

THE EFFECTS OF STUDENT AND TEACHER ETHNICITY, SEX, AND
TEACHER EXPERIENCE ON ACHIEVEMENT

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"What lies behind us and what lies before us are tiny matters compared to what lies within us." *Ralph Waldo Emerson*

ABSTRACT

THE EFFECTS OF STUDENT AND TEACHER ETHNICITY, SEX, AND TEACHER EXPERIENCE ON ACHIEVEMENT

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There are multiple aspects of a learner's experience, including instructional and environmental factors, which may affect achievement. Students may be more comfortable with whom they relate and share common experiences (Haberman & Post, 1998; Heath, 1971; Marx, 2008). But does this mean students learn best from teachers who look like them? This quantitative study, utilizing an ex post facto causal comparative analysis, investigated the effects of student and teacher ethnicity. All data was archival, consisting of 3,104 students in grade 10 and 139 teachers. Additional quantitative variables found in the data were also explored, including the effect of the sex of the student and teacher and the effect of teacher experience. Ethnicity, as well as sex, were found to have little impact. However, the data indicate teacher experience may have a greater impact on student achievement than either ethnicity or sex. Students whose teachers had 10 to 14 years' experience demonstrated higher achievement in Mathematics. Further, students whose teachers had zero to four years' experience

outperformed their peers in Reading. Although the effect size was small, the data indicate students whose teacher had zero to four years of experience outperformed their peers respectively.

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CHAPTER I

INTRODUCTION

The population of the United States continues to grow and the demographics to evolve, which is mirrored in the changing populations of public schools (Capps, et al., 2005). Between 1990 and 2010 alone, the enrollment in public schools changed noticeably, according to the National Center for Education Statistics (Aud, et al., 2012). As the number of White students dropped from 29 million to 27.7 million, the number of Hispanic students more than doubled from 5.1 to 12.1 million. Over the decade, the total number of African American students fluctuated but their share of enrollment decreased from 17% to 15%.

In 2009-10, schools serving populations in which 76% or more were eligible for free/reduced lunch programs were considered to be schools of high poverty levels. Nineteen percent of the nation's students attended such campuses (Aud, et al., 2012). These campuses not only struggle to support the varied needs of their student population but to attract and maintain quality staffing (Falch & Ronning, 2007; Fall, 2010; Ingersoll, 2011).

The greatest amount of turnover is found at urban schools serving high-poverty and high-minority populations (Falch & Ronning, 2007; Fall, 2010; Ingersoll, 2011); however, staffing is affected by other components as well. Turnover rates are significantly lower at schools perceived to provide strong administrative support (Ingersoll, 2001; Liu, 2007). Administrative structures that invite teachers into the development of the campus culture increases faculty satisfaction and can reduce teacher attrition (Fall, 2010; Liu, 2007). However, teachers in high-poverty districts often report

they are not involved in campus decisions, which contributes to the perception of an unsupportive administration (Fall, 2010).

There is a considerable amount of research investigating the issues rising from changing student demographics and every school's need for highly qualified and highly successful teachers (Billingsley, 2004; Falch & Ronning, 2007; Fall, 2010; Ingersoll, 2001; Ingersoll, 2011; Johnson & Birkeland, 2003; Liu, 2007). Research now needs to investigate how a school's racial and socio-economical makeup frames the dynamics of a classroom (McGrady & Reynolds, 2013).

Need for the Study

Researchers have investigated numerous concerns resulting from an evolving student population, including attrition (Billingsley, 2004; Falch & Ronning, 2007; Fall, 2010), recruitment, and retention (Ingersoll, 2001; Ingersoll, 2011; Johnson & Birkeland, 2003; Liu, 2007). Student experiences in the classroom may also widely vary because some teachers may hold preconceived beliefs, many times unknowingly, of student cultures or prefer one type of student to another (Heath, 1971; Marx, 2008; Oaks & Wells, 1998). While training is crucial to every teacher's success, the process of teacher selection has been described as a vital, and sometimes overlooked, component (Croninger, Rice, Rathbun, & Nishio, 2007; Haberman & Post, 1998). Teacher education and professional development programs must aim to equip both new and experienced teachers with tools and strategies to meet the needs of a diverse student body and increase cultural competence (Gay & Howard, 2000; Gollnick, 1980; Hollins, 1995; Rousseve, 1963).

Recent reports from the National Center for Education Statistics show 19 percent of America's schools are considered to be high-poverty (Aud, et al., 2012). In the state of Texas alone, just under 2.5 million students are eligible for free/reduced lunch programs (Aud, et al., 2012). Campuses serving diverse and high-poverty populations face numerous increased difficulties, including retention of highly qualified teachers and climate (Billingsley, 2004; Falch & Ronning, 2007; Fall, 2010; Ingersoll, 2001; Ingersoll, 2011; Johnson & Birkeland, 2003; Liu, 2007) as well as an achievement gap between student groups (Heath, 1971; Marx, 2008; Oaks & Wells, 1998).

Student achievement is also impacted by the relationships found within a school, as well as the overall climate of the campus (Shindler, Jones, Williams, Taylor, & Cadenas, n.d.; Sheldon & Epstein, 2002; Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Shindler, Jones, Williams, Taylor, & Cadenas, 2009; Gregory, et al., 2010; Tate & Copas, 2010). According to deLara (2000), the relationships built between students and teachers can greatly impact the effectiveness of a school and positive relationships are necessary for a strong climate (deLara, 2000). Campuses that maintain stronger school climates may be more able to successfully overcome the achievement gap (Shindler, et al., 2009).

Teachers who remain in education, despite the turnover around them, often attribute their decision to an innate desire to affect society, specifically by working with children (Easley II, 2006). But is this intrinsic motivation all that is necessary for a teacher to be successful in a multicultural classroom or do differences between student and teacher culture create a greater obstacle? Students may be more comfortable with whom they relate and share common experiences (Haberman & Post, 1998; Heath, 1971;

Marx, 2008). This means students may trust and, therefore, learn more from teachers with similar backgrounds or from a similar cultural heritage.

Purpose of the Study

This study investigated the effects of student and teacher ethnicity. Additional variables were found in the data and were explored, including the effect of the sex of the student and teacher and the effect of teacher experience. The goal of this study was to provide additional perspectives to educational leaders who wish to further understand and close the achievement gap.

Definition of Key Terms

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

Ethnicity

Categorically defined as African American, Hispanic, White, American Indian, and Asian, which was consistent with the reporting format of Texas school districts and the Texas Education Agency, or TEA (TEA, 2012d).

State of Texas Assessments of Academic Readiness (STAAR)

The state assessment model based on the Texas Essential Knowledge and Skills (TEKS), administered in grades three through eight and as end-of-course assessments to high school students enrolled in English I, English II, Algebra I, Biology, and U.S. History (TEA, 2013).

Student Achievement

Scores on the State of Texas Assessments of Academic Readiness, or STAAR, tests (TEA, 2012d).

Research Questions

Each of the following research questions were addressed:

1. Is there a difference in student achievement where student and teacher ethnicity match as compared to where they do not?
2. Is there a difference in student achievement where student and teacher sex match as compared to where they do not?
3. Is there a difference in student achievement when students are compared according to their teachers' years of experience?

Hypotheses

The null hypotheses of the study were:

H₁: There is no difference in student achievement when the ethnicity between student and teacher match as compared to where there is no match.

H₂: There is no difference in student achievement when the sex between student and teacher match as compared to where there is no match.

H₃: There are no differences in student performance when students are compared to others according to their teachers' years of experience.

Summary

This chapter identified the study's area of focus. A brief discussion of literature was provided, outlining the need for this research. The purpose of this work was also stated. Relevant key terms were identified and defined as they will be used throughout the study.

CHAPTER II

REVIEW OF LITERATURE

The difference between student and teacher ethnicity has been referred to as *the demographic imperative* or *the demographic divide* (Lowenstein, 2009). The disparity between student and teacher experiences, resulting in a teacher's inability to relate to students, is becoming more commonplace (Marx, 2008). Glazer (1993) describes Horace Kallen's concept from 1915, *cultural pluralism*, as a public school system in which all the various student cultures are embraced and celebrated. Student culture is one of many variables, including relationships and school climate, which have an influence on the complex process of instruction (Shindler, Jones, Williams, Taylor, & Cadenas, n.d.; Sheldon & Epstein, 2002; Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Shindler, Jones, Williams, Taylor, & Cadenas, 2009; Gregory, et al., 2010; Tate & Copas, 2010). Nearly 100 years later, the nation is still in need of cultural pluralism as the student population continues to fluctuate and the demographic divide grows (Marx, 2008).

This chapter will provide a review of the literature, specifically as it relates to the ethnicity of students and teachers and the instruction necessary to support student achievement. The review will adhere to the following sections in order to provide a comprehensive understanding of the literature: the history of equity in education; the diversity of schools: nationwide and in the state of Texas; the homogeneity of teachers: nationwide, in the state of Texas, and their years of experience; multicultural education: White, African American, Hispanic; the climate and culture in successfully diverse

schools: teacher education programs, professional development, successful teachers of diversity, teaching strategies, and student-teacher relationships.

The History of Equity in Education

The conflict over equity in American education is almost as old as the country itself, fueled by approximately 35-40 million immigrants from approximately 40 countries entering the United States between 1880 and 1915 speaking over 30 different languages (Krug, 1977). Conflict can be seen as early as the 1840s, when Catholic leaders challenged the public school system for equality as Catholic students were being introduced to Protestant practices. German immigrants fought for students to be educated in their native language in the 1880s and 90s. In 1919, the state of Nebraska attempted to ban instruction of any foreign language before the eighth grade until halted by the Supreme Court (Glazer, 1993). All accounts illustrate immigrants presenting a perceived threat to the Anglo-Saxon race in the early twentieth century (Banks & Banks, 2004).

The early philosophy of *Americanization* asked immigrants to abandon their traditions and habits and take up those of their new country, preserving the Anglo-Saxon culture already present (Krug, 1977). This theme continued in the American public school system until the 1950s when the fight for racial equality gained momentum, exploding into the Civil Rights movement (Glazer, 1993). Replacing *Americanization*, the *Melting Pot* theory suggested Americans and immigrants blend their traditions and cultural norms to create a new American culture (Krug, 1977).

When academic disparities were noticed among student populations, theorists suggested cultural deprivation was to blame for the poor performance of low-income and minority students. Opponents quickly argued that students of all races, despite income,

have a rich culture and should be respected in the school system (Banks, 1988). An epic decision came in 1954 via the *Brown v. Board of Education* case, which ruled against segregation in public schools. As campuses became integrated, disparities amongst student groups became more obvious. In response, the public demanded societal changes, helping to spark the Civil Rights movement and its demand for racial equality (Klarman, 2013).

In 1965, the Elementary and Secondary Education Act (ESEA), Title 1, encouraged public schools serving low-income populations to improve educational standards (Payne & Welsh, 2000). Along with the National Education Association, numerous religious groups contributed to the preparation of materials for and the training of educators, including the National Conference of Christians and Jews and the American Jewish Committee (Gollnick, 1980). In 1972, Congress passed the Ethnic Heritage Studies Program, one of the first Congressional recognitions of the nation's varied demographics. It encouraged members of the nation's multiethnic society to learn and value the history of other cultures as well as their own. In 1973, the American Association of Colleges for Teacher Education declared there is "no one model American" and encouraged the understanding of, and the differences between, the many members of society (Grant, 1978, p. 147). America's long-standing philosophy that every person has an inherent right to self-actualization was called to action as the Bilingual Education Act was passed in 1968 (Grant, 1978). In 1972, Congress enacted the Education Amendments, including Title IX, which prohibited discrimination in federally funded educational programs on the basis of sex (U.S. Department of Justice, 2015).

However, the largest legislative effort was No Child Left Behind (NCLB) in 2002, which had dramatic affects on classrooms everywhere with an increase in accountability and high-stakes testing. The implementation of NCLB resulted in increased math and reading drills, assessments, and examinations, as well as a decrease in teacher autonomy. Now under the threat of punitive accountability, teachers and administrators often feel there is not enough time for multicultural education. Feeling the loss of creative opportunities in the classroom, many gifted teachers choose to abandon the teaching profession altogether. Administrators, under the pressure of a “testing guillotine,” search for ways to un-enroll or exempt struggling students to avoid negative impacts on achievement and accountability ratings (Nieto, 2010).

Diversity of schools

As diversity has become more reflected in educational legislation, researchers have called for proactive efforts through teacher training and professional development programs to increase awareness and prevent biases from negatively impacting instruction (Banks, 2010; Hollins, 1995; Moule, 2012). Ehrenberg, Goldhaber, and Brewer (1995) suggested gender-based assignments had little impact on student performance. However, according to Dee (2005) and Nixon and Robinson (1999), gender, specifically gender-based student-teacher interactions, is a significant contributor to the learning process.

Nationwide

Nationwide enrollment of students who do not speak English in the home more than doubled from 4.7 to 11.2 million between 1980 and 2009. This represents the population increasing from 10% to 21% of the student population (U.S. Department of Education, 2012).

