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Academic Achievement Differences by Grade Span Configuration for White, Black, and Hispanic Students: A Multiyear Statewide Analysis

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I. Introduction

The issue of segregation, desegregation, equality, and success of all students regardless of ethnicity/race have been an ongoing theme since the onset of public education in the United States. In 1954 the U.S. Supreme Court unanimously ruled to separate them [African American school children] from others of similar age and qualifications solely due to their race generates a feeling of inferiority as their status in the community that may affect their hearts and minds in a way unlikely to ever be undone. (Brown versus the Board of Education of Topeka Kansas, 347 U.S. 483, 1954) Even though this ruling was historical and was intended to integrate children of all ethnic/racial groups into public schools, Kozol (2010) contended that the segregation of public schools is currently at its highest levels since the 1960s.

Many reasons including social, educational, and financial exist to explain why students of different ethnic/racial groups still remain largely separate in public schools. Gandara and Aldana (2014) described how Hispanic students have a triple separation by ethnicity, poverty, and language. By the year 2011, the English learners have experienced the greatest impact of segregation with 90-100% of Hispanic students in minority schools with low income students (Gandara&Aldana, 2014). Farkas (2006) reviewed that families closer to the bottom of status hierarchies have weaker networks of social relationships, fewer resources for parenting, and an increased amount of negative stressors in their daily lives. Many stressors including living in poverty, being a single parent, parents' education, parents' home language, and social class are just a few items that contribute to the gap in performance among various ethnicities.

Utilizing the demographic information of the families who participated in the Early Childhood Longitudinal Study-Kindergarten, a nationally representative group of children who began kindergarten in 1998, Farkas (2006) analyzed a variety of social and familial factors which can affect school readiness status. Black students had the highest rate of single parent families at 54%, followed by Hispanic students who had 27%, followed by White students who had15%, and concluding with Asian students who had 10% of single parent families. These children only had one parent providing attention, interaction, instruction, monitoring, and financial resources devoted to their education. Additionally, Black and Hispanic children had the highest percentage living in poverty, 42% and 37% respectfully. This degree of economic disadvantage results in fewer available resources. Black families had an average of 39.6 children's books in their households and only 32.9% of Black families had a computer. Hispanic families had an average of 52.5 children's books in their households with 41.5% of Hispanic families owning a computer. In contrast, White families had an average of 93.1 children's books in their households with 65.7% of White families owning a household computer. Although owning books and computers is an imperfect measure of school readiness, discrepancies are clearly present in the number of resources available to children of different ethnic/racial groups. Overall, a "performance decrement" (Farkas, 2006, p. 24) is associated with the Black and Hispanic

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ethnicity/race, with an additional performance decrement of being a second language learner.

Davis-Kean and Jager (2014) utilized the same data set, Early Childhood Longitudinal Study-Kindergarten, and investigated whether different profiles of reading and mathematics achievement were present within each ethnic/racial group. Davis-Kean and Jager (2014) documented the presence of students from each ethnicity/race in the highest levels of academic achievement. White and Asian families had a higher percentage of students in the high achieving trajectory than Black and Hispanic families. Every ethnic/racial group had students performing below the population average, however, Blackstudents had the highest percentage of all ethnic groups, 72%, performing below the population average. High performing Black students had scores that were 10 points lower than Hispanic and Asian students, and 20 points lower than White students, demonstrating the presence of an achievement gap among the highest performing students.

The gap among ethnic/racial groups continues to exist as students and their families prepare for high school completion and college entrance. Mangino (2012) reported that White students have less of a need for educational investments because they have many information opportunities available to them which allows for economic success including social networks, and high returns in economic and human capital investments. Mangino (2012) utilized data from the National Longitudinal Study of Adolescent Health and Adolescent Health and Academic Achievement to review ethnic/racial disparities among entering college students. Asian students had the highest percentage attending college, followed by White, Hispanic, and Black students. Hispanic and Black populations, or the "aspiring class" (Mangino, 2012, p. 565), rely on education to improve their standard of living, status, and prestige.

The federal government has attempted to address the academic performance of all students and reduce gaps by implementing a federal law, the No Child Left Behind Act in 2002. The No Child Left Behind Act was designed to hold all schools accountable for poor students via high stakes testing, introducing competitive choices to opt out of struggling schools, and increasing family involvement (Grogan-Kaylor& Woolley, 2010). Grogan-Kaylor and Woolley (2010) commented that the No Child Left Behind Act has not concentrated efforts on considering societal factors that affect the academic achievement of Black, Hispanic, and students in poverty including parenting styles, neighborhood conditions, school social climate, family economic status, and the school funding system. A school funding system based on property wealth has encouraged the further separation of students based on their economic wealth. Kozol (2005) identified that property value funding leads Hispanic and Black students to experience (a) lower paid teachers, (b) higher teacher-student ratios, (c) older teaching materials, (d) fewer extracurricular activities, (e) poorly maintained school buildings, and (f) less access to critical social services such as nurses and social workers.

An important concept for students of all ethnic/racial groups that may assist in overcoming the deficits they face is the value of school connectedness and parental involvement. School connectedness and school engagement and their effect on academic achievement are concepts that have been investigated by educators and psychologists alike (Benner, Graham, & Mistry, 2008;Carolan&Chesky, 2012). In an examination of the effects of family and school characteristics on school achievement, Benner et al. (2008) utilized a large multiethnic, urban sample of Grade 9 students to determine various ecological structures that have an impact on student academic performance. Student records, family climate, school climate, school belonging, and school interracial surveys were all utilized in this investigation. Benner et al. (2008) shared that differences in ethnicities arose on the items related to school size. Hispanicand Black students reported that the increased school size was associated with negative perceptions of the academic climate and school achievement level. Additionally, Hispanic and Black families faced hardships that limited school involvement: (a) most were immigrants and spoke a language other than English at home, (b) many had jobs with inflexible hours and/or had multiple jobs, and (c) financial constraints created challenges of transportation to the school. Benner et al. (2008) contended "finding ways to better connect families to schools is imperative for the educational success of these youth" (p. 851).

Numerous avenues exist to encourage parental involvement, school connectedness, and the academic achievement of students of all ethnic/racial groups. One such avenue is the grade span configuration of schools. The breadth of the grades included in a school building can support or depress the social and academic achievement of students in school and encourage or discourage parental involvement.

Abella (2005) investigated the effects of various grade span configurations on the academic performance, discipline, and attendance of students in Grade 6 in K-8 school settings and Grades 6-8 (middle) school settings by administering surveys to parents, teachers, and principals. The majority of the participants were on free or reduced lunch in both settings. In the K-8 setting, the student sample group consisted of 85% Hispanic and the middle school (comparison school) was 78% Hispanic. Abella (2005) analyzed scores in reading and mathematics, attendance rates, and discipline consequences for three

years (during the students' sixth, seventh, and eighth grade school years). For each year, students in the K-8 school setting outperformed students in middle school in reading comprehension and mathematics. By Grade 9, both groups of students scored similarly in reading comprehension and mathematics. Additionally, the attendance rate was higher for all years analyzed for the K-8 setting. In regard to discipline consequences, the out-of-school suspension rate was statistically significantly different in the seventh grade year, less than two days of suspensions in K-8 versus seven days of suspension in the 6-8 configuration. By the eighth grade, the suspension rates were similar.

