Texas High School Distinction Designations and Differences in Teacher and Student Demographic Characteristics: A Statewide, Multiyear Investigation

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Abstract

Analyzed in this study was the degree to which the percentage of beginning teachers and student ethnicity/race enrollment percentages in Texas high schools differed as a function of two distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics) was examined. Archival data were obtained from the Texas Academic Performance Reports for the 2012-2013, 2013-2014, 2014-2015, and 2015-2016 school years. Statistically significant differences were present in the percentage of beginning teachers as a function of distinction designation. Higher percentages of beginning teachers were present in high schools that did not meet the two distinction designations than in schools that met either distinction designations. With respect to student enrollment percentages by ethnicity/race, higher percentages of Asian students and lower percentages of Black and Hispanic students were present at schools that met the two distinction designations. Implications of results and recommendations for future research were provided.

Keywords: Beginning teacher, Distinction designation, Ethnic/racial enrollment, High schools, Mathematics, Reading/English Language Arts

The United States has faced many challenges with regard to student achievement and addressing inequities in public education (Darling-Hammond & Sykes, 2003; Terry, 2010). In an attempt to address the educational challenges in American public schools, the United States government has reauthorized the Elementary and Secondary Education Act numerous times. With each reauthorization, public school leaders had to address various policy changes such as requiring teachers to be highly qualified by standards set forth under the No Child Left Behind Act of 2002. More importantly was the mandate of the No Child Left Behind Act to provide potential punitive consequences to schools that failed to meet accountability standards based on high stakes testing. Although the No Child Left Behind Act has been replaced by the Every Student Succeeds Act, the impetus to meet accountability standards remains a driving force for school administrators to hire high quality teachers.

The Every Student Succeeds Act requires states to establish an accountability rating system to identify the lowest performing schools and be prepared to provide an improvement plan for those schools who fail to demonstrate progress (Alliance for Excellent Education, 2016a). As such, pressure remains on school administrators to hire high quality teachers.

Because numerous researchers (e.g., Brophy, 1988; Darling-Hammond, 2000; Darling-Hammond, 2007; McCormick & O'Connor, 2015; Wright, Horn, & Sanders, 1997) have established that teacher quality and student achievement are related, school leaders have emphasized the hiring of high quality teachers to improve the accountability ratings of their schools.

However, schools that received a poor accountability rating are more likely to have a high percentage of beginning and inexperienced teachers teaching in schools with a high percentage of ethnically diverse students (Martinez-Garcia & Slate, 2010, Peske& Haycock, 2006).

Because researchers (e.g., Darling-Hammond, 2008; Greenlee & Brown, 2009; Martinez-Garcia, LaPrairie, & Slate, 2011; Martinez-Garcia & Slate, 2012a, 2012b) had established a relationship between teacher quality and student achievement, the need to place high quality teachers in schools is a critical topic when addressing low performing schools. Statistically significantly lower percentages of beginning teachers have been documented to be employed in high performing schools than in low performing schools. In a recent study, Moreno and Slate (2015) conducted an empirical investigation of teacher characteristics in Texas high schools. In their statewide analysis, they documented the presence of statistically significant differences in the percentage of beginning teachers by school accountability rating in Texas high schools during the 2010-2011 school year. Moreno and Slate established that over 4% of teachers in Exemplary high schools were beginning teachers in comparison to slightly over 9% of teachers in Academically Unacceptable Schools who were beginning teachers. Similarly documented by Martinez-Garcia and Slate (2012b) was the presence of statistically significant differences in the percentage of beginning teachers by accountability rating in three of the five years (i.e., 2003-2004, 2004-2005, and 2007-2008) of data they analyzed in Texas high schools. For example, in the 2003-2004 school year, the percentage of beginning teachers in Exemplary high schools was slightly less than 5% in comparison to almost 13% beginning teachers in Academically Unacceptable high schools. Additionally, in the 2007-2008 school year, Martinez-Garcia and Slate (2012b) determined that the percentage of beginning teachers in Exemplary high schools was slightly over 6% in comparison to more than 13% beginning teachers in Academically Unacceptable high schools.

Researchers (e.g., Clotfelter, Ladd, &Vigdor, 2006; Darling-Hammond, 2008; Greenlee & Brown, 2009; Martinez-Garcia & Slate, 2012b; Peske & Haycock, 2006) had documented the presence of statistically significant relationships between student achievement and teaching experience. Gagnon and Mattingly (2015) posited that inexperienced teachers have few pedagogical experiences (e.g., classroom management, curriculum, and instruction) which influence their ability to be effective teachers. In an analysis of student achievement and teacher experience in Texas, Rivkin, Hanushek, and Kain (2005) established that mathematics was statistically significantly lower in classrooms with inexperienced teachers than in classrooms with more experienced teachers. Clotfelter et al. (2006) further established that experienced teachers in North Carolina were a consistent indicator of improved student achievement. Because beginning teachers have little to no teaching experience, beginning teachers are more likely to experience greater challenges in their first year (Clotfelter et al., 2006; Darling-Hammond, 2008; Greenlee & Brown, 2009). Moreover, Rivkin et al. posited that the first year of teaching is a transition period wherein the new teacher is adjusting to the profession of education.

Similarly documented by Peske and Haycock (2006) was the presence of a lower percentage of novice teachers in high performing Wisconsin elementary schools as compared to a higher percentage of novice teachers in low performing schools. Peske and Haycock (2006) further established the presence of a high percentage of novice teachers teaching in schools with a high percentage of ethnically/racially diverse schools as compared to a low percentage of novice teachers in schools with a low percentage of ethnically/racially diverse schools. Schools with more than 62% of their students being ethnically/racially diverse had more than one fourth (i.e., 28%) teachers being novice teachers. This percentage was more than twice the percentage (i.e., 11%) of novice teachers in schools that had less than 1.5% of their students being ethnically/racially diverse.