Students speaking other languages at home, and struggling to speak English in school, has decreased slightly, moving from 41% (1,941) in 1980, to 36% (3,503) in 2000, down to 24% (2,654) in 2009. The ethnicity of this student population varies. Only one percent of the population represents students that are White, African American, or Two or More races each. However, 16% of the population is Hispanic and 16% is Asian. Pacific Islanders makeup six percent and American Indians/Alaska Natives are three percent (U.S. Department of Education, 2012).

Dropout rates for the various student groups illustrate the achievement gap. The rate for Hispanics is 15% and eight percent for African Americans. While the rate between White and Hispanic students decreased from 23% in 1990 to 10% in 2010, it continues to remain relatively steady to date. The completion rate continues to show disparities between the student groups, however. The completion rate of Whites is higher than both African Americans and Hispanics in 1980 and 2011. However, the gap between African American and White students dropped from 12 to six percent, and from 31 to 23% between White and Hispanic students (U.S. Department of Education, 2012).

The sheer number of students is also on the rise. In the 1990s, public school enrollment increased to record levels each year until 2006. Enrollment was projected to rise a full four percent by 2019 (U.S. Department of Education, 2012). These trends of White students maintaining the highest completion rates, and lowest drop-out rates, continues to sound the call for multicultural education.

White. White students consistently have the smallest percentage of the nation's dropout rate. In 1990, nine percent of White students are documented as dropouts and

the rate declined to approximately five percent in 2010 (U.S. Department of Education, 2012).

African American. African American students consistently have a higher dropout rate than Whites but significantly less than Hispanics. In 1990, approximately 13% of African American students are reported as dropouts. The rate fluctuates over the next fifteen years but declined in 2010 to eight percent (U.S. Department of Education, 2012).

Hispanic. The dropout rate for Hispanic students dropped 32.4% in 1990 to 15.1% in 2010. Despite this improvement, Hispanic students have consistently had the highest dropout rate in the nation (U.S. Department of Education, 2012).

Sex. According to the U.S. Department of Education (2014), the enrollment of males versus females in public school grade 12 has remained relatively balanced despite an increase in both. The male enrollment has increased from approximately 1.2 million in 2001 to 1.7 million in 2011. Similarly, the female enrollment has increased from approximately 1.2 million to almost 1.7 million in 2011.

The State of Texas

Enrollment increases have been seen in the state of Texas as well. The number of total students rose from 3.8 (TEA, 1997) to almost five million in just 15 years (TEA, 2012c), creating a fluctuation in each student population.

White. The population of White students decreased from approximately 1.7 million in 1997 (TEA, 1997) to 1.5 million in 2012 (TEA, 2012c). This represents the population's decrease of 15 percentage points of the overall population, falling from approximately 46 to 31%.

African American. The African American population remains rather stable over the past 15 years. While the number of total enrollments increased from 500,000 students (TEA, 1997) to just under 650,000 (TEA, 2012c), this is a relatively small change from approximately 14 to 13% of the total population.

Hispanic. Hispanic enrollment has increased from just under 1.5 million (TEA, 1997) to approximately 2.5 million (TEA, 2012c). This represents an increase of 14 percentage points, from approximately 37 to 51% of the total population.

Sex. According to TEA (2014), the enrollment of males versus females in Texas public school grade 12 closely mirrors the national enrollment. While both populations have seen an increase over the last decade, both populations have risen equally. Approximately 48.7% of the overall population is comprised of females while 51.3% is males.

Homogeneity of Teachers

Nationwide

While the demographics of the student population continue to vary, that of public school teachers remains relatively stable. White teachers make up a staggering 83% of public school teachers. Only seven percent of teachers are African American or Hispanic. Even fewer teachers are Asian or of mixed race making up one percent each. Less than one percent are Pacific Islander or American Indian/Alaska Native (U.S. Department of Education, 2012).

A similar disparity can also be seen between the two genders of the teacher population. According to the U.S. Department of Education, females account for 76.3% of the faculty in public schools across the nation. This is approximately three times as

many male teachers, who comprise only 23.7% of the nation's faculty (U.S. Department of Education, 2014).

The state of Texas

The ethnicity of teachers in Texas changed slightly between 1997 and 2012 but the largest population continues to be White, dropping from 76% in 1997 (TEA, 1997) to 63% in 2012 (TEA, 2012c). The second largest population continues to be Hispanic, with 16% in 1997 (TEA, 1997) and 24% in 2012 (TEA, 2012c). African American teachers are consistently the third largest population, growing only slightly from eight percent (TEA, 1997) to nine percent (TEA, 2012c).

State demographics of the public school faculty closely mirror those of the nation with approximately three times as many female teachers than male. Approximately 23.2% of the faculty are male. Females, meanwhile, represent approximately 76.8% of the teaching staff (TEA, 2012c).

Teacher Years of Experience

The argument has been made that teacher quality, or lack of, can affect student progress as much as a full academic year (Hanushek, 1992). Sanders & Horn (1998) suggested that of all variables affecting student learning, teacher effectiveness is the most crucial. However, the degree to which one's experience contributes to instructional effectiveness has been debated. The general view among educators is more experience indicates more knowledge and thus more effectiveness (Huang & Moon, 2009).

The relationship between teacher experience and achievement is further supported by literature related to annual salaries. After surveying area districts, three of the top four in graduation rates happen to also employ faculties with the highest average experience

levels. Conversely, districts with the lowest graduation rates also have teachers whose average experience levels are among the lowest of those surveyed (Robarge, 2016).

However, others are of the opinion that experience does not always equal effectiveness (Corcoran, Jennings, and Beveridge, 2011). There is a general acceptance that beginning teachers do become more effective as they learn and sharpen their skills. However, it has also been suggested this effect does not continue for the entirety of a career but eventually plateaus (Clotfelter, et. al., 2006; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004).

Nationwide

Across the nation, approximately nine percent of the public school faculty have less than three years of experience. Nearly four times as many, approximately 33% of the nation's teachers have between three and nine years' experience. Approximately 36.4% of the faculty have between 10 and 20 years in the classroom and 21.3% have more than 20 years (U.S. Department of Education, 2014).

The state of Texas

Since 1997, the largest experience level of teachers employed in Texas is those with one to five years and 11 to 20 years' experience. However, the largest sect previously the more experienced has recently become those with just one to five years' experience. This represents a general shift in the teaching population, growing increasingly inexperienced in comparison to previous decades (TEA, 1997; TEA, 2012c).

Multicultural Education

Kumashiro (2000) suggested oppression exists within the educational setting through the manner in which students are treated while at school or by the assumptions or

expectations that are attributed to students, especially by faculty. There has been some research which supports this notion: McGrady and Reynolds (2013) found minority students may be viewed more negatively than white students by white teachers. Shah and Maxwell (2012) also found African American students are suspended more than three times the amount of White students. To help develop a more inclusive culture, teachers should work to recognize their students' cultures and incorporate them into the classroom, providing an even richer learning experience for all students (Kumashiro, 2000; Risko, 2012). Actively seeking to build an inclusive classroom, which is supportive of all students, is often referred to as *multicultural education* (Gollnick, 1980; Nieto, 2004; Payne & Welsh, 2000; Sleeter, 1992).

The term *multicultural education* is first used in approximately the late 1960s (Payne & Welsh, 2000). The main concept of multicultural education is grounded in human rights (Payne & Welsh, 2000) and aims to provide appropriate and effective classroom instruction so that all students achieve their potential (Gollnick, 1980). It can be broadly defined as any intentional school efforts to work with oppressed groups (Sleeter, 1992). Multicultural education first addressed racism but has grown to encompass sexism and classism as well, contributing to a wide range of interpretations (Sleeter & Grant, 1987). According to Nieto (2004), multicultural education is “a process of ...basic education for all students...[that] challenges and rejects racism and other forms of discrimination in schools and society and accepts and affirms the pluralism...that students, their communities, and teachers represent” (p. 346). Rather than a new method of teaching, it is often merely described as good teaching when

teachers acknowledge and embrace the different ethnic groups that contribute to our society (Payne & Welsh, 2000).

According to Haberman and Post (1998), a multicultural education provides students with several advantages, such as an understanding of other cultures and increased appreciation for their own. Ronald Takaki states, as quoted by Halford (1999), “it is not only more inclusive, but also more accurate to recognize this diversity” (p. 8). Many critics feel multiculturalism is a relatively new addition to the discussion of American education but it is actually a new term that addresses a very old problem: the manner in which the public education system will respond to and support student diversity (Glazer, 1993).

It has been suggested that the concern of white teachers working with minority students contains an inherent assumption that white teachers struggle to work with diverse populations and utilize very little diversity in their instruction (Lowenstein, 2009). However, it is also true that teachers who are uneducated in multicultural instruction may unconsciously or unknowingly reinforce negative patterns when working with students (Kailin, 1998). All students have the ability to learn the various disciplines, as all cultures utilize the various processes of deduction, reasoning, and justification (Payne, 1983). Some cultures utilize one or more intellectual processes more than others, creating cultural strengths (Payne, 1983). The process of identifying and incorporating various cultural strengths and experiences within instruction is multicultural.

White

According to Wiley and Eskilson (1978), teachers are more likely to believe white students can succeed through determination and effort, no matter what circumstances they may be under. As a result, teachers are more likely to encourage efforts in white students, which may contribute to the achievement gap commonly seen in schools today. While this is beneficial for some students, it may also have the opposite effect, resulting in struggling white students to feel personally responsible for their shortcomings and suffer from lower self-esteem.

Morris (2005) wrote that White students in minority schools receive advantages depending on the teachers' perceptions of race, class, and ability. Because he believed White people benefit from hidden, unspoken advantages embedded within any given system, he used *White privilege* as the term to be applied in these situations (Morris, 2005). It has also been suggested the American educational system, and its curriculum, continues the tradition of White privilege if only due to the homogeneity of teachers as the student population diversifies (Case & Hemmings, 2005). According to Chisholm (1994), this makes it crucial for teachers to participate in professional development to identify and acknowledge their culture's impact on their beliefs, perceptions, expectations, and behaviors.

African American

The behaviors of African American students in the classroom may be misinterpreted by White teachers, leading to misunderstandings or flawed interactions (Tyler, Boykin, & Walton, 2006). Further, students are commonly evaluated through deficit perspectives, focusing on weaknesses and struggles rather than strengths and

successes (Ford, Harris, Tyson, & Trotman, 2002). Success that is achieved is likely attributed to external factors rather than student choices and behaviors (Wiley & Eskilson, 1978).

Not only does this remove the need for teachers to intervene with struggling students, the perception that environmental circumstances are responsible for the success or failure of African American students removes any responsibility the teacher might otherwise have. Similarly, students may be negatively affected by this belief, learning there is little they can do to alter their own path and put forth little effort as a result (Wiley & Eskilson, 1978). However, high school grade point averages are a significant predictor of self-esteem for African American students, more so than for White students (Phinney, Cantu, & Kurtz, 1996).

Rubovits and Maehr (1973) studied White teacher interactions with White and African American students, both average and gifted. The results revealed some disturbing differences. Teachers in general gave less attention to African American students than White. Throughout lessons, African American students were ignored more often than White students and received criticism more often than praise.

Hispanic

According to Delgado-Gaitan (1992), Mexican immigrant families often defy the common belief that the culture does not support education. Rather, immigrants strongly want their children to receive an education. Uneducated parents expose children to their daily struggles in hopes of providing motivation to embrace the educational opportunities before them.

While high school grade point averages are a significant predictor of Latino students' self-esteem (Phinney, Cantu, & Kurtz, 1996), teachers should also be mindful that peers are often a contributing factor to student resistance (Delgado-Gaitan, 1992). Additionally, students who speak a language other than English at home are also more likely to engage when provided opportunities to utilize both languages in the classroom and in the learning process (Moll, 1988).

Culturally Responsive Teaching

This study was designed using the framework of Culturally Responsive Teaching, or CRT. While the ideas of this framework have been discussed by other scholars using other names (Ladson-Billings, 1992; Ladson-Billings, 1995), this study used the comprehensive philosophy set forth by Geneva Gay (2010). "Culturally responsive teaching can be defined as using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them" (p. 31). CRT viewed teachers as cultural organizers, who not only understand the culturally diverse classroom but facilitate instruction utilizing the diversity within.

Instruction and assessment are made accessible to all students through the use of a variety of strategies and techniques that address the various learning styles and strengths of ethnic students. Many layers are involved in this form of instruction, including "curriculum content, learning context, classroom climate, student-teacher relationships, instructional techniques, classroom management, and performance assessments (Gay, 2010, p. 33). Teachers use cultural knowledge, awareness, and perspectives in order to create inclusive and effective learning experiences for all. Teachers need to not only be

aware and respectful of cultural differences, they also need to learn factual and historical specifics of a variety of ethnic and cultural groups. Without doing so, it will be difficult, if not impossible, to construct learning experiences that are engaging to and representative of diverse students.