In contrast, Wilson and Slate (2014) investigated Grade 6 Hispanic and Black students academic achievement based on their school's grade span configuration. Hispanic students who were enrolled in Texas middle schools had statistically significant higher mathematics passing rates, 78.43%, than did the Hispanic students enrolled in K-8 schools, 72.17%. Wilson and Slate (2014) commented that their results were contrary to current literature on grade span configuration and academic achievement. As such, they recommended that future researchers analyze individual student level data, rather than the aggregated school level data they analyzed.

The Carnegie Council on Adolescent Development (1989) reported "a volatile mismatch exists between the organization and curriculum of middle grades schools, and the intellectual, emotional, and interpersonal needs of young adolescents"(pp. 8-9). Mizell (2005) shared that a critical requirement for a successful academic outcome for middle school students is a more personalized setting where students are in contact with adults who know them well and provide academic and emotional support. Personalized settings will be more available in smaller elementary configurations versus larger middle school settings. Anderman (2003) also commented that the longer middle school students remained in the Grade 6-8 configuration, their sense of acceptance and school connectedness decreased.

Benner et al. (2008) shared the idea that in the school micro system, educators need to implement interventions that increase students' feelings of belonging and connectedness which positively influences academic achievement. In the family micro system level, schools need to intervene to encourage greater levels of parent involvement which is directly related to increased academic performance- higher grades, increased achievement test scores, and increased rating of students' academic attitudes (Benner et al., 2008). Benner et al. (2008) examined relations among family and school characteristics, family and school processes, student school engagement, and academic performance. Benner et al. (2008) clarified that students' engagement in school influences their feelings of belonging, thus, influences their families' involvement in their child's academics. School configurations, relationships with staff, less transitions/adjustments made by students, and the involvement of the parental community are main reasons why a larger grade span configuration may increase the academic performance of students. Abella (2005) noted, "educators and researchers also believe that the beneficial effects of K-8 schools can be attributed to smaller student populations at the schools and to staff being more familiar with students and their parents" (p. 29).The greater the grade span in the school setting, the greater the preponderance of relationship building and feelings of school connectedness for individual students and their families.

II. Statement of the Problem

Numerous authors and researchers (e.g., Anderson, 2012; Davis-Kean & Jager, 2014; Diamond & Huguley, 2014; Flashman, 2012; Gandara & Aldana, 2014; Grogan-Kaylor& Woolley, 2010; Mangino, 2012) have investigated and documented discrepancies in the academic achievement of Black and Hispanic students from White and Asian students. By 2042, the population of the United States will become more racially diverse with the population of minorities (everyone other than non-Hispanic White) becoming the majority(U.S. Census Bureau, 2010). Black and Hispanic children are being raised in families with fewer resources and in a higher percentage of single parent families than the White and Asian children, and on average Black and Hispanic families experience more negative stressors. These stressors have assisted in creating large reading, mathematics, and behavioral readiness gaps during preschool years (Farkas, 2006). One approach that educational leaders can consider to combat the variety of stressors and needs of students from diverse backgrounds includes adjusting the grade span configuration of their schools.

Although grade span configuration has been analyzed by researchers (Clark, Slate, Combs, & Moore, 2013; Combs, et al., 2011; Johnson, Jones, Simieou, Matthew, & Morgan, 2012; Rockoff & Lockwood, 2010), what has not been investigated in depth is the effect of grade span configuration on the academic success of elementary and middle students based on their ethnicity/race. School connectedness and relationships that are developed as students are engaged with their teachers and friends for a greater span of time are extremely important for students of all racial and ethnic groups.

III. Purpose of the Study

The purpose of this research investigation was to determine the degree to which differences might be present in the reading and mathematics performance of

Grade 5 and 6 White, Hispanic, and Black students as a function of the grade span configuration in which they were enrolled. These analyses were conducted for the 2012-2013 through the 2014-2015 school years so that trends could be ascertained, if present. As such, the extent to which grade span configuration was related to academic achievement was determined separately for students in a PreK-6 grade campus and for students in single or double grade campuses (Grades 4-5, 5 only, or Grades 5-6).

IV. Significance of the Study

In a review of the benefits of a larger grade span configuration, Herman (2004) noted that students have better relationships with staff members, teachers can collaborate and devise creative approaches to learning, parent involvement increases, and older students can serve as role models and mentors to younger students creating a safer atmosphere. Meeting the physical, academic, social, and emotional challenges of all grade level students, particularly students in a transition phase of maturity, is important for student success. Grade span configuration may be one vital opportunity in meeting these needs. Through this study valuable information was obtained on the relationship of grade span configuration with the academic achievement (i.e., reading and mathematics) of White, Black, and His panic students within multi-grade level or single/double grade span configurations. Upon the completion of this research study, empirical information will be available to educational leaders and policymakers for their use in the determination of the most appropriate grade span configuration in their schools. Furthermore, the extent to which reading and mathematics achievement as a function of grade span configuration for students of diverse backgrounds was determined. Accordingly, policymakers and educational leaders may utilize this information to determine how to configure their school settings to improve their students' academic performance.

V. Research Questions

The following research questions were addressed in this study: (a) What is the difference in reading achievement as a function of grade span configuration for Grade 5 White, Black, and Hispanic students? (b) What is the difference in mathematics achievement as a function of grade span configuration for Grade 5 White, Black, and Hispanic students?; (c) What is the difference in reading achievement as a function of grade span configuration for Grade 6 White, Black, and Hispanic students?; and (d) What is the difference in mathematics achievement as a function of grade span configuration for Grade 6 White, Black, and Hispanic students? All four research questions were examined for three school years of data (i.e., 2012-2013 through 2014-2015). Furthermore, each research question was analyzed separately for each ethnic/racial membership. Following the statistical analyses, the extent to which trends were present in reading and in mathematics achievement were examined for each grade span configuration.

VI. Method

a) *Research Design*

The research design for this study was a non-experimental, causal-comparative research design (Creswell, 2009; Johnson & Christensen, 2012). In non-experimental causal-comparative research, the independent variable cannot be manipulated. In this multiyear, statewide investigation, the independent variable of grade span configuration had already occurred and extraneous variables were not controlled. The archival data that were utilized herein represent past events (Johnson & Christensen, 2012). The independent variable involved in this research article was grade span configuration (i.e., multi-grade level schools or single/double grade level schools). For each grade span configuration, the dependent variables were the State of Texas Assessments of Academic Readiness (STAAR) Reading and Mathematics passing rates of Grade 5 and 6 students. Three different samples of student data were analyzed: White, Black, and Hispanic students.

b) *Participants and Instrumentation*

Archival data were obtained for the 2012-2013 through the 2014-2015 school years from the Texas Education Agency Ask Texas Education Directory (Texas Education Agency, 2016) and Texas Academic Performance Reports system for all Grade 5 and 6 students. Once the test scores for all students in Grades 5 and 6 were available, they were analyzed separately for three ethnic/racial groups: White, Black, and Hispanic. All school campuses and school districts are mandated by the Texas Education Agency to report student demographic characteristics, along with other salient information. Each spring students take the state-mandated assessments and the score are provided to the Texas Education Agency. Data present for each student are audited by the Texas Education Agency for errors.