In an investigation in the state of interest for this article, Texas, Martinez-Garcia and Slate (2010) documented the presence of a high percentage of beginning teachers in Texas high schools with a high percentage of ethnically/racially diverse student population for the 2004-2005 through 2007-2008 school years. For the 2007-2008 school year, schools with slightly less than 60% of their students being ethnically/racially diverse were present in the highest one-third of beginning teacher percentages.

This percentage was approximately a 15% difference compared to slightly less than 52% of their students being ethnically/racially diverse in the lowest one-third of beginning teacher percentages. The presence of a high percentage of beginning teachers in Texas high schools with a high percentage of ethnically/racially diverse student population for the Martinez-Garcia and Slate (2010) study were also similar for the 2004-2005 through 2006-2007 school years.

Similarly documented by the Illinois Education Council was the presence of a higher percentage of students being ethnically/racially diverse in schools with a low teacher quality index as compared to a low percentage of students being ethnically/racially diverse in schools with a higher teacher quality index (Peske& Haycock, 2006). The Illinois Education Council established a teacher quality index utilizing multiple measures (i.e., teacher experience, education, emergency or provisional credentials, Basic Skills test failures, and average ACT composite scores) that had been documented to be related to student achievement (Peske-& Haycock, 2006). The Illinois Education Council used a large database of 140,000 teachers in Illinois from the 20022003 school year. The Illinois Education Council further categorized their results by dividing schools into quartiles based on their teacher quality index rating. Teachers in the top quartile were teachers with a higher teacher quality index rating than teachers in the lower quartile. In the lowest quartile students being ethnically/racially diverse was 88%. This percentage was substantially higher with only 1% of students being ethnically/racially diverse in the highest quartile.

Statement of the Problem

For several decades the United states has faced many challenges with improving student achievement and addressing inequities in public education (Darling-Hammond, 2000; Darling-Hammond & Sykes, 2003; Shen, Mansberger, & Yang, 2004; Terry, 2010). Additionally, the passage of the Every Student Succeeds Act replacing the No Child Left Behind Act, the impetus remains to meet state and federal accountability standards. With federal and state mandates to address student achievement, educational leaders are challenged with hiring quality teachers to ensure their schools do not receive poor accountability ratings from the state and be placed on an improvement plan (Alliance for Excellent Education, 2016a). Unfortunately, a high percentage of beginning teachers with little teaching experience are teaching in low performing schools as compared to a low percentage of beginning teachers in high performing schools (Darling-Hammond, 2008; Greenlee & Brown, 2009; Lopez & Slate; 2014; Martinez-Garcia, LaPrairie, & Slate, 2011; Martinez-Garcia & Slate, 2012a; Moreno & Slate, 2015; Peske& Haycock, 2006). Moreover, a high percentage of low performing schools with a high percentage of ethnically/racially diverse students were taught by beginning teachers (Gagnon & Mattingly, 2015; Peske& Haycock, 2006). Researchers (e.g., Clotfelter et al., 2006; Darling-Hammond, 2008; Greenlee & Brown, 2009; Martinez-Garcia & Slate, 2012b, Peske& Haycock, 2006) had well documented the presence of statistically significant relationships between student achievement and teacher experience. Furthermore, schools with a high percentage of beginning teachers and ethnically/racially diverse students have been established by researchers to be indicators of low performing schools (Adamson & Darling-Hammond, 2012; Borman & Dowling, 2010; Goldhaber, Lavery, & Theobald, 2015; Schmidt, Cogan, & McKnight, 2011).

Purpose of the Study

Four purposes were present in this investigation. The first purpose was to examine the degree to which the percentage of beginning teachers in Texas high schools differed as a function of two distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics).

The second purpose was to determine the extent to which differences were present in student enrollment by ethnicity/race as a function of two distinction designations for Texas middle schools. The third purpose was to ascertain whether trends were present for the percentage of beginning teachers and student demographic characteristics with respect to distinction designations in reading and mathematics.

The final purpose was to determine the degree to which prior trends established by Martinez-Garcia and Slate (2010, 2012a, 2012b) and Moreno and Slate (2015) were commensurate with the 2012-2013 through 2015-2016 school years that were examined in this study.

Significance of the Study

After an extensive review of the literature, no published studies were located that examined the percentage of beginning teachers as a function of two distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics) for Texas high schools. Moreover, no published studies were located in which student enrollment differences by ethnicity/race might exist as a function of two distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics) for Texas high schools. To date, the only study in which the percentage of beginning teachers was addressed as a function of two distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics) was conducted by Lopez and Slate (2014) for elementary schools in Texas. Prior to this study, Martinez and Garcia (2010), Martinez-Garcia and Slate (2012a) and Moreno and Slate (2015) conducted an empirical investigation of beginning teachers as a function of an accountability rating system no longer in use.

Research Questions

The following research questions were addressed in this study: (a) What is the difference in the percentage of beginning teachers in Texas high schools as a function of two distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics)?; (b) What is the difference in student enrollment by ethnicity/race in Texas high schools as a function of distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics)?; (c) What trend is present in the percentage of beginning teachers in Texas high schools as a function of two distinction designations?; and (d) What trend is present in student enrollment ethnic/racial composition in Texas high schools as a function of two distinction designations? The first two research questions were repeated for the 2012-2013 through the 2015-2016 school years whereas the last two research questions involved a comparison across the four school years.