By teaching “to and through the strengths of ... students,” culturally responsive teaching “recognize[s] the importance of racial and cultural diversity in learning” (Gay, 2010, p. 31). Classrooms that are culturally responsive embrace and honor differences found within, resulting in a mutually supportive community of learners that progresses together not just as individual students, but as a team. Success is defined by more than academic grades, but as “cultural competence, critical social consciousness, political activism, and responsible community membership” (Gay, 2010, pg. 31).

The philosophy of CRT is that student success is mandatory. Rather than accepting student failure as the natural consequence of student circumstance, CRT utilizes each to support the other. By supporting students as unique individuals, and uniting them as a community that not only learns with but from one another, students have more than a teacher who gives a grade- they are a member of a community that supports, encourages, and assists one another through the academic learning process and as individuals (Gay, 2010).

Teacher education programs

While staff development can be a productive tool for continuing education, it has limited ability to modify a teacher’s professional practices (Sleeter, 1992). Preparation programs, along with professional development, are responsible for training teachers in multicultural methods (Gay & Howard, 2000; Gollnick, 1980). This includes alternative

instruction and assessment methods for common learning outcomes, appropriate and varied teaching methods for diverse learning styles, and the ability to create a learning environment that is appropriate for varied ethnicities (Gay & Howard, 2000).

Pre-service programs should help teachers realize their own culture's impact on perceptions and assumptions, which in turn influence their expectations and behavior (Chisholm, 1994). According to Hollins (1995), personalizing culture allows one the opportunity to recognize that which might otherwise be sub-conscious. In doing so, one is examining his own culture and the influences which contributed to its development, further allowing one to see the unique development of others' culture as well. Understanding the process by which a culture is created allows teachers to appreciate cultures that differ from their own. This helps to build a respect for all cultures and, in turn, facilitates healthy communication, which contributes to the learning process. Without an appreciation for how a culture is developed, it is likely for teachers to hold students to their own cultural standards and expectations.

Teachers of multicultural content should have knowledge of various ethnic groups as well as a heightened sensitivity to racial comments or behaviors that may occur (Banks, 2010; Gay, 2010). Training programs should prepare teachers to analyze instructional materials for any possible controversy they may introduce into the lesson (Banks, 2010; Hollins, 1995). Instructors with a high level of cultural knowledge are able to select materials that will present opportunities for cultural learning, rather than controversy, into the classroom (Gay, 2010; Hollins, 1995).

Professional development

While seasoned teachers have classroom experience to draw from, it is necessary for professional development programs to increase their cultural awareness. Cultural confidence, or the ability to interact accordingly with members of other cultures, is crucial in order to work with and build trust with students and their families. Cross-cultural communication skills prepare teachers to identify and appropriately react to non-verbal behaviors from students that might otherwise result in a clash of cultures (Chisholm, 1994).

Resistance to working with diverse populations is just as common with veteran teachers as with novices. A common reaction is that the momentous task of teaching the required curriculum, with the appropriate level of rigor, and including aspects of multicultural education is nearly impossible. Some claim courses are not multicultural content areas, such as biology and algebra; therefore, just the curriculum should be taught (Gay & Howard, 2000).

Strong professional development, however, will guide teachers through a process, similar to that of a preparation program, of identifying their own culture's impact on their thoughts, words, and actions (Gay, 2010; Gollnick, 1980). Effective programs will arm teachers with instructional strategies necessary for a diverse student population (Gay, 2010; Gollnick, 1980). Teachers can also benefit from observations of successful colleagues (Haberman & Post, 1998). Observations can include instructional techniques appropriate for diverse learning styles, a variety of assessment methods, and teachers who successfully create an inclusive learning environment that embraces all students (Gay, 2010; Gay & Howard, 2000).

Professional development programs should not only provide instructional support and resource guidance, but facilitate positive and inspired teachers who will, in turn, address the challenges of the classroom with fervor and enthusiasm (Rousseve, 1963). Teachers often become disillusioned and disheartened when faced with the often complex realities of the classroom. It is not enough to be morally driven into the classroom; rather, today's teachers must integrate their purpose with personal and professional development to instill and sharpen effective skills (Fullan, 1993).

Successful teachers of diversity

Common characteristics can be seen in those successfully reaching diverse student populations. Teachers that are confident in their own culture provide an example of confidence and self-esteem, encouraging students to draw strength from their own cultural heritage (Haberman & Post, 1998). Effective teachers not only have rich knowledge and appreciation of their own heritage but a great knowledge of pedagogy and sharp instructional skills (Haberman & Post, 1998; McGee Banks & Banks, 1995).

Marx (2008) suggested that White teachers who connect with diverse student populations often embrace their students as exceptions of their culture rather than members of a culture that is different from what they believed it to be (Marx, 2008). In order to foster relationships, though, it is important for teachers to realize that their own cultural perspective is not adhered to by everyone, nor is it the only right one (Chisholm, 1994). A great deal of empathy and relationship building helps teachers to be understanding and accepting of circumstances and backgrounds that may be different from their own (Haberman & Post, 1998). Additionally, when teachers understand how students perceive social interactions, they can improve the effectiveness of their own

interactions within the classroom (McGee Banks & Banks, 1995). Effective communication is at the heart of teaching in any situation. However, since communication is heavily affected by culture, effective communication skills are imperative for successful work with ethnic students (Gay & Howard, 2000).

Educational success now means not only understanding other cultures but allowing students to bring their own perspectives into the learning process (Ernst & Statzner, 1994). Effective teachers not only expose students to the curriculum but provide an opportunity for them to identify and embrace their own culture (Kailin, 1998). Teachers that encourage students to refer to and incorporate their own experiences are more effective instructionally (Moll, 1988). For example, when analyzing a novel, comparing and contrasting characters, events, and society with individual experiences actively involves students in the content and material being taught (Moll, 1988). Successful teachers lean on their students' strengths, utilizing their linguistic and cultural differences throughout instruction, enriching the learning process which takes place (Risko, 2012). Educators must lean on culturally sensitive strategies, as well as diverse content, in order to provide an opportunity to all students to grow academically, socially, and personally (Chisholm, 1994).

Flexibility is required when working with students whose cultures foster different behaviors. For example, while American teachers typically expect eye contact from students, some cultures teach students to refrain from looking authority figures in the eye (Chisholm, 1994). Rather than depending solely on written, standardized methods to assess knowledge, incorporating varied assessment methods as appropriate. Alternative

assessments could include oral responses, performance, or project based demonstrations (Gay & Howard, 2000).

In many urban area schools, students force teachers to focus more on reacting to behaviors rather than instruction (Haberman & Post, 1998). It is accepted that socially disadvantaged students are likely to bring a variety of attitudes and behaviors into a classroom, which presents the teacher with the challenge to understand and utilize those attitudes and behaviors within instruction. If behaviors are not used strategically, they will impede instruction and learning (Johnson, 1964), commonly seen when students approach school with a *make me* attitude (Haberman & Post, 1998). This attitude often lays a foundation for the cycle in which teachers attempt to force students to learn, students resist and rebel, and a battle for power and control consumes the classroom. As teachers focus more on behavior management, they focus less on instruction and grow tired of battling their students for control. To end the battle, students are rewarded with grades for minimal effort and promoted to the next grade in order to move them on to the next classroom. Successful teachers do not battle their students but motivate them through engaging curricula and lessons rather than merely presenting tasks before them. This is accomplished through multicultural lessons, which can be naturally more engaging to students, as they focus on real world issues and speak to students' experiences (Haberman & Post, 1998).

According to Moll (1988), the processes necessary to engage diverse student populations does make autonomy in the classroom necessary. Teachers who effectively work with diverse students are skilled in speaking with administration and explaining, or justifying, the autonomy they desire as well as their instructional activities. Effective

teachers are not only willing to fight their administration for such autonomy, but often move campuses to follow leadership that appreciates and supports it. This step is likely to be difficult for first year teachers, however. Despite their individual autonomy instructionally, teachers actively participate in collaboration, providing the opportunity to learn from others' hits and misses.

A common mistake is the assumption of student readiness rather than assessing knowledge and differentiating to meet the student needs (Johnson, 1964). Chenoweth (2009) found that schools of poverty or minority populations that are high achieving do not assume students have been exposed to any information. Instead, teachers methodically assess the knowledge students have, that which they need, and proceed to support them with relentless determination.

Teaching strategies

Education must be tied to a more immediate, short-term goal that provides some sort of benefit, making the educational process worth-while. There is little intrinsic desire for students to learn specific academic knowledge simply because the curriculum declares it is time to do so. Instruction can be innately more meaningful if provided in correlation with age interests and related experiences. Keeping instruction specific and to the point is also key in maintaining student attention, especially if the long-term benefits are not yet comprehended (Johnson, 1964).

Allowing students to utilize their strengths in combination with the learned skills, such as reading in English but composing an analysis in Spanish, helps students to see they are capable even if they are learning a new language (Moll, 1988). Integrating skill practice and demonstration within a larger context of value, such as older students

tutoring younger students in reading, gives the lesson a larger purpose with innate motivation. Repetition may be seen as dull and practice in front of classmates may be embarrassing. Darling-Hammond (1993) believed assessment methods that present students with 'real-world' challenges, rather than rote memorization, provide teachers with essential knowledge of how students may perform in realistic problem-solving situations and increase student engagement.

Accommodations for cultural differences are also used. While it is common for American classrooms to include student presentations to the class, some cultures rarely engage in public speaking, making this expectation not only difficult but uncomfortable for some students. Basic assignments may also be similarly affected. For example, Spanish cultures often open business letters with personal greetings to the recipient's family, which is not considered appropriate in an American business letter (Chisholm, 1994).

McGee Banks and Banks (1995) use the term *equity pedagogy* when referring to teaching strategies that assist diverse student populations, with various cultures and backgrounds, in successfully acquiring the knowledge and skills necessary for success in education, as well as active and productive roles in society. Equity pedagogy challenges teachers to view instruction as a dynamic process involving a variety of techniques intentionally used in certain contexts. Moll (1988) stated that collaboration is common amongst those successfully implementing equity pedagogy, while McGee Banks & Banks (1995) added that students are used as active participants in the instructional process.

Student-teacher relationships

According to deLara (2000), it is the interaction between students and the adults on a school campus that is crucial. Positive relationships, appropriate boundaries and expectations, and the presence of adults who care for the students in general, are necessary for a strong school climate. While teacher ability to relate and connect with students can vary with the ethnicity of the student population (Heath, 1971; Marx, 2008), quality relationships between student and teacher, combined with high expectations, are a contributing factor to student achievement (DeJesus & Antrop-Gonzalez, 2006; Gay, 2010).

According to Marx (2008), most misperceptions teachers have about their students are based on both stereotypes and a lack of cultural knowledge. Perceptions are influenced by various factors, including perceived ability levels, behavior, or even family income level (Rist, 1970; Sorhagen, 2013). Teacher perceptions of student abilities, or misperceptions, can adversely affect academic performance for up to 10 years as student treatment one school year can either enhance or hinder student learning (Sorhagen, 2013). If allowed, stereotypes and social definitions will not only inform teacher behaviors but students' perceived self-limitations (Hines, 1964).

Student Achievement

Since 1971, the National Assessment of Educational Progress (NAEP) has administered assessments in reading and mathematics across the nation in order to document student performance trends over time. Assessments are administered to students nine, 13, and 17 years old in samples that are representative of the national student population (U.S. Department of Education, 2013).

The NAEP describes student performance with percentages of participants meeting five levels on the reading and mathematics scales: 150, 200, 250, 300, and 350. The scaled scores correspond with assessed skills and knowledge, increasing in difficulty from lowest to highest. Student performance is provided for several reporting groups including gender, school type, parent level of education, and race/ethnicity for White, African American, and Hispanic students (U.S. Department of Education, 2013).

The mathematics assessment was designed to measure students' knowledge of mathematical facts and ability to complete computations with paper and pencil. Students must also demonstrate knowledge of basic formulas and mathematics applications such as time and money. The reading assessment was designed to assess reading comprehension and includes several reading selections of various lengths. Students are required to locate information, make inferences and draw conclusions, and identify main ideas. Both assessments are predominately multiple choice items (U.S. Department of Education, 2013).

The most recent administrations were in the 2011-2012 school year when approximately 26,000 students participated in each assessment. Comparing recent results for 17 year olds to those from 1975 when results for Hispanic students were first included, there is no significant difference in overall student performance. There are some gains amongst individual student groups, though. In mathematics, the average scale score of White students increased eight points, while Hispanic students increased 18 and African American students 20. In reading, the average scale score of White students only increased two points, while Hispanic students increased 22 and African American students 28 (U.S. Department of Education, 2013).

State of Texas Assessments of Academic Readiness

The state of Texas replaced the previous state assessment, Texas Assessment of Knowledge and Skills (TAKS), with the State of Texas Assessments of Academic Readiness (STAAR). In addition to being administered in grades three through eight, the STAAR is given as an end-of-course assessment to high school students enrolled in English I, English II, Algebra I, Biology, and U.S. History. Similar to TAKS, the STAAR is based on the Texas Essential Knowledge and Skills (TEKS), which guide curriculum and instruction across the state of Texas (TEA, 2013).