Specific data downloaded from the Texas Education Agency Academic Performance Reports were: (a) grade span configuration of the school in which each student was enrolled; (b) student demographic characteristics; and (c) reading and mathematics achievement passing rates. Readers are referred to the Texas Education Agency website for more detailed information about the data they require school campuses and school districts to provide; for the auditing procedures used to ensure accuracy of the data; and for the technical manuals on the score

reliabilities and score validities of the STAAR Reading and Mathematics tests.

VII. Results

Prior to conducting inferential statistics to determine whether differences were present between single/double and multi-grade level schools in the academic achievement of White, Black, and Hispanic students in Grades 5 and 6, checks were conducted to determine the extent to which these data were normally distributed (Onwuegbuzie& Daniel, 2002). Although some of the data were not normally distributed, a decision was made to use parametric independent samples *t*-tests to answer the research questions. For results that were statistically significant at the .05 level, the effect size (i.e., Cohen's *d*) was calculated. Statistical results will now be presented by grade level, student ethnicity, subject area, and by school year.

With respect to Grade 5 White students for the 2012-2013 school year, the parametric independent samples *t*-test revealed a statistically significant difference, $t(161.85) = 3.61$, $p < .001$, in the STAAR Reading test passing rates between single/double grade level schools and multi-grade level schools. This difference represented a small effect size (Cohen's *d*) of 0.45 (Cohen, 1988). Grade 5 White students had higher average STAAR Reading passing rates in multi-grade level schools by more than 3.5% than did Grade 5 White students who were enrolled in single/double grade level schools. Readers are directed to Table 1 for the descriptive statistics for this analysis.

Table 1: Descriptive Statistics for the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 5 White Students for the 2012-2013 Through the 2014-2015 School Years

Subject Area, Year, and Grade Span Configuration	*n* of schools	*M*	*SD*
Reading for 2012-2013			
Single/Double	227	89.87	7.45
Multi-Grade	99	93.53	8.81
Reading for 2013-2014			
Single/Double	231	90.11	7.08
Multi-Grade	101	93.75	8.89
Reading for 2014-2015			
Single/Double	231	90.90	7.77
Multi-Grade	316	93.22	8.57
Mathematics for 2012-2013			
Single/Double	226	90.43	7.87
Multi-Grade	97	92.68	9.68
Mathematics for 2013-2014			
Single/Double	230	89.92	8.12
Multi-Grade	101	93.26	9.63

Concerning the 2013-2014 school year for Grade 5 White students, the parametric independent samples *t*-test yielded a statistically significant difference, $t(157.85) = 3.64$, $p < .001$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen's *d*) of 0.45 (Cohen, 1988). Congruent with the previous year, Grade 5 White students had higher average STAAR Reading passing rates in multi-grade level schools by more than 3.5% than did Grade 5 White students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 1.

With respect to the 2014-2015 school year for Grade 5 White students, a statistically significant difference was present, $t(520.55) = -3.30$, $p = .001$, on the STAAR Reading test passing rates between the two grade span configurations. This difference represented a small effect size (Cohen's *d*) of 0.28 (Cohen, 1988). Commensurate with the previous two years, Grade 5 White students had higher average STAAR Reading passing rates in multi-grade level schools by more than 2.25% than did Grade 5 White students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are revealed in Table 1.

For the 2012-2013 school year for Grade 6 White students, a statistically significant difference was yielded, $t(163.39) = 2.72$, $p = .007$, in the STAAR Reading test passing rates between single/double grade level schools and multi-grade level schools. This difference represented a small effect size (Cohen's *d*) of 0.35 (Cohen, 1988). Grade 6 White students had higher average STAAR Reading passing rates in multi-grade level schools by more than 4% than did Grade 6 White students who were enrolled in single/double grade level schools. Delineated in Table 2 are the descriptive statistics for this analysis.

Table 2: Descriptive Statistics for the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 6 White Students for the 2012-2013 Through the 2014-2015 School Years

Subject Area, Year, and Grade Span Configuration	*n* of schools	*M*	*SD*
Reading for 2012-2013			
Single/Double	182	82.58	10.05
Multi-Grade	100	86.70	13.16
Reading for 2013-2014			
Single/Double	191	85.72	9.23
Multi-Grade	101	88.87	12.90
Reading for 2014-2015			
Single/Double	164	85.52	9.71
Multi-Grade	310	89.45	10.28
Mathematics for 2012-2013			
Single/Double	184	83.40	10.47
Multi-Grade	99	86.68	14.19
Mathematics for 2013-2014			
Single/Double	194	86.77	10.13
Multi-Grade	101	88.92	13.94

Regarding the 2013-2014 school year for Grade 6 White students, a statistically significant difference was revealed, $t(155.48) = 2.18$, $p = .03$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen's *d*) of 0.28 (Cohen, 1988). Congruent with the previous year, Grade 6 White students had higher average STAAR Reading passing rates in multi-grade level schools by more than 3% than did Grade 6 White students who were enrolled in single/double grade level schools. Revealed in Table 2 are the descriptive statistics for this analysis.

With respect to the 2014-2015 school year for Grade 6 White students, a statistically significant difference was yielded, $t(349.06) = -4.11$, $p < .001$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen's *d*) of 0.39 (Cohen, 1988). Commensurate with the previous two years, Grade 6White students had higher average STAAR Reading passing rates in multi-grade level schools by more than 3.75% than did Grade 6 White students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 2.

Next, the STAAR Mathematics test passing rates were analyzed as a function of grade span configuration for Grade 5 White students. Regarding the 2012-2013 school year, a statistically significant difference was yielded, $t(152.95) = 2.02$, $p = .05$, on the STAAR Mathematics test passing rates between the two grade span configurations. The difference represented a small effect size (Cohen's *d*) of 0.26 (Cohen, 1988). Passing rates on the STAAR Mathematics test for Grade 5 White students in multi-grade level schools were 2.25% higher than for Grade 5 White students who were enrolled in single/double grade level schools. Revealed in Table 1 are the descriptive statistics for this analysis.

With respect to the 2013-2014 school year for Grade 5 White students, the parametric independent samples *t*-test revealed a statistically significant difference, $t(165.23) = 3.04$, $p = .003$, $d = 0.38$, in STAAR Mathematics passing rates between the two grade span configurations The difference represented a small effect size (Cohen, 1988). Grade 5 White students who were enrolled in multi-grade level campuses had average passing rates that were 3.25% higher on the STAAR Mathematics assessment than did Grade5 White students who were enrolled in single/double grade level campuses. Readers are referred to Table 1 for the descriptive statistics for this analysis.