Method

Research Design

A non-experimental causal-comparative research design was used in this study (Cresswell, 2014; Johnson & Christensen, 2012). Due to the nature of non-experimental causal-comparative research, no manipulation of the independent variables can occur (Johnson & Christensen, 2012). The data that were obtained and analyzed in this study were archival quantitative data. Independent variables for this study represented distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics) for traditionally configured high schools in Texas whereas the dependent variables represented school characteristics (i.e., percentages of beginning teachers and student demographics).

Participants

Data from the Texas Academic Performance Reports for all traditionally configured (i.e., Grades 9-12) public high schools for the 2012-2013 through 2015-2016 school years in the State of Texas will be utilized in this study. Only traditional public high schools will have their data analyzed. Not present in this investigation will be data on any non-traditional or charter schools because of substantial differences between them and traditional schools.

Data specific to the percentages of beginning teachers as a function of Academic Achievement in Reading/English Language Arts and Mathematics distinction designations in the Texas Academic Performance Reports will be obtained for analysis. Distinction designation labels include *Distinction Earned*, *No Distinction Earned*, and *Not Eligible* (Texas Education Agency, 2014a).

Only schools that have earned a *Met Standard* accountability rating may qualify for the aforementioned distinction label of *Distinction Earned*. The Texas Education Agency uses five accountability rating categories: (a) Met Standard; (b) Met Alternative Standard; (c) Improvement Required; (d) Not Rated; and (e) Not Rated: Data Integrity Issues. Distinction designations, as defined by the Texas Education Agency (2014a), are "awarded in recognition of outstanding achievement in specific areas" (p. 53) such as Academic Achievement in Reading/English Language Arts or Academic Achievement in Mathematics. Each academic distinction designation is awarded based on outstanding achievement (Texas Education Agency, 2014a). Additionally, The Texas Education Agency (2014b) defined a beginning teacher as "a teacher reported with zero years of experience" (p. 27).

Procedures

Archival data were downloaded from the Texas Academic Performance Reports in the Texas Education Agency's website. Data were acquired on all Texas public high schools that contained Grades 9-12 for the 2012-2013 through the 2015-2016 school years. Specific variables on which information was downloaded were:(a) percent of beginning teachers; (b) distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics); and (c) student enrollment percentages by student demographics (i.e., Asian, Black, Hispanic, and White) were obtained.

The Texas Education Agency's distinction designations are awarded based on a variety of qualifications, or indicators, by school level. The Academic Achievement in Reading/English Language Arts distinction is awarded for academic achievement in reading/English language arts based on four indicators for the high school level. The Texas Education Agency (2014a) utilized the following indicators to determine eligibility: (a) Attendance rate; (b) AP/IB examination participation and performance in English language arts; (c) and SAT/ACT participation and performance in English language arts. The Academic Achievement in Mathematics is awarded for academic achievement in mathematics based on three indicators for the high school level. The Texas Education Agency (2014a) utilized the following indicators to determine eligibility: (a) Attendance rate; (b) AP/IB examination participation and performance in mathematics; (c) and SAT/ACT participation and performance in mathematics.

Results

Prior to conducting inferential statistics to determine whether differences were present in the percentage of beginning teachers between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn a distinction designation, checks were conducted to determine the extent to which these data were normally distributed. Because the majority of the normality values were within the limits of normality, +/- 3 (Onwuegbuzie & Daniel, 2002), parametric independent samples *t*-tests were conducted.

For the 2012-2013 school year for Texas high schools, the parametric independent samples *t*-test revealed a statistically significant difference in the percentage of beginning teachers between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation, $t(692.94) = 3.36$, $p = .001$. This difference represented a small effect size (Cohen's d) of 0.22 (Cohen, 1988). High schools in Texas that did not earn a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of beginning teachers (7.18%) than did high schools that earned a distinction designation (5.92%). Readers are directed to Table 1 for the descriptive statistics for this analysis.

Table 1 Descriptive Statistics for the Percentages of Beginning Teachers Between Schools That Met and Did Not Meet the Reading/English Language Arts Distinction Designation for the 2012-2013 Through the 2015-2016 School Years

Distinction Designation	*n* of schools	*M%*	*SD%*
2012-2013			
Met Distinction	311	5.92	5.24
Did Not Meet Distinction	734	7.18	6.28
2013-2014			
Met Distinction	374	8.14	10.31
Did Not Meet Distinction	830	8.29	7.30
2014-2015			
Met Distinction	357	6.76	5.66
Did Not Meet Distinction	699	8.34	6.87
2015-2016			
Met Distinction	370	5.98	4.94
Did Not Meet Distinction	696	8.14	5.99

Concerning the 2013-2014 school year for Texas high schools, the parametric independent samples *t*-test did not reveal a statistically significant difference in the percentage of beginning teachers between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation, $t(548.32) = 0.26$, $p = .80$. Similar percentages of beginning teachers were employed in both high school types. Table 1 contains the descriptive statistics for this analysis.

With respect to the 2014-2015 school year for Texas high schools, a statistically significant difference was revealed in the percentage of beginning teachers between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation, $t(848.16) = 3.97$, $p < .001$. This difference represented a small effect size (Cohen's *d*) of 0.25 (Cohen, 1988). Similar to the 2012-2013 school year, high schools in Texas that did not earn a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of beginning teachers (8.34%) than did high schools that earned a distinction designation (6.76%). Delineated in Table 1 are the descriptive statistics for this analysis.