However, the TEKS have been further analyzed by the TEA into readiness and supporting standards in order to narrow the instructional focus, allowing teachers to cover fewer skills but with more depth. Supporting standards includes material that may be introduced or reinforced in the current year but are emphasized in another. The readiness standards include knowledge and skills that are considered essential not only for the current course but subsequent courses and college readiness (TEA, 2013).

Unlike TAKS, which tested comprehensive understanding of material studied over several years, the STAAR assesses material covered that school year, increasing the alignment between instruction and assessment. The STAAR also includes more items with a higher level of cognitive complexity, requiring critical analysis more than literal comprehension. Writing assessments require two essays instead of one and other content areas assess process skills in context instead of in isolation. Science and mathematics exams include more open-ended or griddable items, which require students to arrive at an answer independently, without multiple choice answer options, which is bubbled in for

scoring. With these changes, the STAAR assessment is designed to ready students for success in college, careers, and global competition (TEA, 2013).

Summary

As the demographic divide continues to exist, if not grow, in American schools, teachers are being tasked with challenges of teaching more than academia to students. While the process of selection continues to be refined (Haberman & Post, 1998), research shows that students are more likely to connect and relate to teachers who have similar backgrounds and life experiences (Haberman & Post, 1998; Heath, 1971; Marx, 2008). However, more than three-fourths of the nation's teachers continue to be White (U.S. Department of Education, 2012). "Educational equity will exist for all students when teachers become sensitive to the cultural diversity in their classroom, vary their teaching styles so as to appeal to a diverse student population, and modify their curricula to include ethnic content" (Banks, 1988, p. 466). It is with this knowledge that the current research aims to further inform educators of the likely impact of the demographic divide on student achievement.

CHAPTER III

METHODOLOGY

The primary focus of this research was to investigate student and teacher ethnicity and sex, along with teacher experience, and the impacts of each on student achievement.

The following research questions were addressed:

1. Is there a difference in student achievement where student and teacher ethnicity match as compared to where they do not?
2. Is there a difference in student achievement where student and teacher sex match as compared to where they do not?
3. Is there a difference in student achievement when students are compared according to their teachers' years of experience?

The null hypotheses of the study were:

H₁: There is no difference in student achievement when the ethnicity between student and teacher match as compared to where there is no match.

H₂: There is no difference in student achievement when the sex between student and teacher match as compared to where there is no match.

H₃: There are no differences in student performance when students are compared to others according to their teachers' years of experience.

This chapter will provide a description of the study's methodology with the following sections: population, sample, research design, data collection procedures, instrumentation, data analysis procedures, and limitations.

Research Design

This study used an ex post facto causal comparative design. All data were retrieved from an archived database. This design was appropriate due to the nature of the independent variables, which were preexisting and could not be manipulated for the purposes of the study (Chatterji, 2007).

Population

The population for this study was a large suburban district in southeast Texas, consisting of five comprehensive high schools with just over 39,000 students and more than 4,800 employees (TEA, 2012b).

According to TEA (2012b), the district was predominately White with 52.3% self-reporting in this category. Approximately 8.3% of the students were African American and 26% are Hispanic. Asian students comprised 9.8% of the student body, with the remaining 3.6% being American Indian, Pacifica Islander, or Two or more races.

Also according to the TEA (2012b), a majority of the student population, 71.9%, was considered to be non-educationally disadvantaged. However, approximately 28% of the students were considered economically disadvantaged and 29.1% are at-risk. A smaller portion of the student body, 8.1%, were considered to have limited English proficiency.

District student performance on each of the four state assessments was higher than that of the state average (TEA, 2012b). While Texas did not declare academic ratings in 2011-2012 school year, the district previously received a Recognized rating (TEA, 2012a), the second highest of five possible ratings (Glossary for the Academic Excellence Indicator System, 2012). District ratings were determined by a combination

of factors, including student performance on the state assessment, completion rate, and dropout rate (Glossary for the Academic Excellence Indicator System, 2012).

The ethnic distribution of the district's faculty, according to the TEA (2012b), included approximately 5% African American, 10% Hispanic, and 80% White. The remaining 5% of the staff was considered to be American Indian, Asian, or Pacific Islander. The faculty was approximately 20% male, while 80% is female.

The majority of teachers, or 75.9%, held a Bachelors degree but 23.0% also held a Master's degree. Less than one percent, or 0.4%, held a doctoral degree (TEA, 2012b).

According to the TEA (2012b), teachers in the district had an average of 11.5 years of experience, with 7.3 years within the sample district itself. Only 2.7% of the faculty were first year teachers. Those with anywhere between one and five years experience make up 29.7% of the faculty. Faculty members with between six and 10 years' experience represented 22.1% while 28.9% had between 11 and 20 years experience. The remaining 16.6% of faculty had over 20 years' experience in the classroom.

Sample

The five comprehensive high schools within the district served as a convenience sample, providing data for 3,104 10th grade students. Sex was evenly distributed within the student sample with 50.42%, or (1,565) being male and 49.58% (1,539) being female. The student sample was 54.48% (1,691) White, 8.80% (273) African American, and 23.81% (739) Hispanic. Additionally, 19.94% (619) of the student sample were eligible for Free/Reduced Lunch. Demographics of the student sample can be seen in Table 3.1.

Student demographics specific to each research question's portion of the sample can be found in the section for each research question.

Table 3.1

Student Sample Demographics (N = 3,104)

Subgroups of the Total Sample	%	N
Male	50.42	1,565
Female	49.58	1,539
White	54.48	1,691
African American	8.80	273
Hispanic	23.81	739
Eligible for Free/Reduced Lunch	19.94	619

Only schools with large numbers were included to prevent any bias from occurring in the results due to small school size. This study did not investigate the achievement of the special education population; as a result, students receiving any modified instruction were also excluded from the analysis. Additionally, students receiving sheltered instruction were omitted from the analysis. Sheltered instruction refers to instruction designed to teach the language to English learners as well as academic content (Echevarria, Vogt, & Short, 2004). Since this research did not focus on students in the process of acquiring the English language, these students' data was omitted from the analysis.

Operational Definitions

The data gathered for this study included student achievement, defined as the scores on the State of Texas Assessment of Academic Readiness, or STAAR, Math, Reading, and Writing exams. These data was obtained from the district Office of Assessment and Accountability.

Student and teacher ethnicity was categorically defined as African American, Hispanic, White, American Indian, and Asian. This is consistent with the reporting format of Texas school districts and TEA (TEA, 2012d).

In research questions one and two, the variable, either ethnicity or sex, was noted for students and teachers. The term *match* was used when either the ethnicity or sex of the student and the teacher were the same. Where this was true, a *1* was coded. The term *non-match* was used when either the ethnicity or sex of the student were not the same. Where this was not true, a *0* was coded for each of the variables.

Data Collection Procedures

Approval was obtained from the Internal Review Board and the Committee for the Protection of Human Subjects from the school district and the University of Houston-Clear Lake respectively. Participant consent was not necessary since all data were archival. All student and faculty information was kept confidential; all data were received from the district labeled by alphanumeric codes in order to maintain confidentiality. No identifying information was used in the data analysis or discussion. Access to the data was restricted to the researcher and those directly involved in the supervision of the study.

Student and faculty data were accessed through the participating district's database via the Office of Assessment and Evaluation. Student ethnicity and socio-economic level were gathered from parent provided information within each student's registration file. Student achievement was retrieved from the district database, which is compiled from and consistent with TEA score reporting. Raw scores, or the number of question items answered correctly, was pulled for the 9th grade Math, Reading, and

Writing STAAR tests administered in 2011-2012 and the 10th grade Math, Reading, and Writing STAAR tests administered in 2012-2013. Teacher ethnicity was found within self-reported information in the employee files, where a code system indicated ethnicity. Student to teacher assignment for the 10th grade was retrieved from the district database for the 2012-2013 school year.

Teacher experience level was also found within employee files, which indicated each teacher's number of service years on record within the Teacher Retirement System. Experience levels were coded into the following categories: Where teacher experience level was between zero and four years, a 1 was coded. Experience between five and nine years was coded with a 2, 10 to 14 years with a 3, 15 to 19 years with a 4, and 20 or more years' experience with a 5.

Student and faculty data were entered into an Excel spreadsheet and sorted to identify those students who participated in the district's STAAR testing in both the 2011-2012 and 2012-2013 school years. Data for those students who did not participate in both administrations within the participating district were discarded. The remaining data for teachers and students were matched for the 2012-2013 school year.

Data Analysis Procedures

The dependent variables were categorized by the coursework students took in 9th grade. Algebra 1 scores were disaggregated to reflect instruction that was on level in Algebra 1 and advanced in Algebra 1 Pre-Advanced Placement (Pre-AP). English 1 Reading and Writing scores were disaggregated to reflect instruction that was on-level in English 1 and advanced in English 1 Enriched and English 1 Pre-AP. Geometry scores were disaggregated to reflect instruction that was on level in Geometry and advanced in

Geometry Pre-AP. English 2 Reading and Writing scores were disaggregated to reflect instruction that was on level in English 2 and advanced in English 2 Enriched and English 2 Pre-AP.

Artificial dichotomies were used to recode the independent variables, ethnicity, sex, and teacher experience. For ethnicity and sex, where the student and teacher variables were the same, a *1* was coded; a *0* was coded where the student and teacher variables were different. This allowed for statistical analysis to be run using two groups: those where the student-teacher variables, ethnicity or sex, were the same and those where they were not. However, because the sample size was very small for those whose ethnicity was Two or More races, they were not included in the analysis.

Teacher experience was also recoded with an artificial dichotomy, with a *1* representing 4 years' experience or less, a *2* representing five to nine years' experience, a *3* representing 10-14 years, a *4* representing fifteen to nineteen years, and a *5* representing 20 years or more experience. These artificial dichotomies allowed for all data to be student-based in their analysis.

Instruction can vary greatly from student to student for many reasons, resulting in a variety of achievement levels (Brookover & Lezotte, 1977; Delgado-Gaitan, 1992; Payne, 1983). Therefore, analysis of covariance, or ANCOVA, was an appropriate test due to its ability to "equalize initial differences between groups" (p. 276) (Salkind, 2008). ANCOVA helped reduce the amount of error by adjusting for differences in instruction previously received. Student performance on the 9th grade Math, Reading, and Writing STAAR tests in 2011-2012 were used as covariates since they represented all instruction that occurred prior to the year being analyzed. Specifically, the covariate was

performance on the ninth grade STAAR Algebra 1, English 1 Reading, and English 1 Writing exams in 2011-2012. The dependent variable was performance on the tenth grade STAAR Geometry, English 2 Reading, and English 2 Writing exams in 2012-2013.

Levene's test was used to assess the underlying assumption of equal variances and the significance level was set at .05. The effect size was also determined by calculating partial eta squared, which was appropriate because the samples were reasonably close in size (Cohen, 1965). Partial η^2 , or η_p^2 , measures the total proportion of variance that can be attributed to the independent variable with "other nonerror sources of variance being partialled out" (Cohen, 1965, p. 105). In other words, η_p^2 provides the proportion of variance while excluding certain variables in the study. This study adhered to the following guidelines, as offered by Salkind (2008): effect sizes ranging from 0.0 to .20 were considered small, those ranging from .20 to .50 were considered medium, and those above .50 were considered to be large.

In the data for the third research question, there was some variation from sample to sample in the number of student-teacher pairs. To account for the various sample sizes, weighted averages were calculated. This resulted in comparable means which were adjusted for the differences in sample size. Pairwise comparisons were conducted, allowing the teacher experience ranges to be compared two at a time (Gravetter & Wallnau, 2007).

Limitations

Demographics for ethnicity and sex are self-reported data. A teacher may view him or herself as having the same ethnicity as a student while the student does not. Since

data analysis was conducted using the number of matches between student and teacher demographics, the results could be influenced by the perception of a student or teacher.

There was also a large teacher effect due to the small number of teachers in comparison to the large number of students involved in the study. If one or two teachers had extremely high performance, their students could raise the test scores for all of the subject-area teachers. Conversely, if a teacher had extremely low performance, their students could lower the achievement for all teachers.

Summary

This chapter outlined the study's methodology, beginning with a presentation of the research design and a description of the population. Demographics for the student population included the ethnic makeup, socio-economic distribution, and student achievement. The faculty population was also described by the ethnic distribution, as well as achieved levels of education and experience. The sampling method was identified and demographics were provided to describe the student and faculty sample, including the breakdown of both sex and ethnicity, along with student socio-economics.

Data omitted from the analysis was identified and justification was provided for its omission. Operational definitions used throughout the study were established. The study's approval process was reviewed and the source of data was identified. The variables within the study were defined, as was the process of coding and categorizing data. The steps for analysis were presented, including the logic for using ANCOVA. Limitations of the study were also discussed.