Next, the STAAR Mathematics test passing rates were analyzed as a function of grade span configuration for Grade 6 White students. Regarding the 2012-2013 school year, a statistically significant difference was revealed, $t(156.59) = 2.02$, $p = .05$, $d = 0.26$, on the STAAR Mathematics test passing rates as a function of grade span configuration. The difference represented a small effect size (Cohen, 1988). Grade 6 White students who were enrolled in multi-grade level campuses had a higher average passing rate in mathematics by more than 3.25% than did Grade 6 White students in single/double grade level schools. Table 2contains the descriptive statistics for this analysis.

Concerning the 2013-2014 school year for Grade 6 White students, a statistically significant difference was not present, $t(156.44) = 1.38$, $p = .17$, in STAAR Mathematics passing rates between the two grade span configurations. Although the results were not statistically significant, Grade 6 White students had a

higher average STAAR Mathematics passing rate in multi-grade level schools by 2.15% than Grade 6 White students in single/double grade level schools. Readers are referred to Table 2 for the descriptive statistics for this analysis.

Results of the statistical analyses for Grade 5 and 6 Black students will now be reported. For the 2012-2013 school year for Grade 5 Black students, a statistically significant difference was yielded, $t(74.25) = 4.15$, $p < .001$, $d = 0.68$,on the STAAR Reading passing rates between single/double grade level schools and multi-grade level grade schools. This difference represented a moderate effect size (Cohen, 1988). Grade 5Black students had STAAR Reading passing rates in multi-grade level schools that were more than 7.75% higher than Grade 5 Black students who were enrolled in single/double grade level schools. Table 3 contains for the descriptive statistics for this analysis.

Table 3: Descriptive Statistics for the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 5 Black Students for the 2012-2013 Through the 2014-2015 School Years

Subject Area, Year, and Grade Span Configuration	*n* of schools	*M*	*SD*
Reading for 2012-2013			
Single/Double	169	82.42	11.28
Multi-Grade	48	90.23	11.57
Reading for 2013-2014			
Single/Double	162	79.88	12.12
Multi-Grade	52	86.98	10.70
Reading for 2014-2015			
Single/Double	164	80.73	13.67
Multi-Grade	162	83.90	12.05
Mathematics for 2012-2013			
Single/Double	168	79.90	13.84
Multi-Grade	47	85.85	12.09
Mathematics for 2013-2014			
Single/Double	164	79.93	14.22
Multi-Grade	51	85.92	12.59

Regarding the 2013-2014 school year for Grade 5Black students, a statistically significant difference was yielded, $t(96.47) = 4.03$, $p < .001$, $d = 0.62$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a moderate effect size (Cohen, 1988). Congruent with the previous year, Grade 5 Black students had higher average STAAR Reading passing rates in multi-grade level schools by more than 7% than did Grade 5 Black students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 3.

With respect to the 2014-2015 school year for Grade 5 Black students, a statistically significant difference was revealed, $t(319.93) = -2.23$, $p = .027$, $d = 0.25$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen, 1988). Commensurate with the previous two years, Grade 5 Black students had higher STAAR Reading passing rates in multi-grade level schools by more than 3.15% than did Grade 5 Black students who were enrolled in single/double grade level schools. Table 3 contains the descriptive statistics for this analysis.

For the 2012-2013 school year for Grade 6 Black students, a statistically significant differenc e was present, $t(63.29) = 4.34$, $p < .001$, $d = 0.77$, in the STAAR Reading test passing rates between single/double grade level schools and multi-grade level schools. This difference represented a moderate effect size (Cohen, 1988). Grade 6 Black students had STAAR Reading passing rates in multi-grade level schools that were more than 11.25% higher than Grade 6 Black students who were enrolled in single/double grade level schools. Readers are directed to Table 4 for the descriptive statistics for this analysis.

Table 4: Descriptive Statistics for the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 6 Black Students for the 2012-2013 Through the 2014-2015 School Years

Subject Area, Year, and Grade Span Configuration	*n* of schools	*M*	*SD*
Reading for 2012-2013			
Single/Double	146	67.46	14.23
Multi-Grade	42	78.81	15.15
Reading for 2013-2014			
Single/Double	152	74.80	12.85
Multi-Grade	51	83.24	14.75
Reading for 2014-2015			
Single/Double	128	74.02	14.31
Multi-Grade	158	78.74	14.75
Mathematics for 2012-2013			
Single/Double	142	67.78	15.24
Multi-Grade	42	81.48	15.94
Mathematics for 2013-2014			
Single/Double	153	74.97	15.21
Multi Grade-	51	83.92	13.31

Concerning the 2013-2014 school year for Grade 6 Black students, a statistically significant difference was yielded, $t(77.04) = 3.65$, $p < .001$, $d = 0.61$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a moderate effect size (Cohen, 1988). Congruent with the previous year, Grade 6 Black students had higher average STAAR Reading passing rates in multi-grade level schools by more than 8.4% than did Grade 6 Black students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 4.

With respect to the 2014-2015 school year for Grade 6 Black students, a statistically significant difference was revealed, $t(274.95) = -2.73$, $p = .007$, $d = 0.32$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen, 1988). Commensurate with the previous two years, Grade 6 Black students had higher average STAAR Reading passing rates in multi-grade level schools by 4.7% than did Grade 6 Black students who were enrolled in single/double grade level schools. Revealed in Table 4 are the descriptive statistics for this analysis.

Next, the STAAR Mathematics test passing rates were analyzed as a function of grade span configuration for Grade 5Black students. Regarding the 2012-2013 school year, a statistically significant difference was present, $t(82.83) = 2.88$, $p = .005$, $d = 0.46$, on the STAAR Mathematics test passing rates as a function of grade span configuration. The difference represented a small effect size (Cohen, 1988). Grade 5 Black students had higher average STAAR Mathematics passing rates in multi-grade level schools by more than 5.9% than Grade 5 Black students who were enrolled in single/double grade level schools. Table 3 contains the descriptive statistics for this analysis.

With respect to the 2013-2014 school year for Grade 5Black students, a statistically significant difference was revealed, $t(93.03) = 2.87$, $p = .005$, $d = 0.45$, on the STAAR Mathematics passing rates between the two grade span configurations. This difference represented a small effect size (Cohen, 1988). Commensurate with the previous year, Grade 5 Black students had higher average STAAR Mathematics passing rates in multi-grade level schools by more than 5.99% than did Grade 5 Black studentswho were enrolled in single/double grade level schools. Revealed in Table 3 are the descriptive statistics for this analysis.

The STAAR Mathematics test passing rates were next analyzed as a function of grade span configuration for Grade 6 Black students. Regarding the 2012-2013 school year, a statistically significant difference was yielded, $t(64.79) = 4.94$, $p < .001$, $d = 0.88$, on the STAAR Mathematics test passing rates as a function of grade span configuration. The difference represented a large effect size (Cohen, 1988). Grade 6 Black students had higher average STAAR Mathematics passing rates in multi-grade level schools by more than 13.65% than did Grade 6 Black students who were enrolled in single/double grade level schools. Delineated in Table 4 are the descriptive statistics for this analysis.