Regarding the 2015-2016 school year for Texas high schools, a statistically significant difference was yielded in the percentage of beginning teachers between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation, $t(884.26) = 6.32$, $p < .001$. This difference represented a small effect size (Cohen's *d*) of 0.39 (Cohen, 1988). Congruent with the 2012-2013 and 2014-2015 school years, high schools in Texas that did not earn a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of beginning teachers (8.14%) than did high schools that earned a distinction designation (5.98%). Presented in Table 1 are the descriptive statistics for this analysis.

Next, the percentage of beginning teachers for Texas high schools was examined between schools that earned a distinction designation in mathematics and schools that did not earn such a distinction. For the 2012-2013 school year for Texas high schools, the parametric independent samples *t*-test revealed a statistically significant difference in the percentage of beginning teachers between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation, $t(766.28) = 2.44$, $p = .02$.

This difference represented a below small effect size (Cohen's *d*) of 0.16 (Cohen, 1988). High schools in Texas that did not earn a distinction designation in mathematics had a statistically significantly higher percentage of beginning teachers (7.12%) than did high schools that earned a distinction designation (6.19%). Readers are directed to Table 2 for the descriptive statistics for this analysis.

Table 2 Descriptive Statistics for the Percentages of Beginning Teachers Between Schools That Met and Did Not Meet the Mathematics Distinction Designation for the 2012-2013 Through the 2015-2016 School Years

Distinction Designation	*n* of schools	*M%*	*SD%*
2012-2013			
Met Distinction	351	6.19	5.61
Did Not Meet Distinction	694	7.12	6.19
2013-2014			
Met Distinction	444	7.77	10.08
Did Not Meet Distinction	799	8.91	8.43
2014-2015			
Met Distinction	389	6.73	5.05
Did Not Meet Distinction	667	8.43	7.19
2015-2016			
Met Distinction	384	6.33	4.96
Did Not Meet Distinction	682	7.99	6.05

Concerning the 2013-2014 school year for Texas high schools, the parametric independent samples *t*-test revealed a statistically significant difference in the percentage of beginning teachers between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation, $t(787.93) = 2.03$, $p = .04$. This difference represented a below small effect size (Cohen's *d*) of 0.12 (Cohen, 1988). Similar to the previous school year, high schools in Texas that did not earn a distinction designation in mathematics had a statistically significantly higher percentage of beginning teachers (8.91%) than did high schools that earned a distinction designation (7.77%). Table 2 contains the descriptive statistics for this analysis.

With respect to the 2014-2015 school year for Texas high schools, a statistically significant difference was revealed in the percentage of beginning teachers between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation, $t(1018.53) = 4.50$, $p < .001$. This difference represented a small effect size (Cohen's *d*) of 0.27 (Cohen, 1988). Similar to the previous two school years, high schools in Texas that did not earn a distinction designation in mathematics had a statistically significantly higher percentage of beginning teachers (8.43%) than did high schools that earned a distinction designation (6.73%). Delineated in Table 2 are the descriptive statistics for this analysis.

Regarding the 2015-2016 school year for Texas high schools, a statistically significant difference was yielded in the percentage of beginning teachers between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation, $t(927.01) = 4.85$, $p < .001$. This difference represented a small effect size (Cohen's *d*) of 0.30 (Cohen, 1988). Congruent with the previous three school years, high schools in Texas that did not earn a distinction designation in mathematics had a statistically significantly higher percentage of beginning teachers (7.99%) than did high schools that earned a distinction designation (6.33%). Presented in Table 2 are the descriptive statistics for this analysis.

With respect to the second research question, the dependent variable consisted of the percentages of student enrollment of four student demographic groupings (i.e., Asian, Black, Hispanic, and White). As such, a multivariate analysis of variance (MANOVA) statistical analysis was conducted separately for the Academic Achievement in Reading/English Language Arts and for the Academic Achievement in Mathematics designation distinctions. Prior to conducting the MANOVA procedures, the underlying assumptions for normality of the four dependent variables for each independent variable were checked. Specifically examined were Box's Test of Equality of Covariance and the Levene's Test of Equality of Error Variances. Although these assumptions were not met, Field (2013) contends that the MANOVA is sufficiently robust that a violation can be withstood.

For the 2012-2013 school year, the MANOVA revealed a statistically significant difference, Wilks' $\Lambda = .96$, $p < .001$, partial $\eta^2 = .04$, in student enrollment percentages by ethnicity/race between schools that earned a distinction designation in Reading/English Language Arts schools and schools that did not earn this distinction designation. Using Cohen's (1988) criteria, a small effect size was present. Univariate follow-up analysis of variance (ANOVA) procedures were then calculated to determine which particular student ethnic/racial grouping (i.e., Asian, Black, Hispanic, and White) percentages differed between the two school distinction designations. The ANOVAs yielded statistically significant differences between schools that earned a distinction in Reading/English Language Arts and schools that did not earn this distinction in the percentage of Asian students, $F(4, 1043) = 41.96$, $p < .001$, partial $\eta^2 = .04$; and in the percentage of Black students, $F(4, 1043) = 7.20$, $p = .007$, partial $\eta^2 = .002$. The effect sizes for these two statistically significant differences were small and below small, respectively. High schools in Texas that earned a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Asian students (3.68%) than did high schools that did not earn this distinction designation (1.64%). High schools that did not earn a distinction designation in Reading/English Language Arts had a statistically higher percentage of Black students (12.00%) than did high schools that earned this distinction designation (9.24%). Statistically significant differences were not present, however, in the percentage of Hispanic student enrollment, $F(4, 1043) = 0.53$, $p = .47$; and in the percentage of White student enrollment, $F(4, 1043) = 1.03$, $p = .31$. Similar percentages of Hispanic and White students were enrolled in both the high schools that meet this particular distinction designation and in high schools that did not meet this particular distinction designation. Readers are directed to Table 3 for the descriptive statistics for this analysis.

