Differences in Academic Performance by School District Size for Students in Special Education: A Multiyear, Statewide Investigation

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Abstract

In this empirical statewide, multiyear analysis, the extent to which the academic performance of students enrolled in special education was influenced by school district student enrollment was determined. Five years of Texas statewide data on the Texas Assessment Knowledge Skills Reading, Mathematics, Science, Social Studies, and Writing exams were analyzed as a function of three school district sizes: (a) small-size (up to 1,599 students); (b) moderate-size (1,600 to 9,999 students); and (c) large-size (10,000 or more students). Inferential statistical procedures revealed that students in special education who were enrolled in large-size school districts had statistically significantly higher passing rates on all five exams than did students in special education who were enrolled in either moderate-size or small-size school districts for all 5 years. Effect sizes were small.

Index terms— students in special education, school district size, texas assessment of knowledge and skills, passing rates.

1 I. Introduction

chool district consolidation and its relationship to student academic performance and cost effectiveness has been and continues to be debated in forums involving school reform. During the 2013 legislative session, Texas State Representative Roland Gutierrez from San Antonio amended an education bill to require the Texas Education Agency to determine whether bigger Texas school districts would be better than the many small Texas school districts in existence (Mathis, 2014). On the opposite end of the spectrum, legislation was proposed to split school districts considered too large to improve performance. Specifically, Texas State Representative Jason Villalba threatened to split the 160,253 student Dallas Independent School District if it did not move faster with reform measures (Mathis, 2013).

In an effort to increase both engagement with school and academic achievement, school districts across the United States have created small high schools (Weiss, 2010). Pittman and Haughwout (1987) and Avila (2011) contended that small schools or smaller learning communities have greater student engagement, higher graduation rates, and high extracurricular participation than larger-size high schools. All of these factors contribute to academic success and positive feelings about the school experience. Cotton (1996) identified that small schools produce equal or superior achievement for students than do large schools. Smaller schools benefit students when their family background is atypical (i.e., economically disadvantaged) of what is considered successful (Leithwood, 2009). Proponents of small schools have identified several variables that contribute to student success within small school districts. Howley (1996) and Riggen (2013) emphasized the influence of economic status on student academic achievement and its relationship to school size. Riggen (2013) in her Ohio school size study established that economic status had the largest influence on student reading levels. In a study of West Virginia students, Howley (1996) contended that small schools were instrumental in the academic achievement of impoverished students, whereas large schools facilitated the academic achievement of affluent students.

Friedkin and Necochea (1988) also observed the same trends between school district size and socioeconomic status. In their investigation, larger school size was associated with positive effects for affluent students. Bullard (2011) identified in her study of California schools that larger size schools had positive effects on SAT scores, however, a negative influence was documented for overall school achievement. Bullard (2011) determined that every 100 students added to student enrollment in a school resulted in a decline in academic performance. Smaller size, by contrast, was associated with positive effects for students in poverty. In a Washington state study, Wilson (1985) determined that school systems of less than 2,000 pupils had greater proportions of higher achieving schools. Wilson in his study focused on the mathematics achievement of students in relation to school district size. Turner, Camilli, Kroc, and Hoover (1986), in their study of 102 Colorado school systems, documented that elementary pupil achievement decreased as school district enrollment increased.

Andrews, Duncombe, and Yinger (2002) identified an optimum size for a high school is between 600-900 students, even when student economic background is taken into account. Black (2006) also contended that the arguments in support of large schools, especially in the area of diversified curriculum can be counteracted by small schools, when they restructure their curriculums to suit their strengths. Small schools need to utilize more independent study to compensate for the lack of available course offerings.

Researchers (e.g., **??**etchum Lenear (2013) compared the performance of Black, Hispanic, and White students in relation to school district size. She determined that school district size had a statistically significant impact on the academic performance of Black, Hispanic, and White students. In another recent investigation of school size, Morris and Slate (2012) analyzed student performance on Advanced Placement and International Baccalaureate exams as a function of high school size. They documented that students enrolled in large-size high schools had statistically significantly higher passing rates than did students enrolled in either small-size or moderate-size high schools.

In an analysis of elementary school size and Black students it was established that Black students attending large-size elementary schools outperformed Black students attending small or very-small size elementary schools (Zoda, Combs, & Slate, 2011). Similar results were reported for Black and Hispanic middle school students in a study conducted by Riha, Slate, and Martinez-Garcia (2013). In their study middle school students attending larger-size middle schools statistically significantly outperformed middle school students who attended small-size middle schools on all four academic measures. Lenear (2013), Ketchum and Slate (2012), Barnes and Slate (2014) have generated optimal sizes for school district size in reference to academic performance and administrative costs. The Texas Education Agency recently conducted a study in conjunction with the University of Texas at Dallas Education Research Center identified that cost savings can be expected for consolidations involving small districts, but as the size of the consolidated district increases past 3,200 students, costs are expected to rise, not fall (Gronberg, Jansen, Karakaplan, & Taylor, 2014). In deciding whether or not school consolidation is advisable, factors such as class size, administrative costs, and transportation costs must be considered (Barnes & Slate, 2014). When school size is considered in isolation, schools between 500 and 1,000 students are probably operating at peak economic efficiency (Turner & Thrasher, 1970). Sizable potential cost savings may exist by moving from a very small district (500 or fewer pupils) to a district with 2,000 to 4,000 students, both in instructional and administrative costs (Barnes & Slate, 2014).