With respect to the 2013-2014 school year for Grade 6 Black students, a statistically significant difference was revealed, $t(96.96) = 4.01$, $p < .001$, $d = 0.63$, on the STAAR Mathematics passing rates between the two grade span configurations. This difference represented a moderate effect size (Cohen, 1988). Commensurate with the previous year, Grade 6 Black students had higher average STAAR Mathematics passing rates in multi-grade level schools by8.95% than Grade 6 Black students who were enrolled in

single/double grade level schools. The descriptive statistics for this analysis are presented in Table 4.

Results of the statistical analyses for Grade 5 and 6 Hispanic students will now be reported. For the 2012-2013 school year, the parametric independent samples *t*-test revealed a statistically significant difference, $t(162.61) = 4.26$, $p < .001$,$d = 0.52$, on the STAAR Reading passing rates between single/double grade level schools and multi-grade level schools. This difference represented a moderate effect size (Cohen, 1988). Grade 5Hispanic students had STAAR Reading passing rates in multi-grade level schools that were more than 5% higher than Grade 5 Hispanic students who were enrolled in single/double grade level schools. Readers are directed to Table 5 for the descriptive statistics for this analysis.

Table 5: Descriptive Statistics for the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 5 Hispanic Students for the 2012-2013 Through the 2014-2015 School Years

Subject Area, Year, and Grade Span Configuration	*n* of schools	*M*	*SD*
Reading for 2012-2013			
Single/Double	237	83.69	8.65
Multi-Grade	102	88.73	10.50
Reading for 2013-2014			
Single/Double	244	81.79	9.83
Multi-Grade	105	87.67	10.66
Reading for 2014-2015			
Single/Double	241	83.11	9.98
Multi-Grade	370	85.94	11.94
Mathematics for 2012-2013			
Single/Double	238	85.65	9.37
Multi-Grade	101	88.33	11.61
Mathematics for 2013-2014			
Single/Double	243	85.57	9.43
Multi-Grade	103	89.58	11.62

Concerning the 2013-2014 school year for Grade 5Hispanic students, a statistically significant difference was revealed, $t(183.50) = 4.83$, $p < .001$, $d = 0.57$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a moderate effect size (Cohen, 1988). Congruent with the previous year, Grade 5 Hispanic students had higher average STAAR Reading passing rates in multi-grade level schools by more than 5.75% than did Grade 5 Hispanic students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 5.

With respect to the 2014-2015 school year for Grade 5 Hispanic students, a statistically significant difference was yielded, $t(572.27) = -3.16$, $p = .002$, $d = 0.26$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen, 1988).

Commensurate with the previous two years, Grade 5 Hispanic students had higher average STAAR Reading passing rates in multi-grade level schools by more than 2.75% than did Grade 5 Hispanic students who were enrolled in single/double grade level schools. Revealed in Table 5 are the descriptive statistics for this analysis.

For the 2012-2013 school year for Grade 6 Hispanic students, a statistically significant difference was present, $t(154.51) = 3.87$, $p < .001$, $d = 0.50$, on the STAAR Reading test passing rates between single/double grade level schools and multi-grade level schools. This difference represented a moderate effect size (Cohen, 1988). Grade 6 Hispanic students had STAAR Reading passing rates in multi-grade level schools that were more than 7.25% higher than Grade 6 Hispanic students who were enrolled in single/double grade level schools. Table 6contains the descriptive statistics for this analysis.

Table 6: Descriptive Statistics for the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 6 Hispanic Students for the 2012-2013 Through the 2014-2015 School Years

Subject Area, Year, and Grade Span Configuration	*n* of schools	*M*	*SD*
Reading for 2012-2013			
Single/Double	201	69.78	12.33
Multi-Grade	100	77.05	16.67
Reading for 2013-2014			
Single/Double	205	78.62	10.13
Multi-Grade	104	82.92	14.05
Reading for 2014-2015			
Single/Double	178	75.70	11.09
Multi-Grade	358	80.16	14.25
Mathematics for 2012-2013			
Single/Double	200	73.94	12.00
Multi-Grade	102	79.39	16.69
Mathematics for 2013-2014			
Single/Double	206	80.81	10.73
Multi-Grade	105	85.65	13.16

Regarding the 2013-2014 school year for Grade 6 Hispanic students, a statistically significant difference was revealed, $t(158.95) = 2.78$, $p = .006$, $d = 0.35$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen, 1988). Congruent with the previous year, Grade 6 Hispanic students had higher average STAAR Reading passing rates in multi-grade level schools by more than 4.25% than did Grade 6 Hispanic students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 6.

With respect to the 2014-2015 school year for Grade 6 Hispanic students, a statistically significant difference was present, $t(439.69) = -3.98$, $p < .001$, $d = 0.35$, on the STAAR Reading test passing rates as a function of grade span configuration. This difference represented a small effect size (Cohen, 1988). Commensurate with the previous two years, Grade 6 Hispanic students had higher average STAAR Reading passing rates in multi-grade level schools by 4.45% than did Grade 6 Hispanic students who were enrolled in single/double grade level schools. Revealed in Table 6 are the descriptive statistics for this analysis.

Next, the STAAR Mathematics test passing rates were analyzed as a function of grade span configuration for Grade 5Hispanic students. For the 2012-2013 school year, a statistically significant difference was yielded, $t(157.86) = 2.05$, $p = .042$, $d = 0.25$, on the STAAR Mathematics test passing rates as a function of grade span configuration. The difference represented a small effect size (Cohen, 1988). Grade 5 Hispanic students had higher average STAAR Mathematics passing rates in multi-grade level schools by more than 2.65% than Grade 5 Hispanic students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 5.

With respect to the 2013-2014 school year for Grade 5Hispanic students, a statistically significant difference was revealed, $t(161.67) = 3.10$, $p = .002$, $d = 0.38$, on the STAAR Mathematics passing rates between the two grade span configurations. This difference represented a small effect size (Cohen, 1988). Commensurate with the previous year, Grade 5 Hispanic students had higher average STAAR Mathematics passing rates in multi-grade level schools by more than 4% than did Grade 5 Hispanic students who were enrolled in single/double grade level schools. Revealed in Table 5 are the descriptive statistics for this analysis.

The STAAR Mathematics test passing rates were next analyzed as a function of grade span configuration for Grade 6 Hispanic students. Regarding the 2012-2013 school year, a statistically significant difference was yielded, $t(155.81) = 2.94$, $p = .004$, $d = 0.38$, on the STAAR Mathematics test passing rates as a function of grade span configuration. The difference represented a small effect size (Cohen, 1988). Grade 6 Hispanic students had higher average STAAR Mathematics passing rates in multi-grade level schools by more than 5.45% than did Grade 6 Hispanic students who were enrolled in single/double grade level schools. Table 6contains the descriptive statistics for this analysis.