Table 3 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Reading/English Language Arts Distinction Designation Distinction Designation in the 2012-2013 School Year

Distinction Designation	n of schools	M%	SD%
Met Distinction			
Asian	312	3.68	7.27
Black	312	9.24	12.01
Hispanic	312	42.84	29.07
White	312	41.92	28.16
Did Not Meet Distinction			
Asian	736	1.64	2.94
Black	736	12.00	16.41
Hispanic	736	44.28	29.63
White	736	39.94	29.28

Concerning the 2013-2014 school year, the MANOVA revealed a statistically significant difference, Wilks' Λ = .94, $p < .001$, partial η^2 = .06, in overall student enrollment percentages by ethnicity/race between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation. Using Cohen's (1988) criteria, a moderate effect size was present. The follow-up ANOVAs yielded statistically significant differences between schools that earned a distinction in Reading/English Language Arts and schools that did not earn this distinction in the percentage of Asian students, $F(4, 1202) = 66.66$, $p < .001$, partial $\eta^2 = .05$; and in the percentage of Hispanic students, $F(4, 1202) = 4.43$, $p = .036$, partial $\eta^2 = .004$. The effect sizes for these two statistically significant differences were small and below small, respectively. Although not statistically significant at the conventional .05 level, near-statistically significant differences were present in the percentage of Black students, $F(4, 1202) = 3.03$, $p = .08$. Statistically significant differences were not present in the percentage of White students, $F(4, 1202) = 1.94$, $p = .16$.

Similar to the previous school year, high schools in Texas that earned a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Asian students (4.32%) than did high schools that did not earn this distinction designation (1.64%). High schools that did not earn a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Hispanic students (44.71%) than did high schools that earned this distinction (40.87%). Similar percentages of Black and White students were enrolled in both high school groupings. Table 4 contains the descriptive statistics for this analysis.

Table 4 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Reading/English Language Arts Distinction Designation Distinction Designation Distinction Designation in the 2013-2014 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	375	4.32	8.15
Black	375	9.84	12.59
Hispanic	375	40.87	28.26
White	375	42.56	28.07
Did Not Meet Distinction			
Asian	832	1.64	3.24
Black	832	11.48	16.16
Hispanic	832	44.71	29.81
White	832	40.03	29.68

Regarding the 2014-2015 school year, the MANOVA revealed a statistically significant difference, Wilks' Λ = .95, $p < .001$, partial η^2 = .05, in overall student enrollment percentages by ethnicity/race between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation. Using Cohen's (1988) criteria, a small effect size was present. The follow-up univariate ANOVAs yielded statistically significant differences between schools that earned a distinction in Reading/English Language Arts and schools that did not earn a distinction in the percentage of Asian students, $F(4, 1055) = 34.11$, $p < .001$, partial $\eta^2 = .03$; and in the percentage of Black students, $F(4, 1055) = 10.03$, $p = .002$, partial $\eta^2 = .009$. A small effect size was present for the Asian student group and a below small effect size was present for the Black student group (Cohen, 1988). Statistically significant differences were not present in the percentage of Hispanic students, $F(4, 1055) = 1.52$, $p = .22$; and in the percentage of White students, $F(4, 1055) = 0.52$, $p = .47$.

Similar to the previous two school years, high schools in Texas that earned a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Asian students (3.68%) than did high schools that did not earn this distinction designation (1.77%). Similar to the 2012-2013 school year, high schools that did not earn a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Black students (12.17%) than did high schools that earned this distinction designation (9.13%). Similar percentages of Hispanic and White students were enrolled in both high school types. Delineated in Table 5 are the descriptive statistics for this analysis.

Table 5 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Reading/English Language Arts Distinction Designation Distinction Designation Distinction Designation in the 2014-2015 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	360	3.68	7.33
Black	360	9.13	11.90
Hispanic	360	46.83	29.92
White	360	38.02	27.49
Did Not Meet Distinction			
Asian	700	1.77	3.34
Black	700	12.17	16.05
Hispanic	700	44.50	28.76
White	700	39.36	29.20

With respect to the 2015-2016 school year, the MANOVA revealed a statistically significant difference, Wilks' $\Lambda = .95$, $p < .001$, partial $\eta^2 = .05$, in overall student enrollment percentages by ethnicity/race between schools that earned a distinction designation in Reading/English Language Arts and schools that did not earn this distinction designation. A small effect size was present (Cohen, 1988). The follow-up univariate ANOVAs yielded statistically significant differences between schools that earned a distinction in Reading/English Language Arts and schools that did not earn a distinction in the percentage of Asian students, $F(4, 1067) = 37.01$, $p < .001$, partial $\eta^2 = .03$; and in the percentage of Black students, $F(4, 1067) = 11.73$, $p = .001$, partial $\eta^2 = .01$. Both effect sizes were small (Cohen, 1988). Statistically significant differences were not present in the percentages of Hispanic students, $F(4, 1067) = 0.23$, $p = .63$; and in the percentage of White students, $F(4, 1067) = 0.87$, $p = .35$.

