic cultures can increase student engagement and achievement.

Future Research

The purpose of this quantitative, correlational study was to determine if gender, ethnicity, and/or economic status influences Algebra I passing rates for ninth grade students and graduation rates, particularly for African-American students at urban high schools in Texas. This research may contribute to improving student achievement and graduation for African-American students. The collection of literature focuses research practitioners and educators on root causes of low student achievement for African-Americans students. This section includes ideas for future research.

In this study, the researcher gathered mostly nominal data. The nominal data were readily available from the Texas Education Agency because the student's identity was anonymous. Having the actual Algebra I grade and EOC exam grade, the overall grade point average, and the SAT/ACT score could provide enough data to determine if a correlation exists between a grade, or grade range and graduation. A comparison between test scores, course grade, and EOC scores could illustrate alignment of college and career readiness standards and the Texas Essential Knowledge and Skills. The measurement of EOC grade given by the teacher compared to the Texas Success Initiative (TSI) test, and the TEA corresponding EOC exam could determine the validity of the classroom instruction.

The target population and geographical location of the study can change to focus on Algebra I achievement and graduation for African-American students in rural, urban, and suburban schools. Additional variables for collection include population size, average family income, average education, and spending per child. The geographical comparison between settings determines if environment influences achievement.

A quantitative, correlational study design, with a survey, of African-American high school students in Texas would provide trends on opinions, characteristics, behaviors, and attitudes. The researcher could gather the actual Algebra I grade, ethnicity, gender, attendance, discipline, economic status, family demographics, grade point average (GPA), SAT/ ACT math score, and STAAR® results. Family demographics defined as number of family members living in the house, education of family members, and total household income. A new qualifying standard for each high school includes, though the same overall urban population, 40% or more minority enrollment and free or reduced lunch. The data collection method would require the Institutional Review Board (IRB) approval, special approval from school districts to conduct the study as well as waivers from parents.

A quantitative pilot or experiential research design examining the effect of community-based solutions in schools serves as another future research topic. Organizations like the Harlem Children Zone (HCZ) employ wrap-around services for their students and parents within a 100 block area (Fulwood III, Paynter, & Livingston, 2007). The organization is able to control for widespread issues African-American students and families face in their community. President Obama issued federal funding to support program initiatives looking to replicate the HCZ project. A researcher could indeed study the existing results of the HCZ with a qualitative ethnographic design, which would provide a detailed illustration of the African-American culture in that particular setting before and after receiving those resources.

Summary and Conclusions

African-American students served as the primary participant of interest, though data collected included white and Hispanic students. The geographical setting for this

research was North Texas. Three large urban school districts qualified for participation in the study. Each urban school district was located in a large urban city with over 250,000 residents, 12% or more being African-American. Each district's student population included 40% or more minority students, Hispanic and African-American, students receiving free/reduced lunch. Six traditional high schools in District A, 11 in District B, and 18 in District C qualified for the study. A total of 16,372 students participated in the study. Research Question 1 resulted in determination of the relationship between Algebra I passing rates and graduation rates. The results indicated a relationship; passing Algebra I had a medium effect of maintaining cohort graduation.

The investigator used cross-tabulation to answer Research Questions 2 to 8, which consider if gender, economic status, or ethnicity influences the relationship between passing Algebra I and graduation. The added variables did not counter the initial relationship. However, gender differences became evident as female students achieved higher Algebra I passing percentages. When layering gender differences with ethnicity and economic status, female students still exceeded male student passing percentages.

African-American students continue to score lower on achievement tests than any other ethnic group in Texas, and the United States. Though the achievement gap slightly narrowed in the last 20 years, the gap remains significant between white and African-American students. In contrast to the achievement gap, African-American students do lead in special education classification, discipline removals from class, and school suspensions. The ratio of African-Americans in prison compared to college is disparaging.

To increase academic success for struggling learners, schools continue to focus only on subpopulations. Schools mostly provide extra academic support for students to pass state assessments. Methods of support continue to include afterschool tutorials, summer prep camps, Saturday school sessions, or pull-out sessions during school. These solutions can increase passing and participation rates for standardized tests, but only serve as a temporary fix. If the school district continues to employ intervention year after year, it is not addressing the problem, but remedying the symptoms of the problem.

School systems, like Broward Schools, need to attack obstacles prevalent in the African-American community that prevent success (Vasquez, 2013). Researchers need to conduct experiential research and pilot programs focused on one-third academic and two-thirds community/societal issues preventing student achievement for African-American students. Educators must return to developing the whole child through family and community partnerships.

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APPENDIX A

Institutional Review Board Exemption



UNIVERSITY OF
MARY HARDIN-BAYLOR
EDUCATION FOR LIFE... EXPERIENCE OF A LIFETIME

March 17, 2014

Christopher Harvey
900 College Street
UMHB 8017
Belton, TX 76513

Dear Christopher:

Your study titled "*Exploration Of Graduation And Algebra I Passing Rates Of African American Students In Texas Urban Schools*" submitted to the University of Mary Hardin-Baylor's Institutional Review Board committee has been reviewed. The committee has determined that your project is exempt from IRB review based on the guidelines of the Office of Human Research Protections, and this letter serves as the official notice that you can start your study and IRB approval is not needed.

As you start your study, please keep in mind that any change in your study could potentially alter your IRB exemption status, so any changes need to be sent to me as the study progresses. When the study is complete, the Primary Investigator (C. Harvey) must notify the Chair of the UMHB Institutional Review Board so we can update the status of the study in our records.

If you have any further questions, please contact me via email (ltaylor@umhb.edu) or by phone at 254-295-4895.

Respectfully,



Lem Taylor, PhD
Assistant Professor
Chair, Institutional Review Board

900 College Street • Belton, Texas 76513
(800) 727-UMHB • (254) 295-8642
umhb.edu