With respect to the 2013-2014 school year for Grade 6 Hispanic students, a statistically significant difference was present, $t(176.20) = 3.26$, $p = .001$, $d = 0.40$, on the STAAR Mathematics passing rates between the two grade span configurations. This difference

represented a small effect size (Cohen, 1988). Commensurate with the previous year, Grade 6 Hispanic students had higher average STAAR Mathematics passing rates in multi-grade level schools by4.75% than Grade 6 Hispanic students who were enrolled in single/double grade level schools. The descriptive statistics for this analysis are presented in Table 6.

VIII. Discussion

In this investigation, the degree to which differences were present in reading and mathematics achievement as a function of grade span configuration for White, Black, and Hispanic students in Texas was examined. Three years of Texas statewide data were obtained and analyzed on White, Black, and Hispanic students in Grades 5 and 6 who were enrolled in either multi-grade level schools (i.e., PreK-6) or in single/double grade level campuses (i.e., Grades 4-5, 5 only, or Grades 5-6). For all three school years analyzed, the passing rates on the STAAR Reading and Mathematics tests for Grade 5 and 6 White, Black, and Hispanic students were statistically significantly higher in multi-grade level schools than in single/double grade level schools.

A Cohen's *d* (Cohen, 1988) was calculated to determine the practical importance of the passing rates differences for Grade 5 and 6 White, Black, and Hispanic students who were enrolled in either a single/double grade level configuration or a multi-grade level configuration for each subject area and school year.The array of the Cohen's *d* calculations for both the STAAR Reading and Mathematics analyses ranged from a low of 0.25 to a high of 0.88, with the average being 0.57 for the three years of data analyzed. Thus, the average degree of practical significance of the statistically significant results was moderate (i.e., 0.50 is the beginning of the moderate effect size range). Readers are referred to Table 7 for the Cohen's *d* effect size calculations for the STAAR Reading and Mathematics analyses.

Table 7: Cohen's ds for Differences in the STAAR Reading and Mathematics Passing Rates by Grade Span Configuration for Grade 5 and 6White, Black, and Hispanic Students for the 2012-2013 Through the 2014-2015 School Years

Grade Level, Ethnicity/Race, and Subject	2012-2013	2013-2014	2014-2015
Grade 5White Students			
Reading	0.45	0.45	0.28
Mathematics	0.26	0.38	N/A
Grade 6 White Students			
Reading	0.35	0.28	0.39
Mathematics	0.26	0.18	N/A
Grade 5 Black Students			
Reading	0.68	0.62	0.25
Mathematics	0.46	0.45	N/A
Grade 6 Black Students			
Reading	0.77	0.61	0.32
Mathematics	0.88	0.63	N/A
Grade 5Hispanic Students			
Reading	0.52	0.57	0.26
Mathematics	0.25	0.38	N/A
Grade 6 Hispanic Students			
Reading	0.50	0.35	0.35
Mathematics	0.38	0.40	N/A

With reference to the STAAR Reading results of Grade 5 White students, Cohen's *d* values ranged from a low of 0.28 to a high of 0.45 for the three years that were analyzed. For Grade 6White students, Cohen's *d* values for the STAAR Reading results ranged from a low of 0.28 to a high of 0.39 for the same three years. In comparison, the Cohen's *d*sfor the STAAR Reading results of Grade 5 Black students ranged from a low of 0.25 to a high of 0.68 for the same three years that were analyzed. The Cohen's *d* calculations for Grade 6 Black students on the STAAR Reading assessment ranged from 0.32 to 0.77. With reference to the STAAR Reading results of Grade 5 Hispanic students, Cohen's *d* values ranged from a low of 0.26 to a high of 0.57 for the three

years that were analyzed. For Grade 6 Hispanic students, Cohen's *d* values for the STAAR Reading results ranged from a low of 0.35 to a high of 0.50 for the same three years. For both grade levels for all ethnic groups, students enrolled in multi-grade level schools performed at a higher rate on the STAAR Reading assessment than did their peers in single/double grade level schools. Students enrolled in multi-grade level schools had an average passing rate that was 2.32% to 11.35% higher than students enrolled in single/double grade level schools. These Cohen's *d* calculations are presented in Table 7.

In regard to the STAAR Mathematics Assessment for Grade 5 White students, only two years of data were reported for the 2012-2013 and 2013-2014 school years. The Texas Education Agency had not established standards for the redesigned STAAR Mathematics assessment for the 2014-2015 school year, therefore, passing rates were not reported (Texas Education Agency, 2013). The difference in STAAR Mathematics passing rates as a function of grade span configuration for Grade 5 White students ranged from 0.26 to 0.38. The difference in average passing rates for the two years were 2.25% and 3.34%. For Grade 6White students, the average difference in STAAR Mathematics passing rates as a function of grade span configuration ranged from 0.18 to 0.26 (i.e., Cohen's *d*). The difference in average passing rates for the two years were 3.28% and 2.15%. All of these averages were in favor of White students who were enrolled in multi-grade level schools in comparison to White students who were enrolled in single/double grade level schools. Readers are referred to Table 7 for these Cohen's *d* calculations.

With respect to the STAAR Mathematics Assessment for Grade 5Black students, Cohen's *d*sranged from 0.45 to 0.46. The difference in the average passing rates were 5.95% and 5.99%, both in favor of Grade 5 Black students who were enrolled in multi-grade level schools in comparison to Grade 5 Black students who were enrolled in single/double grade level schools. For Grade 6 Black students, the Cohen's *d* calculations ranged from 0.63 to 0.88. These Cohen's *d* values are delineated in Table 7.

Concerning the STAAR Mathematics Assessment for Grade 5 Hispanic students, Cohen's *d*s ranged from 0.25 to 0.38. The difference in the average passing rates were 2.68% and 4.01%, both in favor of Grade 5 Hispanic students who were enrolled in multi-grade level schools in comparison to Grade 5 Hispanic students who were enrolled in single/double grade level schools. For Grade 6 Hispanic students, the Cohen's *d* calculations ranged from 0.38 to 0.40. Table 7 contains these Cohen's *d* values.

Grade 5 and 6 White, Black, and Hispanic students who were enrolled in multi-grade level schools had higher average passing rates in reading and in mathematics for the three school years than did their peers who were enrolled in single/double grade level schools. Readers are referred to Table 8, 9, and 10 for the mean differences between the grade span configurations and the grade span configuration wherein students had higher passing rates. The minimum difference was 2.15% and the maximum difference was 13.69% in favor of the multi-grade level schools.