CHAPTER IV

RESULTS

This study examined the effects of ethnicity and sex, along with teacher experience. The main focus was to discover the impact, if any, to student achievement. What follows is a presentation of the results of data analysis, conducted using analysis of covariance. Results are presented by research question so each one is dealt with independently. For each question, the variable within the sample is identified and descriptive statistics are provided for each group included in the analysis.

Statistics are presented for each STAAR test by the two groups run in the analysis: students whose ethnicity or sex was the same as their teachers' (Ethnicity Match) and students whose ethnicity or sex differed from their teachers' (Ethnicity Non-Match). Students' ninth grade course enrollment further disaggregates the results.

The N within each question represents the number of times a student and teacher match occurs. For example, the first research question focuses on ethnicity, so the N is determined to be the number of times the students' ethnicity matches their teachers' ethnicity. Student performance was measured by raw scores, or the number of items correct, on the STAAR assessments. Descriptive statistics, as well as statistical outcomes, are presented by each STAAR assessment included in the analysis.

Research Question 1

The initial question explored by this study asked, "is there a difference in student achievement where student and teacher ethnicity match as compared to where they do not?" The ethnicity within the teacher sample included 87.77% (122) White, 3.60% (5)

African American, and 7.20% (10) Hispanic. The teachers' ethnicities can be seen in Table 4.1.

Table 4.1

Teacher Sample by Ethnicity (N = 139)

Subgroups of the Total Sample	%	N
White	87.77	122
African American	3.60	5
Hispanic	7.20	10

Math achievement

Raw data. The raw data for the STAAR Math scores are presented in Table 4.2. In Algebra 1 Pre-AP, in the Ethnicity Match group, where student and teacher ethnicity were the same, the sample size was $n = 336$. The mean STAAR raw score was $M = 40.55$ with a standard deviation of $SD = 6.867$. In the Non-Match group, where student and teacher ethnicity were not the same, the sample size was $n = 214$. The mean STAAR raw score was $M = 38.99$ with a standard deviation of $SD = 7.059$.

In Algebra 1, where student and teacher ethnicity were the same, the sample size was $n = 497$. The mean STAAR raw score of the Ethnicity Match group was $M = 31.00$ with a standard deviation of $SD = 8.476$. Within the Non-Match group, the sample size was $n = 477$. The group had a mean STAAR raw score of $M = 29.94$ and a standard deviation of $SD = 8.973$.

Table 4.2

Raw Data for 10th Grade STAAR Math Score by 9th Grade Math Course and Group

Course			
Group	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
Algebra 1 Pre-AP			
Ethnicity Match	40.55	6.867	336
Ethnicity Non-Match	38.99	7.059	214
Total	39.94	6.978	550
Algebra 1			
Ethnicity Match	31.00	8.476	497
Ethnicity Non-Match	29.94	8.973	477
Total	30.48	8.735	974

Results of analysis. Levene's test was not significant for Algebra 1 Pre-AP ($p = .254$) and Algebra 1 ($p = .444$). Therefore, analysis was conducted utilizing ANCOVA and Ethnicity. The results of the analysis, presented by group and by ninth grade course enrollment, can be found in Table 4.3. Only when students had taken Algebra 1 Pre-AP as their 9th grade math course was a significant interaction between student and teacher ethnicity indicated, $F(1, 547) = 6.06, p = .014, \eta_p^2 = 0.011$.

Table 4.3

Results of ANCOVA using Ethnicity and Math STAAR Scores

Assessment				
Course	Mean Difference (M-NM)	F	<i>p</i>	η_p^2
Algebra 1				
Algebra 1 Pre-AP	1.56	6.06	0.014*	0.011
Algebra 1	1.06	0.25	0.617	0.000

* $p < .05$. ** $p < .01$. *** $p < .001$.**Reading achievement**

Raw data. The raw data for the STAAR Reading scores are presented in Table 4.4. In English 1 Pre-AP, the sample size where student and teacher ethnicity matched was $n = 437$. The mean STAAR raw score within the group was $M = 47.54$ with a standard deviation of $SD = 5.894$. In the Non-Match group, where student and teacher ethnicity differed, the sample size was $n = 348$ and the mean raw score was $M = 46.62$. The standard deviation was $SD = 6.656$.

Within English 1 Enriched, the sample size of the Ethnicity Match group was $n = 141$ and the mean raw score was $M = 44.94$. The standard deviation of the group was $SD = 5.627$. The sample size of the Non-Match group was $n = 107$. The mean STAAR raw score of the Non-Match group was $M = 42.73$ while the standard deviation was $SD = 6.404$.

In English 1, the sample size where students and teacher had the same Ethnicity was $n = 474$. The Ethnicity Match group had a mean raw score of $M = 39.14$ and a standard deviation of $SD = 7.544$. Where ethnicity did not match, the sample size was n

= 513 and the mean raw score was $M = 37.68$. The standard deviation of the Non-Match group was $SD = 7.635$.

Table 4.4

Raw Data for 10th Grade STAAR Reading Score by 9th Grade English Course and Group

Course			
Group	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Matches (n)
English 1 Pre-AP			
Ethnicity Match	47.54	5.894	437
Ethnicity Non-Match	46.62	6.656	348
Total	47.13	6.255	785
English 1 Enriched			
Ethnicity Match	44.94	5.627	141
Ethnicity Non-Match	42.73	6.404	107
Total	43.98	6.062	248
English 1			
Ethnicity Match	39.14	7.544	474
Ethnicity Non-Match	37.68	7.635	513
Total	38.38	7.622	987

Results of analysis. Levene's test was used to confirm homogeneity of the variances. The results were not significant for English 1 Pre-AP ($p = .909$), English 1 Enriched ($p = .124$), or for the on-level English 1 course ($p = .094$). ANCOVA, along with Ethnicity, were used for analysis. These figures can be seen in Table 4.5 presented by group and by ninth grade course enrollment. The mean difference where students had

taken English 1 Pre-AP was 0.92. The mean difference was 2.21 where students took English 1 Enriched and 1.46 in English 1. A significant interaction was indicated when students had taken English 1 in the 9th grade, $F(1, 984) = 3.95, p = .047, \eta_p^2 = .004$. While the significance demonstrates these numbers are accurate, the effect size is small.

Table 4.5

Results of ANCOVA using Ethnicity and Reading STAAR Scores

Assessment Course	Mean Difference (M-NM)	F	<i>p</i>	η_p^2
English 1 Reading				
English 1 Pre-AP	0.92	0.49	0.486	0.001
English 1 Enriched	2.21	2.20	0.139	0.009
English 1	1.46	3.95	0.047*	0.004

* $p < .05$. ** $p < .01$. *** $p < .001$.

Writing achievement

Raw data. Table 4.6 presents the raw data for the STAAR Writing scores.

Where students took English 1 Pre-AP in the ninth grade, and the ethnicity of the student and teacher were the same, the sample size was $n = 437$. The mean STAAR raw score of the group was $M = 51.34$ with a standard deviation of $SD = 5.521$. Within the Non-Match group, the sample size was $n = 348$. The group had a mean raw score of $M = 50.91$ and a standard deviation of $SD = 6.015$.

Where students participated in English 1 Enriched as freshmen, the sample size where student and teacher ethnicity matched was $n = 143$. The mean STAAR raw score of the group was $M = 48.56$ with a standard deviation of $SD = 5.949$. In the Non-Match group, where student and teacher ethnicity differed, the sample size was $n = 107$ and the mean raw score was $M = 46.50$. The standard deviation of the group was $SD = 5.747$.

Where English 1 was taken during the freshmen year, the sample size of the Ethnicity Match group was $n = 478$ and the mean raw score was $M = 42.97$. The standard deviation of the group was $SD = 6.336$. The sample size of the Non-Match group was $n = 514$. The mean raw score of the Non-Match group was $M = 41.86$ while the standard deviation was $SD = 6.427$.

Table 4.6

Raw Data for 10th Grade STAAR Writing Score by 9th Grade English Course and Group

Course			
Group	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Matches (n)
English 1 Pre-AP			
Ethnicity Match	51.34	5.521	437
Ethnicity Non-Match	50.91	6.015	348
Total	51.15	5.745	785
English 1 Enriched			
Ethnicity Match	48.56	5.949	143
Ethnicity Non-Match	46.50	5.747	107
Total	47.68	5.940	250
English 1			
Ethnicity Match	42.97	6.336	478
Ethnicity Non-Match	41.86	6.427	514
Total	42.40	6.404	992

Results of analysis. Levene's test confirmed homogeneity of the variances for English 1 Pre-AP ($p = .899$), English 1 Enriched ($p = .546$), and English 1 ($p = .484$). Results of the analysis, using ANCOVA and Ethnicity, are presented, by group and by ninth grade course enrollment, in Table 4.7. The mean difference where students had taken English 1 Pre-AP was 0.43. The mean difference was 2.06 where students had taken English 1 Enriched and 1.11 in English 1. A significant interaction was indicated

for English 1 in the Writing assessments, $F(1, 989) = 4.41$, $p = .036$, $\eta_p^2 = .004$. The significance indicates these numbers are most likely representative of the population; however, the effect size is small, so the results should be interpreted with caution.

Table 4.7

Results of ANCOVA using Ethnicity and Writing STAAR Scores

Assessment				
Course	Mean Difference (M-NM)	F	p	η_p^2
English 1 Writing				
English 1 Pre-AP	0.43	0.04	0.843	0.000
English 1 Enriched	2.06	1.33	0.251	0.005
English 1	1.11	4.41	0.036*	0.004

* $p < .05$. ** $p < .01$. *** $p < .001$.

Research Question 2

Research question two asked, “is there a difference in student achievement where student and teacher sex match as compared to where they do not?” The sample used in this study included 139 teachers. The sample had more females than males, with 73.38% (102) of the sample being female while only 26.62% (37) were males. These figures can be found in Table 4.8.

Table 4.8

Teacher Sample by Sex (N = 139)

Subgroups of the Total Sample	%	N
Male	26.62	37
Female	73.38	102

Statistics are presented for each STAAR test by the two groups run in the analysis: students who were of the same sex as their teachers (Sex Match) and students who were of the opposite sex than that of their teachers (Sex Non-Match). The course taken by students in the ninth grade further disaggregates the results.

Math achievement

Raw data. The raw data for the STAAR Math scores are presented in Table 4.9. Where students took Algebra 1 Pre-AP in the ninth grade, and the sex of the student was the same as the sex of the teacher, the sample size was $n = 268$. The mean STAAR raw score of the group was $M = 39.72$ with a standard deviation of $SD = 7.010$. In the Non-Match group, where the sex of the student was not the same as that of the teacher, the sample size was $n = 282$. The mean raw score was $M = 40.16$ with a standard deviation of $SD = 6.952$.

Where students took Algebra 1 in the ninth grade, and the sex of the student matched the sex of the teacher, the sample size was $n = 497$. The mean STAAR raw score of the group was $M = 30.78$ with a standard deviation of $SD = 8.843$. Within the Non-Match group, the sample size was $n = 477$. The group had a mean raw score of $M = 30.17$ and a standard deviation of $SD = 8.618$.

Table 4.9

Raw Data for 10th Grade STAAR Math Score by 9th Grade Math Course and Group

Course Group	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Matches (<i>n</i>)
Algebra Pre-AP			
Sex Match	39.72	7.010	268
Sex Non-Match	40.16	6.952	282
Total	39.94	6.978	550
Algebra 1			
Sex Match	30.78	8.843	497
Sex Non-Match	30.17	8.618	477
Total	30.48	8.735	974

Results of analysis. Levene's test was not significant for Algebra 1 Pre-AP ($p = .379$) or Algebra 1 ($p = .465$), confirming homogeneity of variances. Analysis was, therefore, completed using ANCOVA and Gender. Results can be seen in Table 4.10, presented by group and by ninth grade course enrollment. Results are presented by group and by ninth grade course enrollment. Where students had enrolled in Algebra 1 Pre-AP, the mean difference was 0.44. Where students enrolled in Algebra 1, the mean difference was 0.61. There were no significant results indicated for either Algebra 1 Pre-AP or Algebra 1.

Table 4.10

Results of ANCOVA using Sex and Math STAAR Scores

Assessment					
Course	Mean Difference (M-NM)	N	F	<i>p</i>	η^2
Algebra 1					
Algebra 1 Pre-AP	-0.44	550	2.41	0.122	0.004
Algebra 1	0.61	974	0.178	0.673	0.000

* $p < .05$. ** $p < .01$. *** $p < .001$.**Reading achievement**

Raw data. The raw data for the STAAR Reading scores can be found in Table 4.11. Where students participated in English 1 Pre-AP as freshmen, the sample size where student and teacher were of the same sex was $n = 432$. The mean STAAR raw score of the group was $M = 47.29$ with a standard deviation of $SD = 5.908$. In the Non-Match group, where the student and teacher were of opposite sexes, the sample size was $n = 353$ and the mean raw score was $M = 46.94$. The standard deviation of the group was $SD = 6.659$.