Congruent with the previous three school years, high schools in Texas that earned a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Asian students (3.90%) than did high schools that did not earn this distinction designation (1.84%). Commensurate with the 2012-2013 and the 2014-2015 school year's results, high schools that did not earn a distinction designation in Reading/English Language Arts had a statistically significantly higher percentage of Black students (11.94%) than did high schools that earned this distinction designation (8.82%). Similar percentages of Hispanic and White students were enrolled in both high school types. Presented in Table 6 are the descriptive statistics for this analysis.

Table 6 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Reading/English Language Arts Distinction Designation Distinction Designation Distinction Designation in the 2015-2016 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	373	3.90	7.71
Black	373	8.82	10.52
Hispanic	373	45.70	29.71
White	373	39.15	27.90
Did Not Meet Distinction			
Asian	699	1.84	3.32
Black	699	11.94	15.85
Hispanic	699	46.59	28.93
White	699	37.44	28.74

For the 2012-2013 school year, the MANOVA revealed a statistically significant difference, Wilks' $\Lambda = .95$, $p < .001$, partial $\eta^2 = .05$, in student enrollment percentages by ethnicity/race for between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation. A small effect size was present (Cohen, 1988). The follow-up ANOVAs yielded statistically significant differences between schools that earned a distinction in mathematics and schools that did not earn a distinction in the percentage of Asian students, $F(4, 1043) = 35.64$, $p < .001$, partial $\eta^2 = .03$; and in the percentage of Black students, $F(4, 1043) = 10.23$, $p = .001$, partial $\eta^2 = .01$. Both effect sizes were small (Cohen, 1988). Statistically significant differences were not present in the percentage of Hispanic students, $F(4, 1043) = 0.13$, $p = .72$; and in the percentage of White students, $F(4, 1043) = 1.02$, $p = .31$. Readers are directed to Table 7 for the descriptive statistics for this analysis.

Table 7 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Mathematics Distinction Designation in the 2012-2013 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	353	3.45	7.16
Black	353	9.07	12.84
Hispanic	353	43.39	28.92
White	353	41.79	28.74
Did Not Meet Distinction			
Asian	695	1.63	2.64
Black	695	12.25	16.29
Hispanic	695	44.08	29.75
White	695	39.88	29.06

High schools in Texas that earned a distinction designation in mathematics had a statistically significantly higher percentage of Asian students (3.45%) than did high schools that did not earn this distinction designation (1.63%). High schools that did not earn a distinction designation in mathematics had a statistically significantly higher percentage of Black students (12.25%) than did high schools that earned this distinction designation (9.07%). Similar percentages of Hispanic and White students were enrolled in both high school types.

Concerning the 2013-2014 school year, the MANOVA revealed a statistically significant difference, Wilks' Λ = .95, $p < .001$, partial $\eta^2 = .05$, in overall student enrollment percentages by ethnicity/race between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation. Using Cohen's (1988) criteria, a small effect size was present. The follow-up univariate ANOVAs yielded statistically significant differences between schools that earned a distinction in mathematics and schools that did not earn a distinction in the percentage of Asian students, $F(4, 1241) = 41.20$, $p < .001$, partial $\eta^2 = .03$; and in the percentage of Black students, $F(4, 1241) = 13.23$, $p < .001$, partial $\eta^2 = .01$. Both effect sizes were small (Cohen, 1988). Statistically significant differences were not present in the percentage of Hispanic students, $F(4, 1241) = 0.62$, $p = .43$; and in the percentage of White students, $F(4, 1241) = 2.36$, $p = .12$.

Similar to the previous school year, high schools in Texas that earned a distinction designation in mathematics had a statistically significantly higher percentage of Asian students (3.79%) than did high schools that did not earn this distinction designation (1.77%). High schools that did not earn a distinction designation in mathematics had a statistically significantly higher percentage of Black students (12.44%) than did high schools that earned this distinction designation (9.11%). Delineated in Table 8 are the descriptive statistics for this analysis. Similar percentages of Hispanic and White students were enrolled in both high school types.

Table 8 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Mathematics Distinction Designation in the 2013-2014 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	446	3.79	7.74
Black	446	9.11	11.97
Hispanic	446	42.72	28.09
White	446	42.15	27.76
Did Not Meet Distinction			
Asian	800	1.77	3.29
Black	800	12.44	17.21
Hispanic	800	44.08	30.08
White	800	39.49	30.01

Regarding the 2014-2015 school year, the MANOVA revealed a statistically significant difference, Wilks' Λ = .95 $p < .001$, partial $\eta^2 = .05$, in student enrollment percentages by ethnicity/race between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation. Using Cohen's (1988) criteria, a small effect size was present. The follow-up univariate ANOVAs yielded statistically significant differences between schools that earned a distinction in mathematics and schools that did not earn a distinction in the percentage of Asian students, $F(4, 1055) = 43.30$, $p < .001$, partial $\eta^2 = .04$; and in the percentage of White students, $F(4, 1055) = 4.72$, $p = .04$, partial $\eta^2 = .004$. The effect sizes for these two statistically significant differences were small and below small, respectively (Cohen, 1988).

Statistically significant differences were not present, however, in the percentage of Hispanic students, $F(4, 1055) = 3.10$, $p = .08$; and in the percentages of Black students, $F(4, 1055) = 2.53$, $p = .11$.

Similar to the previous two school years, high schools in Texas that earned a distinction designation in mathematics had a statistically significantly higher percentage of Asian students (3.75%) than did high schools that did not earn this distinction designation (1.64%). High schools that did not earn a distinction designation in mathematics had a statistically higher percentage of White students (40.33%) than did high schools that earned this distinction designation (36.48%). Similar percentages of Black and Hispanic students were enrolled in both the high schools that meet this particular distinction designation and in high schools that did not meet this particular distinction designation. Readers are directed to Table 9 for the descriptive statistics for this analysis.