Table 8: Mean Differences and Grade Span Configuration with the Best Performance in the STAAR Reading and Mathematics Passing Rates for Grade 5 and 6White Students for the 2012-2013 Through the 2014-2015 School Years

Grade Level, Subject, and Year	Mean Difference	Grade Span With Highest Passing Rate
Grade 5		
Reading		
2012-2013	3.66	Multi-Grade Level
2013-2014	3.64	Multi-Grade Level
2014-2015	2.32	Multi-Grade Level
Mathematics		
2012-2013	2.25	Multi-Grade Level
2013-2014	3.34	Multi-Grade Level
Grade 6		
Reading		
2012-2013	4.12	Multi-Grade Level
2013-2014	3.15	Multi-Grade Level
2014-2015	3.93	Multi-Grade Level
Mathematics		
2012-2013	3.28	Multi-Grade Level
2013-2014	2.15	Multi-Grade Level

Table 9: Mean Differences and Grade Span Configuration with the Best Performance in the STAAR Reading and Mathematics Passing Rates for Grade 5 and 6 Black Students for the 2012-2013 Through the 2014-2015 School Years

Grade Level, Subject, and Year	Mean Difference	Grade Span With Highest Passing Rate
Grade 5		
Reading		
2012-2013	7.81	Multi-Grade Level
2013-2014	7.10	Multi-Grade Level
2014-2015	3.18	Multi-Grade Level
Mathematics		
2012-2013	5.95	Multi-Grade Level
2013-2014	5.99	Multi-Grade Level
Grade 6		
Reading		
2012-2013	11.35	Multi-Grade Level
2013-2014	8.43	Multi-Grade Level
2014-2015	4.72	Multi-Grade Level
Mathematics		
2012-2013	13.69	Multi-Grade Level
2013-2014	8.95	Multi-Grade Level

Table 10: Mean Differences and Grade Span Configuration with the Best Performance in the STAAR Reading and Mathematics Passing Rates for Grade 5 and 6Hispanic Students for the 2012-2013 Through the 2014-2015 School Years

Grade Level, Subject, and Year	Mean Difference	Grade Span With Highest Passing Rate
Grade 5		
Reading		
2012-2013	5.04	Multi-Grade Level
2013-2014	5.88	Multi-Grade Level
2014-2015	2.83	Multi-Grade Level
Mathematics		
2012-2013	2.68	Multi-Grade Level
2013-2014	4.01	Multi-Grade Level
Grade 6		
Reading		
2012-2013	7.27	Multi-Grade Level
2013-2014	4.30	Multi-Grade Level
2014-2015	4.46	Multi-Grade Level
Mathematics		
2012-2013	5.46	Multi-Grade Level
2013-2014	4.84	Multi-Grade Level

a) Connections with Existing Literature

Schwarts, Stiefel, Rubenstein, and Zabel (2011) analyzed the achievement of students in Grade 8 based on grade span configuration. They noted that changing schools more frequently was associated with lower academic performance. Schwarts et al. (2011)noted that students in schools with multi-grade span configurations (e.g., K-8 or K-4 and 5-8) had a greater sense of belonging and the teachers had an improved opportunity to know the students, ultimately resulting in higher achievement scores. Similar results occurred when Rockoff and Lockwood (2010) documented that students' academic level decreased 0.15 standard deviations in mathematics and English when they transitioned from elementary to middle schools.

Additionally, Johnson et al. (2012) reviewed grade span configuration and analyzed the difference between the Texas Assessment of Knowledge and Skills passing rates in Science for Grade 5 students based on grade span configuration. They compared elementary settings (K-5) with intermediate settings (5-6) on the statewide science assessment. Johnson et al. (2012) documented that students in the K-5 setting had statistically significant higher science scores than their

peers in the intermediate setting. Of particular importance in their study were student passing rates that were up to 18% higher in the K-5 setting versus the 5-6 setting. The connectedness of all students, regardless of their race or ethnicity, can be increased by expanding the number of years spent in one school setting and implementing fewer transitions between schools.

b) Connection to Theoretical Framework

In this article, the school connectedness theory served as the theoretical framework (Biag, 2016; Niehaus, Rudasill, & Rakes, 2012; Woolley & Brown, 2007). Biag (2016) explored school connectedness forurban school personnel and the low-income ethnic minority youth they taught. Biag (2016) contended that school personnel were responsive to the family, economic, and community problems in which students face which help build caring and trusting relationships. In a study completed by Niehaus et al. (2012), trusting and supportive relationships that were consistent among staff in the school setting and students in Grade 6 were associated with higher academic achievement of Grade 6 students. Woolley and Bowen (2007) noted that students had higher academic performance if they had engaged, supportive adults present in their educational experience.

The results of this empirical, multiyear investigation are commensurate with the findings of Bing (2016), Niehaus et al. (2012), and Woolley and Brown (2007). White, Black, and Hispanic students in Grades 5 and 6 who attended a multi-grade level school setting had higher passing rates in reading and mathematics for every year analyzed than their peers who attended single/double grade span configured school settings. One explanation of these results can be explained by the support and engagement the students receive in a multi-grade level configuration versus a single/double grade span configuration.

c) Implications for Policy and Practice

In this multiyear analysis of academic achievement and grade span configuration for Grade 5 and 6 White, Black, and Hispanic students in Texas, students in schools with multi-grade level configurations had the highest passing rates on the STAAR Reading and Mathematics assessments. The concept of grade span configuration has substantial implications for education policy and practice. Local school district leaders and school board members should analyze the benefits of grade span configuration and review the grade span configurations of the campuses within the district's boundaries. If the district has any single/double grade span configurations within the schools, it would be important to reconfigure the schools to include multi-grade levels. This action would serve multiple purposes including increasing school connectedness among students and increasing academic achievement. Expanding the number of grade levels within school campuses would reduce the transitions students would have to make, which have been associated with decreases in academic achievement. The recognition and actions taken to increase the grade levels in school buildings would allow for greater consistency for students in reference to school procedures and expectations, greater consistency between families and school personnel, a reduced number of discipline concerns, and a greater focus on academics versus reestablishing oneself in a group of new peer groups. For future school construction, school leaders and school boards should examine the extant literature on grade span configuration and student performance.

d) Recommendations for Future Research

In this multiyear study, differences in passing rates in reading and in mathematics were examined for Texas White, Black, and Hispanic students in Grade 5 and 6 as a function of grade span configuration. The results that were obtained were consistent across both grade levels and all three years for all three student groups. Accordingly, researchers are encouraged to extend this study to other groups of students in secondary school levels. An extension of this study would be useful to determine whether grade span configuration is related to the academic achievement of students at advanced levels, students determined to be at-risk or economically disadvantaged, English Language Learners, or enrolled in special education. To date, researchers have utilized aggregated campus-level data to ascertain the effects of grade span configuration on student achievement. Utilizing individual student data provided by the Texas Education Agency Public Education Information Management System would be beneficial to add to the body of research on grade span configuration. Researchers are also encouraged to extend this study to other states to determine the extent to which results from this empirical investigation are generalizable to students and to school campuses in other states. Additional school connectedness factors that could be evaluated based on grade span configurations include attendance rates, truancy, and discipline records.

Researchers are encouraged to include qualitative data in a mixed methods study to enhance the qualitative information provided in this study. The qualitative data could include the perceptions of educational leaders, teachers, parents, and students regarding grade span configuration. As such, researchers are encouraged to conduct investigations into the social and/or emotional reasons for the relationship between grade span configuration and academic achievement.