Where English 1 Enriched was taken during the freshmen year, the sample size of the Sex Match group was $n = 126$ and the mean raw score was $M = 44.47$. The standard deviation of the group was $SD = 5.774$. The sample size of the Non-Match group was $n = 122$. The mean raw score of the Non-Match group was $M = 43.48$ while the standard deviation was $SD = 6.330$.

Where students enrolled in English 1 as ninth graders, and the student and teacher were of the same sex, the sample size was $n = 484$. The group had a mean raw score of $M = 38.49$ and a standard deviation of $SD = 7.700$. Where the student and teacher sex did not match, the sample size was $n = 503$ and the mean raw score was $M = 38.27$. The standard deviation of the group was $SD = 7.553$.

Table 4.11

Raw Data for 10th Grade STAAR Reading Score by 9th Grade English Course and Group

Course Group	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Matches (n)
English 1 Pre-AP			
Sex Match	47.29	5.908	432
Sex Non-Match	46.94	6.659	353
Total	47.13	6.255	785
English 1 Enriched			
Sex Match	44.47	5.774	126
Sex Non-Match	43.48	6.330	122
Total	43.98	6.062	248
English 1			
Sex Match	38.49	7.700	484
Sex Non-Match	38.27	7.553	503
Total	38.38	7.622	987

Results of analysis. Homogeneity of variances was confirmed via Levene's test, which was not significant for English 1 Pre-AP ($p = .073$), English 1 Enriched ($p = .506$), or the on-level English 1 course ($p = .267$). Analysis was then conducted using ANCOVA and Gender. Table 4.12 presents the results by group and by ninth grade course enrollment. Where students had participated in English 1 Pre-AP, the mean difference was 0.35. Where students had participated in English 1 Enriched, the mean difference was 0.99. Where students had participated in English 1, the mean difference

was 0.22. There no significant results indicated on the Reading assessment for any of the English courses.

Table 4.12

Results of ANCOVA using Sex and Reading STAAR Scores

Assessment Course	Mean Difference (M-NM)	N	F	<i>p</i>	η_p^2
English 1 Reading					
English 1 Pre-AP	0.35	785	.343	0.558	0.000
English 1 Enriched	0.99	248	1.295	0.256	0.005
English 1	0.22	987	0.023	0.879	0.000

* $p < .05$. ** $p < .01$. *** $p < .001$.

Writing achievement

Raw Data. The raw data for the STAAR Writing scores are presented in Table 4.13. Where students took English 1 Pre-AP in the ninth grade, and the sex of the student matched the sex of the teacher, the sample size was $n = 432$. The mean STAAR raw score of the group was $M = 51.39$ with a standard deviation of $SD = 5.606$. Within the Non-Match group, the sample size was $n = 353$. The group had a mean raw score of $M = 50.84$ and a standard deviation of $SD = 5.906$.

Where students participated in English 1 Enriched as freshmen, the sample size where student and teacher were of the same sex was $n = 128$. The mean raw score of the group was $M = 48.23$ with a standard deviation of $SD = 5.707$. In the Non-Match group, where the student and teacher were of opposite sexes, the sample size was $n = 122$ and the mean raw score was $M = 47.11$. The standard deviation of the group was $SD = 6.145$.

Where English 1 was taken during the freshmen year, the sample size of the Sex Match group was $n = 488$ and the mean raw score was $M = 42.60$. The standard deviation of the group was $SD = 6.259$. The sample size of the Non-Match group was $n = 504$. The mean raw score of the Non-Match group was $M = 42.20$ while the standard deviation was $SD = 6.542$.

Table 4.13

Raw Data for 10th Grade STAAR Writing Score by 9th Grade English Course and Group

Course Group	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Matches (n)
English 1 Pre-AP			
Sex Match	51.39	5.606	432
Sex Non-Match	50.84	5.906	353
Total	51.15	5.745	785
English 1 Enriched			
Sex Match	48.23	5.707	128
Sex Non-Match	47.11	6.145	122
Total	47.68	5.940	250
English 1			
Sex Match	42.60	6.259	488
Sex Non-Match	42.20	6.542	504
Total	42.40	6.404	992

Results of analysis. Levene's was used to test homogeneity of the variances. It was not significant for English 1 Pre-AP ($p = .494$), English 1 Enriched ($p = .133$), or English 1 ($p = .721$); therefore, analysis was conducted using ANCOVA and Gender. These figures can be found in Table 4.14 by group and by ninth grade course enrollment. Where students had enrolled in English 1 Pre-AP, the mean difference was 0.55. The mean difference was 1.12 where students had enrolled in English 1 Enriched and 0.40

where students had enrolled in English 1. There were no significant results indicated for any of the English courses on the Writing assessments.

Table 4.14

Results of ANCOVA using Sex and Writing STAAR Scores

Assessment					
Course	Mean Difference (M-NM)	N	F	<i>p</i>	η_p^2
English 1 Writing					
English 1 Pre-AP	0.55	785	0.100	0.752	0.000
English 1 Enriched	1.12	250	0.207	0.650	0.001
English 1	0.40	992	0.260	0.610	0.000

* $p < .05$. ** $p < .01$. *** $p < .001$.

Research Question 3

The third, and final, research question of this study asked, “is there a difference in student achievement when students are compared according to their teachers’ years of experience?” The independent variable, teacher experience, was re-coded to reflect an artificial dichotomy. Levels of experience were grouped into ranges with a “1” representing 4 years experience or less, a “2” representing five to nine years experience, a “3” representing 10-14 years, and a “4” representing fifteen to nineteen years.

Math achievement

Algebra 1 Pre-AP.

Raw data. In Algebra 1 Pre-AP, teachers with zero to four years’ experience had 187 students. The mean STAAR raw score was 39.43 with a standard deviation of 7.468. Teachers with five to nine years of experience had 263 students, whose mean raw score

was 40.24. The standard deviation of the students' performance was 6.435. There were 57 students whose teacher had 10-14 years of experience. Their mean raw score was 41.46 with a standard deviation of 6.985. There were 43 students whose teacher had 15-19 years of experience. Their mean raw score was 38.33 with a standard deviation of 7.649. There was only one teacher with 20 years of experience or more; therefore, this category was excluded from analysis. These data are presented in Table 4.15.

Table 4.15

Raw Statistics for Algebra 1 Pre-AP and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
Algebra 1 Pre-AP			
0 – 4 Years	39.43	7.468	187
5 – 9 Years	40.24	6.435	263
10 – 14 Years	41.46	6.985	57
15 – 19 Years	38.33	7.649	43
20 Years or More	-	-	-
Total			550

Weighted averages were also calculated. Where teachers had zero to four years' experience, the mean STAAR raw score of 187 students was 38.950 with a standard error of .372. Teachers with five to nine years experience had 263 students, with a mean raw score of 40.172 and a standard error of .313. Teachers with 10-14 years' experience had 57 students. The average raw score in this group was 42.722 with a standard error of .675. Teachers with 15-19 years had 43 students. These students had an average raw score of 39.188 with a standard error of .775. There was only one teacher with 20 years of experience or more; therefore, this category was excluded from analysis. Table 4.16 presents these data by teacher experience.

Table 4.16

Estimated Statistics for Algebra 1 Pre-AP and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
Algebra 1 Pre-AP				
	0 – 4 Years	38.950	.372	187
	5 – 9 Years	40.172	.313	263
	10 – 14 Years	42.722	.675	57
	15 – 19 Years	39.188	.775	43
	20 Years or More	-	-	-
Total				550

Results of analysis. Levene's test was not significant, $p = .859$, confirming homogeneity of variances. Analysis was then completed using ANCOVA and Teacher Experience. A significant affect was indicated in the third experience range, where teachers had 10 to 14 years' experience, $F(3, 545) = 8.51$, $p = .000$. Pairwise comparisons for the affect of teacher experience were conducted using Bonferroni adjusted alpha levels of .0125 per test (.05/4). Results indicated the students of teachers with 10 to 14 years' experience were more successful than their peers with teachers of different experience levels. Results of the pairwise comparisons for Algebra 1 Pre-AP students can be found in Table 4.17.

Table 4.17

Raw Score Pairwise Comparisons of Algebra 1 Pre-AP and Teacher Experience Levels

Years of Experience (I)	Teacher Experience (J)	Mean Difference (I – J)	Standard Error	<i>p</i>
0 – 4	5 – 9	-1.222	.486	.073
	10 – 14	-3.772	.772	.000***
	15 – 19	-.238	.861	1.000
	20 +	-	-	-
5 – 9	0 – 4	1.222	.486	.073
	10 – 14	-2.550	.744	.004**
	15 – 19	.984	.836	1.000
	20 +	-	-	-
10 – 14	0 – 4	3.772	.772	.000***
	5 – 9	2.550	.744	.004**
	15 – 19	3.534	1.025	.004**
	20 +	-	-	-
15 – 19	0 – 4	.238	.861	1.000
	5 – 9	-.984	.836	1.000
	10 – 14	-3.534	1.025	.004**
	20 +	-	-	-
20 +	0 – 4	-	-	-
	5 – 9	-	-	-
	10 – 14	-	-	-
	15 – 19	-	-	-

* $p < .05$. ** $p < .01$. *** $p < .001$.

Algebra 1.

Raw data. In Algebra 1, 468 students of teachers with zero to four years' experience had a mean STAAR raw score of 30.94 with a standard deviation of 8.542. Teachers with five to nine years of experience had 220 students. The mean raw score of those students was 31.26 with a standard deviation of 8.747. Teachers with 10 to 14 years of experience had 230 students, whose mean raw score was 27.83 with a standard deviation of 8.711. There were two students with a teacher of 15 to 19 years' experience with an average number of items correct of 19.00 and a standard deviation of 11.314; therefore, this category was excluded from the analysis. There were 54 students whose teacher had 20 years' experience or more. Their mean raw score was 35.06 with a standard deviation of 7.064. These figures can be seen in Table 4.18.

Table 4.18

Raw Data for Algebra 1 and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
Algebra 1				
	0 – 4 Years	30.94	8.542	468
	5 – 9 Years	31.26	8.747	220
	10 – 14 Years	27.83	8.711	230
	15 – 19 Years	19.00	11.314	2
	20 Years or More	35.06	7.064	54
Total				974

Adjusting for various sample sizes, the weighted mean raw score of 468 students, with teachers of zero to four years' experience, was 30.314 with a standard deviation of .295. Teachers with five to nine years of experience had 220 students with a mean raw score of 30.798. The standard deviation of this group was .429. There were 230 students

whose teacher had 10 to 14 years of experience. These students had a mean raw score of 30.129 with a standard deviation of .428. There were two students whose teachers had 15 to 19 years of experience with a mean raw score of 24.210. The standard deviation for the students was 4.503. A total of 54 students had a teacher with 20 years of experience or more. Their mean raw score was 32.415 with a standard deviation of .871. These data are presented in Table 4.19.

Table 4.19

Estimated Statistics for Algebra 1 and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
Algebra 1			
0 – 4 Years	30.314	.295	468
5 – 9 Years	30.798	.429	220
10 – 14 Years	30.129	.428	230
15 – 19 Years	24.210	4.503	2
20 Years or More	32.415	.871	54
Total			974

Results of analysis. Levene's test was not significant, $p = .199$, confirming the homogeneity of variances assumption. Analysis was completed using ANCOVA and Teacher Experience; however, the results were not significant, $F(4, 968) = 2.079$, $p = .082$.

Reading achievement**English 1 Pre-AP.**

Raw data. In English 1 Pre-AP, teachers with zero to four years of experience had 113 students with a mean STAAR raw score of 47.03. The students' standard deviation was 6.336. There were 400 students whose teacher had five to nine years'

experience. Their mean raw score was 48.11 with a standard deviation of 6.157.

Teachers with 10-14 years of experience worked with 234 students. The mean raw score of these students was 45.76 with a standard deviation of 6.197. There were no student-teacher pairs in English 1 Pre-AP with 15-19 years of experience; therefore, this category was not included in the analysis. There were 38 teachers with 20 or more years of experience. Their students had a mean raw score of 45.61 with a standard deviation of 5.693. Table 4.20 presents these data for English 1 Pre-AP.

Table 4.20

Raw Data for English 1 Pre-AP and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
English 1 Pre-AP				
	0 – 4 Years	47.03	6.336	113
	5 – 9 Years	48.11	6.157	400
	10 – 14 Years	45.76	6.197	234
	15 – 19 Years	-	-	-
	20 Years or More	45.61	5.693	38
Total				785

Weighted averages, taking sample size into consideration, can be found in Table 4.21. The mean STAAR raw score of students in the first experience range, with zero to four years' experience, was 48.649 with a standard error of .481. The student performance of teachers in the second experience range, with five to nine years' experience, had a mean raw score of 47.151 with a standard error of .257. Students whose teacher had 10-14 years' experience had a mean raw score of 46.441 with a standard error of .331. There were no student-teacher pairs in the experience range of 15-19 years, so this category was not included in the analysis. The mean raw score of

students whose teacher had 20 years of experience or more was 46.686 with a standard error of .819. These figures can be found in Table 4.21.