Table 9 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Mathematics Distinction Designation in the 2014-2015 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	392	3.75	7.33
Black	392	10.19	12.99
Hispanic	392	47.35	29.10
White	392	36.48	27.52
Did Not Meet Distinction			
Asian	668	1.64	2.96
Black	668	11.69	15.80
Hispanic	668	44.08	29.16
White	668	40.33	29.18

With respect to the 2015-2016 school year, the MANOVA revealed a statistically significant difference, Wilks' $\Lambda = .94$, $p < .001$, partial $\eta^2 = .07$, in overall student enrollment percentages by ethnicity/race for Texas high schools between schools that earned a distinction designation in mathematics and schools that did not earn this distinction designation. Using Cohen's (1988) criteria, a moderate effect size was present. The follow-up univariate ANOVAs yielded statistically significant differences between schools that earned a distinction in mathematics and schools that did not earn a distinction in the percentage of Asian students, $F(4, 1067) = 65.77$, $p < .001$, partial $\eta^2 = .06$. A moderate effect size was present for the Asian student group. Statistically significant differences were not present in the percentage of Black students, $F(4, 1067) = 2.10$, $p = .15$; in the percentage of Hispanic students, $F(4, 1067) = 0.05$, $p = .82$; and in the percentage of White students, $F(4, 1067) = 0.41$, $p = .52$.

Congruent with the previous three school years, high schools in Texas that earned a distinction designation in mathematics had a statistically significantly higher percentage of Asian students (4.28%) than did high schools that did not earn this distinction designation (1.59%). Similar percentages of Black, Hispanic, and White students were enrolled in both elementary school types. Presented in Table 10 are the descriptive statistics for this analysis.

Table 10 Descriptive Statistics for the Percentages of Student Enrollment by Ethnicity/Race Between Schools That Met and Did Not Meet the Mathematics Distinction Designation in the 2015-2016 School Year

Distinction Designation	*n* of schools	*M%*	*SD%*
Met Distinction			
Asian	387	4.28	7.82
Black	387	10.01	11.74
Hispanic	387	46.01	29.42
White	387	37.30	28.15
Did Not Meet Distinction			
Asian	685	1.59	2.83
Black	685	11.31	15.54
Hispanic	685	46.44	29.08
White	685	38.45	28.63

Discussion

In this statewide, multiyear analysis, the degree to which the percentage of beginning teachers differed between two Texas high school accountability ratings was determined. Moreover, the extent to which differences were present in student enrollment ethnic/racial characteristics by school accountability rating for Texas high schools was ascertained. These two purposes were addressed for four school years of data. Following statistical analyses, results of this empirical investigation were then compared with the results from the Martinez-Garcia and Slate (2010, 2012a, 2012b) and Moreno and Slate (2015) studies on the previous Texas accountability system. Texas high schools that did not earn the Academic Achievement in Reading/English Language Arts and the Academic Achievement in Mathematics distinction designations had statistically significantly higher percentages of beginning teachers than did high schools that earned this distinction in all four years of data analyzed. The magnitude of the differences in the percentages of beginning teachers between schools that earned a distinction designation and schools that did not earn a distinction designation were ascertained by calculating Cohen's *d*s (Cohen, 1988). The array of the Cohen's *d* calculations in the percentages of beginning teachers for high schools that earned, or did not earn, the Reading/English Language Arts distinction designation analyses was from a low of 0.22 to a high of 0.39, with the average being 0.29 for the four years of data analyzed. As such, the average degree of practical significance of the statistically significant results was small. Though small, readers should note that the analyses conducted in this investigation consisted of aggregated data on thousands of Texas high school students. Students who were enrolled in high schools that did not meet the distinction designations had higher percentages of beginning teachers than did students who were enrolled in schools that did meet these distinction designations. Table 11 contains the Cohen's *d* effect size calculations for the percentages of beginning teachers for high schools that earned, or did not earn, the Reading/English Language Arts distinction designation.

Table 11 Cohen's ds for the Percentages of Beginning Teachers Between Schools That Met and Did Not Meet the Reading/English Language Arts and Mathematics Distinction Designation by School Year

School Year	Cohen's *d*	%age Point Difference
2012-2013		
Reading/English Language Arts	0.22	1.21
Mathematics	0.16	1.15
2013-2014		
Reading/English Language Arts	N/A	N/A
Mathematics	0.12	1.15
2014-2015		
Reading/English Language Arts	0.25	1.23
Mathematics	0.27	1.25
2015-2016		
Reading/English Language Arts	0.39	1.36
Mathematics	0.30	1.26

With regard to the mathematics distinction designation, the array of Cohen's *d* calculations in the percentages of beginning teachers for high schools that earned, or did not earn, this distinction designation analyses was from a low of 0.12 to a high of 0.30, with the average being 0.28 for the three years of data analyzed. As such, the average degree of practical significance of the statistically significant results was small. Students who were enrolled in high schools that did not meet the distinction designations had higher percentages of beginning teachers than did students who were enrolled in schools that did meet these distinction designations. Table 11 contains the Cohen's *d* effect size calculations for the percentages of beginning teachers for high schools that earned, or did not earn, the mathematics distinction designation.