IX. Conclusion

The purpose of this research study was to determine the degree to which differences were present in reading and mathematics passing rates as a function of grade span configuration for White, Black, and Hispanic students in Texas. Data were analyzed for all Grade 5 and 6 White, Black, and Hispanic students who were enrolled in either multi-grade level schools (i.e., PK-6) or in single/double grade level schools (i.e., Grades 4-5, 5 only, or Grades 5-6) in Texas for the 2012-2013, 2013-2014, and the 2014-2015 school years. Statistically significant differences were present for all three school years for Grade 5 and 6 White, Black, and Hispanic students in their reading and mathematics passing rates as a function of the grade span configuration of the school in which they were enrolled. White, Black, and Hispanic students in Grade 5 and 6 had higher average passing rates in both reading and mathematics in multi-grade level settings than in single/double grade level settings. Congruent with previous researchers (Clark et al., 2013; Combs et al., 2011; Kieffer, 2013), White, Black, and Hispanic students in Grade 5 and 6 who were enrolled in multi-grade level school settings had higher levels of academic success than did their peers who were enrolled in single/double grade level span settings.

References Références Referencias

1. Abella, R. (2005). The effects of small K-8 centers compared to large 6-8 schools on student performance. *Middle School Journal, 37,* 29-35.
2. Anderman, L. H. (2003). Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *The Journal of Experimental Education, 72,* 5-22. doi:10.1080/00220970309600877
3. Anderson, E. (2012), Reflections on the "Black-White achievement gap." *Journal of School Psychology, 50,* 593-597.
4. Benner, A. D., Graham, S., & Mistry, R. S. (2008). Discerning direct and mediated effects of ecological structures and processes on adolescents' educational outcomes. *Developmental Psychology, 44*, 840-854. doi:10.1037/0012-1649.44.3840
5. Biag, M. (2016). A descriptive analysis of school connectedness: The views of school personnel. Urban Education, 51, 32-59.doi:10.1177/00420859-14539772
6. *Brown versus the Board of Education of Topeka Kansas*, 347 U. S. 483, (Supreme Court, 1954).
7. Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century.* New York, NY: Carnegie Corporation.
8. Carolan, B. V., & Chesky, N. Z. (2012). The relationship among grade configuration, school attachment, and achievement. *Middle School Journal, 43*(4), 32-39.
9. Clark, D., Slate, J. R., Combs, J., & Moore, G. W. (2013). Math and reading differences between 6-8 and K-8 grade span configurations: A multiyear, statewide analysis. *Current Issues in Education, 16*(2), 1-14. Retrieved fromhttp://cie.asu.edu/ojs/index.php/cieatasu/article/view/1144
10. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
11. Combs, J., Clark, D., Moore, G. W., On wuegbuzie, A. J., Edmonson, S. L., & Slate, J. R. (2011). Academic achievement for fifth-grade students in elementary and intermediate school settings: Grade span configurations. *Current Issues in Education, 14*(1), 1-45. Retrieved from http://cie.asu.edu/
12. Creswell, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods approaches (3rd ed.). Thousand Oaks, CA: Sage.
13. Davis-Kean, P. E., &Jager, J. (2014). Trajectories of achievement within race/ethnicity: "Catching up" in achievement across time. *The Journal of Educational Research, 107*(3), 197-208. doi:10.1080/00220671.2013.807493
14. Diamond, J. B.,&Huguley, J. P. (2014). Testing the oppositional cultural explanation in desegregated schools: The impact of racial differences in acad-= emic orientations on school performance. *Social Forces, 93*, 747-777.
15. Farkas, G. (2006). *How educational inequality develops* (#06-09). Retrieved from http://www.npc.umich.edu/publications/working-papers/
16. Flashman, J. (2012). Different preferences or different opportunities? Explaining race differentials in the academic achievement of friends. *Social Science Research, 41,* 888-903.
17. Gandara, P. C.,&Aldana, U. S. (2014). Who's segregated now? Latinos, language, and the future of integrated schools. *Education Administration Quarterly, 50*, 735-748.doi:10.1177/0013161x14549957
18. Grogan-Kaylor, A., & Woolley, M. E. (2010). Social ecology of race and ethnicity school achievement gaps: Economic, neighborhood, school, and family factors. *Journal of Human Behavior in the Social Environment, 20,* 875-896.doi:10.1080/10911359.2010.494927
19. Herman, B. E. (2004). The revival of K-8 schools. *Phi Delta Kappa Fastbacks, 519*, 7-37.
20. Johnson, B., & Christensen, L. (2012). *Educational research: Quantitative, qualitative, and mixed approaches*(4th ed.). Thousand Oaks, CA: Sage.
21. Johnson, D., Jones, L., Simieou, F., Matthew, K., & Morgan, B. (2012). The relationship between grade configuration and standardized science test scores

of fifth-grade students: What school administrators should know, *Journal of At-Risk Issues, 17*(2), 31-38.
22. Kieffer, M. J. (2013). Development of reading and mathematics skills in early adolescence: Do K-8 public schools make a difference? *Journal of Research on Educational Effectiveness, 6*, 361-379. doi:10.1080/19345747.2013.822954
23. Kozol, J. (2005). *Shame of the nation: The restoration of apartheid schooling in America.* New York, N.Y.: Crown.
24. Kozol, J. (2010). No half steps, no equivocation. *Educational Leadership, 68*(3), 28-29.
25. Mangino, W. (2012). Why do Whites and the rich have less need for education? *American Journal of Economics and Sociology, 71*(3), 562-602.
26. Mizell, H. (2005). Grade configurations for educating young adolescents are still crazy after all of these years. *Middle School Journal, 37,* 14-23.
27. Niehaus, K.; Rudasill, K. M.; & Rakes, C. R. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology, 50,* 443-460.
28. Onwuegbuzie, A. J., & Daniel, L. G. (2002). Uses and misuses of the correlation coefficient. *Research in the Schools, 9*(1), 73-90.
29. Rockoff, J. E., & Lockwood, B. B. (2010). Stuck in the middle. *Education Next, 10*(4), 68-75.
30. Schwartz, A. E.; Stiefel, L.; Rubenstein, R; & Zabel, J. (2011). The path not taken: How does school organization affect eighth grade achievement? *Educational Evaluation and Policy Analysis, 33*(3), 293-317. doi:10.3102/0162373711407062
31. Texas Education Agency. (2013). *State of Texas assessments of academic readiness (STAAR) assessments: Standard setting technical report.* Austin, TX: Author.
32. Texas Education Agency. (2016). *AskTED.* Retrieved from http://mansfield.tea.state.tx/tea.askted.web/Forms /Home.asp
33. U. S. Census Bureau. (2010). *The next four decades: Population estimates and projections.* Retrieved from http://www.census.gov/prod/2010pubs/p25-1138.pdf.
34. Wilson, R., & Slate, J. R. (2014). Grade span configuration and differences in African American and Hispanic student mathematics achievement. *Journal of Education Research, 8*(4), 211-219.
35. Woolley, M. E., & Bowen, G. L. (2007). In the context of risk: Supportive adults and the school engagement of middle school students. *Family Relations, 56*, 92-104. doi:10.1111/j.1741-3729.2007.0042.