Table 4.21

Estimated Statistics for English 1 Pre-AP and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
English 1 Pre-AP			
0 – 4 Years	48.649	.481	113
5 – 9 Years	47.151	.257	400
10 – 14 Years	46.441	.331	234
15 – 19 Years	-	-	-
20 Years or More	46.686	.819	38
Total			785

Results of analysis. The homogeneity of variances was confirmed through Levene's test, which was not significant, $p = .715$. Analysis was then completed using ANCOVA and Teacher Experience, which indicated a significant affect, $F(1, 780) = 392.063$, $p = .000$. Pairwise comparisons for the affect of teacher experience were conducted using Bonferroni adjusted alpha levels of .0125 per test (.05/4). Results indicated the students of teachers with zero to four years' experience were more successful than their peers with teachers of 10-14 years' experience. Results of the pairwise comparisons for English 1 Pre-AP can be seen in Table 4.22.

Table 4.22

Raw Score Pairwise Comparisons of English 1 Pre-AP and Teacher Experience Levels

Years of Experience (I)	Teacher Experience (J)	Mean Difference (I – J)	Standard Error	p
0 – 4	5 – 9	1.498	.552	.041*
	10 – 14	2.208	.579	.001***
	15 – 19	1.963	.945	.229
5 – 9	0 – 4	-1.498	.552	.041*
	10 – 14	.709	.423	.564
	15 – 19	.464	.862	1.000
10 – 14	0 – 4	-2.208	.579	.001***
	5 – 9	-.709	.423	.564
	15 – 19	-.245	.882	1.000
15 – 19	0 – 4	-1.963	.945	.229
	5 – 9	-.464	.862	1.000
	10 – 14	.245	.882	1.000

*p<.05. **p<.01. ***p<.001.

English 1 Enriched.

Raw data. In English 1 Enriched, there were 87 pairs in the range of zero to four years' experience with a mean STAAR raw score of 42.45 and a standard deviation of 5.998. There were 160 pairs in the range of five to nine years. These students had a mean raw score of 44.88 with a standard deviation of 5.918. There were no student-teacher pairs in the ranges of 10-14 or 15-19 years' experience, so these categories are not included in the analysis. There was only one pair in the range of 20 years' experience or more. This student achieved 35.00 items correct. These data are presented in Table 4.23.

Table 4.23

Raw Data for English 1 Enriched and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (n)
English 1 Enriched				
	0 – 4 Years	42.45	5.998	87
	5 – 9 Years	44.88	5.918	160
	10 – 14 Years	-	-	-
	15 – 19 Years	-	-	-
	20 Years or More	35.00	-	1
Total				248

Weighted averages were also calculated. The students whose teacher had zero to four years' experience had a mean STAAR raw score of 43.261 with a standard error of .549. The students of teachers with five to nine years of experience had a mean raw score of 44.428 with a standard error of .403. Table 4.24 presents these data.

Table 4.24

Estimated Statistics for English 1 Enriched and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (n)
English 1 Enriched				
	0 – 4 Years	43.261	.549	87
	5 – 9 Years	44.428	.403	160
	10 – 14 Years	-	-	-
	15 – 19 Years	-	-	-
	20 Years or More	35.701	5.061	1
Total				248

Results of analysis. Levene's test was not significant, $p = .371$, confirming homogeneity of variances. Analysis was then completed using ANCOVA and Teacher

Experience. Significance was indicated by the ANCOVA, $F(1, 244) = 94.311, p = .000$.

However, there were no indications of significance from the pairwise comparisons.

These results can be found in Table 4.25.

Table 4.25

Raw Score Pairwise Comparisons of English I Enriched and Teacher Experience Levels

Years of Experience (I)	Teacher Experience (J)	Mean Difference (I – J)	Standard Error	<i>p</i>
0 – 4	5 – 9	-1.167	.686	.271
	10 – 14	-	-	-
	15 – 19	-	-	-
	20 +	-7.561	5.089	.416
5 – 9	0 – 4	1.167	.686	.271
	10 – 14	-	-	-
	15 – 19	-	-	-
	20 +	-8.728	5.077	.261
10 – 14	0 – 4	-	-	-
	5 – 9	-	-	-
	15 – 19	-	-	-
	20 +	-	-	-
15 – 19	0 – 4	-	-	-
	5 – 9	-	-	-
	10 – 14	-	-	-
	20 +	-	-	-
20 +	0 – 4	-	-	-
	5 – 9	-7.561	5.089	.416
	10 – 14	-8.728	5.077	.261
	15 – 19	-	-	-

* $p < .05$. ** $p < .01$. *** $p < .001$.

English 1.

Raw Data. In English 1, there were 326 student-teacher pairs where the teachers had zero to four years of experience. The students achieved a mean STAAR raw score of 38.84 with a standard deviation of 7.920. Where teachers had five to nine years of experience, there were 224 student-teacher matches. The mean raw score was 38.44 with a standard deviation of 7.675. In the 10-14 years' experience range, there were 172 students with a mean raw score of 37.66. The standard deviation was 7.378. There were a total of 216 students whose teachers had 15-19 years of experience. The students had a mean raw score of 38.16 with a standard deviation of 7.169. Where the teachers had 20 or more years of experience, there were 49 student-teacher pairs. The mean raw score was 38.51 with a standard deviation of 8.214. These figures can be seen in Table 4.26.

Table 4.26

Raw Data for English 1 and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
English 1			
0 – 4 Years	38.84	7.920	326
5 – 9 Years	38.44	7.675	224
10 – 14 Years	37.66	7.378	172
15 – 19 Years	38.16	7.169	216
20 Years or More	38.51	8.214	49
Total			987

Weighted averages were also calculated. These are presented in Table 4.27. The mean STAAR raw score of students whose teachers had zero to four years of experience

was 38.415. The standard error was .345. Where teachers had five to nine years of experience, the students had a mean raw score of 38.517 with a standard error of .415. Students had a mean raw score of 38.057 where teachers had 10-14 years of experience with a standard error of .474. Students had a mean raw score of 38.357 where teachers had 15-19 years of experience. The standard error was .423. Where teachers had 20 or more years of experience, students had a mean raw score of 38.733 with a standard error of .887.

Table 4.27

Estimated Statistics for English 1 and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
Algebra 1 Pre-AP			
0 – 4 Years	38.415	.345	326
5 – 9 Years	38.517	.415	224
10 – 14 Years	38.057	.474	172
15 – 19 Years	38.357	.423	216
20 Years or More	38.733	.887	49
Total			987

Results of analysis. Homogeneity of variances was confirmed via Levene's test, which was not significant, $p = .675$. Analysis was done using ANCOVA and Teacher Experience, which indicated a significant relationship between the two, $F(1, 981) = 499.284$, $p = .000$. However, the pairwise comparison showed no significant results or differences among any of the experience code categories. Table 4.28 presents the pairwise comparisons for English 1.

Table 4.28

Raw Score Pairwise Comparisons of English I and Teacher Experience Levels

Years of Experience (I)	Teacher Experience (J)	Mean Difference (I – J)	Standard Error	<i>p</i>
0 – 4	5 – 9	-.103	.540	1.000
	10 – 14	.358	.587	1.000
	15 – 19	.057	.546	1.000
	20 +	-.318	.952	1.000
5 – 9	0 – 4	.103	.540	1.000
	10 – 14	.461	.630	1.000
	15 – 19	.160	.592	1.000
	20 +	-.216	.980	1.000
10 – 14	0 – 4	-.358	.587	1.000
	5 – 9	-.461	.630	1.000
	15 – 19	-.301	.635	1.000
	20 +	-.676	1.006	1.000
15 – 19	0 – 4	-.057	.546	1.000
	5 – 9	-.160	.592	1.000
	10 – 14	.301	.635	1.000
	20 +	-.376	.983	1.000
20 +	0 – 4	.318	.952	1.000
	5 – 9	.216	.980	1.000
	10 – 14	.676	1.006	1.000
	15 – 19	.376	.983	1.000

p*<.05. *p*<.01. ****p*<.001.

Writing achievement

English 1 Pre-AP.

Raw data. In English 1 Pre-AP, where teachers had zero to four years of experience, there were 113 students. The students achieved a mean STAAR raw score of 51.41. The standard deviation was 5.683. Where teachers had five to nine years of experience, there were 401 students whose mean raw score was 52.28 with a standard deviation of 5.498. Where teachers had 10-14 years of experience, there were 234 students who scored a mean raw score of 49.32. The standard deviation was 5.759. There were no student-teacher pairs in the 15 to 19 years' experience range. Teachers who had 20 or more years of experience had 37 students whose mean raw score was 49.65. The standard deviation was 5.417. The raw data for English 1 Pre-AP can be found in Table 4.29.

Table 4.29

Raw Data for English 1 Pre-AP and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
English 1 Pre-AP			
0 – 4 Years	51.41	5.683	113
5 – 9 Years	52.28	5.498	401
10 – 14 Years	49.32	5.759	234
15 – 19 Years	-	-	-
20 Years or More	49.65	5.417	37
Total			785

To consider sample sizes, weighted averages were also calculated. Where teachers had zero to four years of experience, the mean STAAR raw score was 53.039 with a standard error of .410. Students whose teachers had five to nine years of experience had a mean raw score of 51.310. The standard error was .218. Where teachers had 10-14 years of experience, the mean raw score for students was 49.905. The standard error was .282. Where teachers had 20 or more years of experience, the students' mean raw score was 51.417 with a standard error of .709. These figures can be seen in Table 4.30.

Table 4.30

Estimated Statistics for English 1 Pre-AP and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
English 1 Pre-AP			
0 – 4 Years	53.039	.410	113
5 – 9 Years	51.310	.218	401
10 – 14 Years	49.905	.282	234
15 – 19 Years	-	-	-
20 Years or More	51.417	.709	37
Total			785

Results of analysis. Levene's test was not significant, confirming homogeneity of variances, $p = .785$. Analysis was then conducted using ANCOVA and Teacher Experience. While significance was indicated by the ANCOVA, $F(1, 3) = 550.482$, $p = .000$, there were no indications of significance from the pairwise comparisons. These comparisons are presented in Table 4.31.

Table 4.31

Raw Score Pairwise Comparisons of English I Pre-AP and Teacher Experience Levels

Years of Experience (I)	Teacher Experience (J)	Mean Difference (I – J)	Standard Error	<i>p</i>
0 – 4	5 – 9	1.728	.470	.002
	10 – 14	3.133	.494	.000
	15 – 19	-	-	-
	20 +	1.622	.813	.278
5 – 9	0 – 4	-1.728	.470	.002
	10 – 14	1.405	.359	.001
	15 – 19	-	-	-
	20 +	-.107	.746	1.000
10 – 14	0 – 4	-3.133	.494	.000
	5 – 9	-1.405	.359	.001
	15 – 19	-	-	-
	20 +	-1.512	.761	.283
15 – 19	0 – 4	-1.622	.813	.278
	5 – 9	.107	.746	1.000
	10 – 14	1.512	.761	.283
	20 +	-	-	-
20 +	0 – 4	1.728	.470	.002
	5 – 9	3.133	.494	.000
	10 – 14	-	-	-
	15 – 19	1.622	.813	.278

p*<.05. *p*<.01. ****p*<.001.

English 1 Enriched.

Raw data. In English 1 Enriched, there were 88 pairs of students with teachers in the 0-4 years of experience range. These students had a mean STAAR raw score of 46.98 and a standard deviation of 5.756. There were 161 students whose teachers had 5-9 years' experience. The mean of these students' raw scores was 48.08 with a standard deviation of 6.034. There were no students with teachers in the ranges of 10-14 or 15-19 years. There was only one teacher with 20 or more years of experience. This student achieved a raw STAAR score of 45.00. Table 4.32 presents these raw data.

Table 4.32

Raw Data for English 1 Enriched and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
English 1 Enriched				
	0 – 4 Years	46.98	5.756	88
	5 – 9 Years	48.08	6.034	161
	10 – 14 Years	-	-	-
	15 – 19 Years	-	-	-
	20 Years or More	45.00	-	1
Total				250

Weighted averages were also calculated. The mean STAAR raw score of students whose teacher had 0-4 years' experience was 43.261 with a standard error of .549. Students whose teacher had 5-9 years of experience had a mean raw score of 44.428 with a standard error of .403. Table 4.33 presents these data.

Table 4.33

Estimated Statistics for English 1 Enriched and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
English 1 Enriched			
0 – 4 Years	48.073	.462	88
5 – 9 Years	47.468	.339	161
10 – 14 Years	-	-	-
15 – 19 Years	-	-	-
20 Years or More	47.225	4.280	1
Total			250

Results of analysis. Levene's test was not significant, $p = .371$, confirming homogeneity of variances. Using ANCOVA and Teacher Experience, analysis was conducted, where significance was indicated, $F(1, 244) = 94.311$, $p = .000$. There were no indications of significance, though, from the pairwise comparisons. The results of the pairwise comparisons (the experience ranges that had student-teacher pairs) can be seen in Table 4.34.