With respect to student enrollment percentages by ethnicity/race (i.e., Asian, Black, Hispanic, and White), statistically significant differences between schools that earned a distinction designation in Reading/English Language Arts and mathematics schools and schools that did not earn these distinction designation were present. Although statistically significant differences between two different distinction designations were present in this investigation, statistically significant differences were not present in all ethnic/racial student groups. Percentages of student enrollment for Black, Hispanic, and White students were not consistently statistically significant across all four years analyzed. However, for all four school years analyzed, statistically significant differences were present for Asian students between the two different distinction designations.

Although not discussed in the Results section of this investigation, differences were clearly evident in the number of schools in the 2012-2013 school year that met and did not meet the Reading/English Language Arts distinction designation. The number of high schools that did not meet this distinction designation were 734, which was more than twice as many schools that did meet this distinction, 311. With respect to the 20132014 school year, schools that did not meet this distinction designation were 830, again, more than twice as many schools that did meet this distinction, 374. Regarding the 2014-2015 school year, schools that did not meet this distinction designation were 699, nearly twice as many schools that did meet this distinction designation, 357. For the 2015-2016 school year, schools that did not meet this distinction designation were 696, again, nearly twice as many schools that did meet this distinction designation, 370.

Similarly, with regard to the mathematics distinction designation, differences were clearly evident in the number of schools in the 2012-2013 school year that met and did not meet this distinction designation. The number of high schools that did not meet this distinction designation were 694, which was nearly twice as many schools that did meet this distinction, 351.

With respect to the 2013-2014 school year, schools that did not meet this distinction designation were 799, again, nearly twice as many schools that did meet this distinction, 444. Regarding the 2014-2015 school year, schools that did not meet this distinction designation were 667, less than twice as many schools that did meet this distinction designation, 389. For the 2015-2016 school year, schools that did not meet this distinction designation were 682, again, less than twice as many schools that did meet this distinction designation, 384.

Connections with Existing Literature

Results in this empirical, multiyear statewide investigation were congruent with prior research. Martinez-Garcia and Slate (2012b) documented the presence of statistically significant differences in the percentage of beginning teachers by accountability rating in three of the five years (i.e., 2003-2004, 2004-2005, and 20072008) of data they analyzed in Texas high schools. Similarly, Moreno and Slate (2015) documented the presence of statistically significant differences in the percentage of beginning teachers by school accountability rating in Texas high schools during the 20102011 school year. Comparatively, Peske and Haycock (2006) revealed that high schools in Ohio that were classified as low performing were taught by fewer qualified teachers than in higher performing schools with more qualified teachers.

Readers should be cautioned, however, that other researchers (Clotfelter, Ladd, &Vigdor, 2005; Darling-Hammond, 2008; Foley & Nelson, 2011; Gagnon & Mattingly, 2015) produced results that were not entirely commensurate with the results of this multiyear, statewide investigation. Results in this study were partially consistent with prior research regarding the overall student enrollment percentages by ethnicity/race (i.e., Asian, Black, Hispanic, and White) for Texas high schools between schools that earned a distinction designation and schools that did not earn a distinction. With regard to student characteristics, researchers (Gagnon & Mattingly, 2015; Peske& Haycock, 2006) revealed a high percentage of low performing schools with a high percentage of ethnically/racially diverse students (i.e., Black and Hispanic) were taught by beginning teachers.

Implications for Policy and Practice

Based on the results of this empirical, multiyear statewide investigation, several implications for policy and practice can be made. Because a relationship between teacher quality and student achievement was established previously by researchers (e.g., Darling-Hammond, 2008; Greenlee & Brown, 2009; Martinez-Garcia et al., 2011; Martinez-Garcia & Slate, 2012a, 2012b) and supported in this investigation, one implication from the results of this investigation would be for educational leaders to be cautioned with regard to placing inexperienced teachers in low performing schools. A second implication, with federal and state mandates to address student achievement, would be for educational leaders to be encouraged to hire experienced, quality teachers to avoid receiving poor accountability ratings from the state and be placed on an improvement plan (Alliance for Excellent Education, 2016a). A third implication would be the placement of high quality and experienced teachers in low performing, difficult-to-staff, schools. Placing high quality and experienced teachers in low performing school may provide a solution for the inequitable distribution of high quality, experienced teachers.

Recommendations for Future Research

In this study, the degree to which differences were present in the percentages of beginning teachers by school accountability rating for Texas high schools was addressed. Regarding the consistent results that were obtained in this investigation of high schools, researchers should consider extending this study to elementary schools and to middle schools. Another suggestion for future research would be to replicate this investigation in other states. The degree to which the results obtained herein on Texas high schools would be generalizable to high schools in other states is not known. Also this study could be extended to other teacher characteristics (e.g., route to being credentialed and certified, ethnicity/race, and content area) than to a focus on only the percentage of beginning teachers. Furthermore, investigations could be conducted in which student demographic characteristics such as economic disadvantage, at-risk status, and English Language Learner are examined.

Conclusion

In this investigation, the degree to which the percentage of beginning teachers and student ethnicity/race enrollment percentages in Texas high schools differed between two different distinction designations (i.e., Academic Achievement in Reading/English Language Arts and Academic Achievement in Mathematics) was determined. Archival data for the 2012-2013 through the 2015-2016 school years for all traditionally configured Texas high schools were analyzed. Statistically significant differences were yielded in all statistical analyses regarding the percentage of beginning teachers between the two different distinction designations. Higher percentages of beginning teachers were present in high schools that did not meet the two distinction designations for each school year. With regard to student enrollment percentages, higher percentages of Black and Hispanic students were present in schools that did not meet the two distinction designation. Higher percentages of Asian students were present in schools that did meet the two distinction designations.

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