Table 4.34

Raw Score Pairwise Comparisons of English I Enriched and Teacher Experience Levels

Years of Experience (I)	Teacher Experience (J)	Mean Difference (I – J)	Standard Error	<i>p</i>
0 – 4	5 – 9	.606	.578	.887
	10 – 14	-	-	-
	15 – 19	-	-	-
	20 +	.849	4.302	1.000
5 – 9	0 – 4	-.606	.578	.887
	10 – 14	-	-	-
	15 – 19	-	-	-
	20 +	.243	4.294	1.000
10 – 14	0 – 4	-	-	-
	5 – 9	-	-	-
	15 – 19	-	-	-
	20 +	-	-	-
15 – 19	0 – 4	-	-	-
	5 – 9	-	-	-
	10 – 14	-	-	-
	20 +	-	-	-
20 +	0 – 4	-.849	4.302	1.000
	5 – 9	-.243	4.294	1.000
	10 – 14	-	-	-
	15 – 19	-	-	-

p*<.05. *p*<.01. ****p*<.001.

English 1.

Raw data. In English 1, 328 students had teachers within the range of zero to four years' experience. The mean STAAR raw score for these students was 42.42 with a standard deviation of 6.238. Where the teachers' experience fell in the five to nine years' experience range, there were 226 students. These students achieved a mean raw score of 42.15 with a standard deviation of 6.532. There were 172 students whose teachers fell in the experience range of 10 to 14 years. These students' mean raw score was 42.52 with a standard deviation of 6.695. Where the teachers had 15 to 19 years of experience, there were 218 students. Their mean raw score was 42.54 with a standard deviation of 6.411. Where teachers had 20 years of experience or more, there were 48 students. These students achieved a mean raw score of 42.31 with a standard deviation of 6.039. These raw data are presented in Table 4.35.

Table 4.35

Raw Data for English 1 and Teacher Experience

Course	Teacher Experience	Mean STAAR Raw Score	Standard Deviation	Student-Teacher Pairs (<i>n</i>)
English 1				
	0 – 4 Years	42.42	6.238	328
	5 – 9 Years	42.15	6.532	226
	10 – 14 Years	42.52	6.695	172
	15 – 19 Years	42.54	6.411	218
	20 Years or More	42.31	6.039	48
Total				992

To account for sample sizes, weighted averages were also calculated. Table 4.36 presents these data. The mean STAAR raw score of students whose teachers had zero to four years of experience was 42.468 with a standard error of .286. Where teachers had

five to nine years of experience, the students had a mean raw score of 42.010. The standard error was .345. Students had a mean raw score of 42.773 where teachers had 10 to 14 years of experience with a standard error of .396. Students had a mean raw score of 42.386 where teachers had 15 to 19 years' experience. The standard error was .351. Where teachers had 20 years of experience or more, students had a mean raw score of 42.441 with a standard error of .749.

Table 4.36

Estimated Statistics for English 1 and Teacher Experience

Course			
Teacher Experience	Mean STAAR Raw Score	Standard Error	Student-Teacher Pairs (<i>n</i>)
English 1			
0 – 4 Years	42.468	.286	328
5 – 9 Years	42.010	.345	226
10 – 14 Years	42.773	.396	172
15 – 19 Years	42.386	.351	218
20 Years or More	42.441	.749	48
Total			992

Results of analysis. Homogeneity of variances was confirmed via Levene's test, which was not significant, $p = .571$. Analysis was done using ANCOVA and Teacher Experience, which did not indicate a significant relationship, $F(4, 986) = .556$, $p = .695$.

Summary

This chapter presented the results of the study's analysis. A description of the coding system used in the analysis was provided. The results were presented by research

question, addressing each one independently. Descriptive statistics for each were provided, including group means and standard deviation, in addition to a description of the N for each group included in the analysis.

Results of the analysis, using ANCOVA, were provided. For each group included in the analysis, the difference of means was provided, as well as the F statistic and the p value. The results were discussed, highlighting significant interactions observed as well as values for η_p^2 for further consideration of effect size.

CHAPTER V

ANALYSIS

This study examined the interaction between student ethnicity, teacher ethnicity, student, and teacher experience level in a large suburban district in southeast Texas, consisting of five comprehensive high schools. The goal of this research was to further inform educators on the effects of these variables and the impacts they may have on student achievement. The following chapter presents an analysis of the results. Discussion is organized by each research question individually.

Research Question 1

The initial question of this study investigated the relationship of student and teacher ethnicity and the impact on student achievement. A difference was indicated where students had participated in one course in each of the assessment areas. In the area of mathematics achievement, significance was indicated in the Algebra 1 Pre-AP course. A difference was also found where students had participated in the English 1 course for both the Reading and Writing assessments. While a relationship student and teacher ethnicity was indicated in these areas, the effect size is small. Therefore, these results should be interpreted with caution.

The mean difference between the two groups, Ethnicity Match and Non-Match, was minimal within each area (Math: 1.56, Reading: 1.46, Writing: 1.11). This does not indicate a meaningful difference in student performance between the two student groups. It is generally accepted amongst educators that student performance will vary a bit based on factors outside any teacher's control. These results appear to support the notions by

Gay (2010) and Ladson-Billings (2009) that, while teacher awareness of ethnicity, as well as cultural differences, may be a critical component of successfully working with diverse populations, it is certainly not the only component.

Research Question 2

The second question of this study investigated the effect the sex of the student and teacher has on achievement. None of the assessment areas indicated significant results. The mean difference between the two student groups, Sex Match and Non-Match, was extremely minimal in not only all assessment areas but for all courses in which students had enrolled. Only one course, when looking at Writing achievement, had a difference of means that indicated a performance difference greater than a full test item but, again, it was only slightly so (English 1 Enriched: 1.12).

These results do not appear to support existing research that has found gender-based teacher interactions to be a significant contributor to the instructional environment and, in turn, educational outcomes (Dee, 2005; Nixon & Robinson, 1999). Rather, the findings of this study support literature suggesting there is little association between gender-based assignments and student performance (Ehrenberg, Goldhaber, & Brewer, 1995).

Research Question 3

The third, and final, research question of the study explored the impact of a teacher's level of experience. A difference was found in the gifted and talented course in two assessment areas, Mathematics and Reading. However, the experience range in which this occurred differed between the two assessment contents.

In Algebra 1 / Gifted and Talented, students whose teachers had 10 to 14 years' experience outperformed students whose teachers' experience level fell into all other ranges. Students of teachers with 10 to 14 years' experience outperformed students whose teachers had five to nine years' experience by approximately two and half questions and students whose teachers had 15 to 19 years of experience by approximately three and a half questions. Both of these results were significant at a critical alpha level of .01. The students of teachers with 10 to 14 years' experience also outperformed those students whose teachers had zero to four years' experience by approximately 3.7 test items; these results were significant at a critical alpha level of .001, suggesting teachers within the experience range of 10 to 14 years have the most success with student learning.

While a difference was found in the same course between both Reading and Mathematics, the range of teacher experience differed between the two. In English 1 / Gifted and Talented, students whose teachers had zero to four years of experience outperformed their classmates whose teachers had five to nine years' experience by approximately one and a half test items and was significant at the .05 level. They also outperformed students whose teachers had 10 to 14 years' experience by just over two questions; this result was significant at the .001 level.

These findings support literature suggesting teachers can continue to improve their skills and perfect their instructional abilities well into their teaching careers (Papay & Kraft, 2015). It has also been suggested effectiveness does not necessarily come with experience, which this study also supports (Corcoran, Jennings, & Beveridge, 2011). However, these findings agree with research showing teachers eventually plateau in their

professional learning over the course of their careers (Clotfelter, et. al., 2006; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004).

Discussion

While a relationship between student and teacher ethnicity was found, as well as a teacher's level of experience, the effect sizes were small. None of the variables were found to drastically impact student achievement. Therefore, these results should be interpreted with caution.

Ethnicity, and the role it plays within our classrooms, has been a focus of discussion for some time (Glazer, 1993; Payne & Welsh, 2000). This discussion was recently illustrated by the findings of McGrady and Reynolds (2013), stating white teachers' treatment of minority students may be more negative than that of white students. Researchers have called for an increasing amount of teacher training and preparedness regarding student ethnicity, in a proactive effort to prevent teachers from, consciously or unconsciously, reinforcing negative stereotypes or allowing biases to impact instruction and, in turn, student learning (Banks, 2010; Hollins, 1995; Moule, 2012). It has also been suggested students may work best with teachers who have similar experiences, supporting stronger relationships (Haberman & Post, 1998; Heath, 1971; Marx, 2008). However, the current findings may not support the notion that ethnicity is a crucial variable in the classroom or that it should be a high priority for either teacher training or on-going professional development.

What should be a focus of professional development, however, is support for beginning teachers. Existing literature suggests teachers new to the classroom make the largest strides in skill, which is most likely due to the learning curve inherent to stepping

into the classroom for the first time (Papay & Kraft, 2015). The current findings, however, suggest newer teachers are more successful in Reading than in Mathematics. Therefore, this study suggests instructional support for beginning teachers, specifically those of mathematics, may need to be a priority of professional development.

Implications

The findings of this study might reform the need for a continued debate of ethnicity in the classroom. Rather, this study appears to support the notion that students and teachers can work together successfully despite a history or culture that may differ from one another. Given the increased focus within teacher training and professional development, perhaps this finding is a result of the conversation, albeit indirectly. However, this study would suggest that ethnicity may not be the variable responsible for the continuing achievement gap.

Research has found so many other variables play an active role in the complex process of instruction and student learning, including the relationships or climate of a campus- which are complex variables themselves (Shindler, Jones, Williams, Taylor, & Cadenas, n.d.; Sheldon & Epstein, 2002; Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Shindler, Jones, Williams, Taylor, & Cadenas, 2009; Gregory, et al., 2010; Tate & Copas, 2010). We also know student learning can be impacted by class sizes and campus funding (Adamson & Darling-Hammond, 2012; Biddle & Berliner, 2002; Jarman & Boyland, 2011). So, then, why does the conversation surrounding the achievement gap seem to focus solely on the variable of ethnicity?

When the achievement gap is itself a phrase used to describe the performance and achievement of students as divided by ethnicity, could it be this is simply the easy answer

to turn to? It is certainly easier to say teachers cannot work with diverse populations than to sort through the myriad of complexity that comes with variables like a campus' climate or relationships. Or, perhaps, could it be ethnicity is commonly referred to as an issue in the classroom not by those in the classrooms themselves but by those who appreciate the political nature of such an answer?

This study suggests educators may not need to be as focused on ethnicity as much the popular conversation may make it appear. Rather, educators should continue to include cultural awareness within programs of teacher training as well as ongoing professional development. However, these programs do not need to be intended as a roadmap for individual interactions with specific ethnicities; rather, they should help provide teachers with a general schema of various cultures, including their own. As suggested within the framework of CRT instruction, successful teachers work to facilitate classroom instruction, utilizing the diversity within, to create inclusive and effective, as well as respectful, learning experiences for all students (Gay, 2010).

Further research

While the state of education, as well its accountability system, continues to be debated, a resulting conversation topic continues to be teacher merit-pay (Figlio & Kenny, 2006; Goldhaber, 2002). Based on the current findings, perhaps teacher experience is a variable that should be considered in future conversations. While experience may be more applicable to some content areas over others to some degree, further research is needed to say if this is the case and, if so, to what degree. Additional research may also be needed on the most effective way to include experience as a

variable in the formula used to determine the recipients, as well as the amount, of merit pay.

Interestingly, an additional finding of this study is that newer teachers of reading may have potential for more success than their experienced counterparts. It is generally accepted that there are a number of classroom skills that require not only knowledge but practice. So, then, what are the talents or abilities newer teachers might possess which may enable increased student success? This information could be used to design continuing professional development to maintain teacher effectiveness over time. However, further research would be needed to analyze the components of teacher qualities, both when teachers initially enter the classroom and once they have more experience, and which ones specifically have a positive impact on reading achievement.

Conclusion

This chapter discussed the data results of each research question. Areas of significance were noted for each. Implications for educators, based on the interpretation of these data, were noted. Possible areas for future research were also reviewed.

This study seems to suggest that educators who are called successful teachers of diversity are, in fact, successful teachers in general. These are the teachers who have strong knowledge of their content, sharp instructional skills, and impressive classroom management. For some, these skills are acquired over a period of time and practice either in their own classroom or in a pre-service environment; for others, these skills may come more naturally and instinctively, allowing their educational training to only further their understanding of the learning process and build upon their instinctive skills. These

teachers do not just work well with students who look like them; they work well with all students.

Teachers see a variety of personalities, strengths and weaknesses- academic or otherwise- and attempt to work with each as a whole individual who is just one piece of the puzzle that is their classroom. Successful teachers are not only skilled at solving their classroom puzzle, through a combination of content knowledge, pedagogy, and interpersonal skills, they have dedicated themselves to solving that puzzle time and time again. These teachers may not see ethnicity when looking around their classrooms; rather, they see their students.

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