2 a) School District Size and Special Needs Students

A literature review was conducted to identify relevant empirical published articles regarding school district size and its influence on the academic achievement of students enrolled in special education. Searches were conducted utilizing the EBSCO Academic Search Complete database and various other print and online sources. Articles were selected based on school district size and student academic performance; if they were peer-reviewed; contained full text; and were produced between 1962 and 2015. The articles selected were focused on topics related to school district size, instructional expenditure ratios, students with programmatic labels, economies of scale, and the demographic changes that are occurring in Texas that influence education.

Texas public school enrollment in 2013 was Texas Education Agency guidelines follow federal government guidelines when making the determination of a student's eligibility for special education and related services (Texas Education Agency, 2013). An Admission, Review, and Dismissal committee made up of parents, diagnostician, school administrator, and teachers determine a student's eligibility for special education services. A multidisciplinary team collects and reviews evaluation data in connection with the determination of a student's eligibility (Texas Education Agency, 2013). With the passing of the No Child Left Behind Act, the identification rates of students enrolled in special education services has fallen across the state and nation (Harper, 2013). Dawkins (2010) documented that students enrolled in special education performed better in resources classes in English and inclusion classes for mathematics and science. Students with disabilities performed better academically in schools where fewer poor students were present and the population was smaller in number (United States Department of Education, 1993). Wilson (2010) documented that students enrolled in special education programs consistently achieved better in middle and upper class cohorts than students in low-income cohorts. Student performance by special education class type was also analyzed. Hogan (2013) analyzed test scores of third, fourth, and fifth grade students enrolled in special education to determine the influence of inclusion classes and resource classes for special education students. Students performed better in regular education inclusion classes versus their peers in resource classes (Hogan, 2013). Roach (2005) analyzed the influence of instructional expenditures per student receiving special education services, percentage of students receiving special education services, percentage of students receiving special education services taking the exam, and special education data analysis system rating on students enrolled in special education services to determine their influence on state testing. He determined that economic status was the dominant predicator of success of students enrolled in special education programs. Exemplary campuses in the state of Texas identified students enrolled in special education at lower rates than schools that obtained lower academic ratings. Exemplary campuses also exempted fewer special education students from the Texas academic assessment system test than any of the other accountability ratings (Grubbs, 2000). Campuses identified as low performing in the Texas accountability system had both the highest special education identification rate, and the highest special education exemption rate of the four rating categories in the Texas accountability system (Grubbs, 2000). In support of this study, Driscoll (2012) contended that additional funding for regular and special education programs must be provided so that students have research-based educational programs that foster student achievement and assist in closing the achievement gap.

3 b) Statement of the Problem

Students enrolled in special education are tested and their passing rates count toward the accountability rating of school campuses and school districts (Texas Education Agency, 2014). The Individuals with Disabilities Education Act requires that each public school provide services to eligible students enrolled in special education in the least restrictive School district leaders and policymakers are analyzing the possibility of consolidating districts to provide more efficient and effective services to students in the state of Texas, as the push for accountability increases. In conjunction with these efforts, the influence on the academic achievement of students enrolled in special education will be examined to ensure they meet the requirements of a free appropriate public education under Individuals with Disabilities Education Act. Results of this empirical research investigation will add to the literature on the relationship of school district size and its influence on the academic achievement of students enrolled in special education.

4 c) Purpose of the Study

The purpose of this multiyear-statewide investigation was to ascertain the extent to which differences might be present in the academic performance by school district size for students enrolled in special education in Texas schools. Analyzed herein were the passing rates on the 2006-2007 through the 2010-2011 school year Texas Assessment of Knowledge and Skills (TAKS) English Language Arts, Mathematics, Science, Social Studies, and Writing exams. Given the education budget situation in Texas (and in many other states as well), policymakers and educational leaders need to make decisions, in this case regarding school district size, based upon the best available empirical information.

5 d) Significance of the Study

School district size and its relationship to the academic achievement of students enrolled in special education was the central focus of this study. Findings in this study may provide evidence that school district size is a statistically significant factor in the academic performance of students enrolled in special education. Examining the performance of students enrolled in special education is relevant within the state of Texas because this group constitutes 8.8% of the current student population (Texas Education Agency, 2014). Findings of this study may be used to develop standards and policies that will help increase the academic performance of students identified with programmatic labels.

6 e) Research Questions

Research questions addressed in this study were: (a) What is the difference in TAKS Reading passing rates as a function of school district size for students enrolled in special education?; (b) What is the difference in TAKS Mathematics passing rates as a function of school district size for students enrolled in special education?; (c) What is the difference in TAKS Science passing rates as a function of school district size for students enrolled in special education?; (d) What is the difference in TAKS Social Studies passing rates as a function of school district size for students enrolled in special education?; and (e) What is the difference in TAKS Writing passing rates as a function of school district size for students enrolled in special education? These five research questions were repeated for each of the five years of data analyzed herein. Thus, a total of 25 research questions were addressed in this investigation regarding the relationship of school district size to the academic performance of students enrolled in special education.

7 II. Method a) Research Design

A causal-comparative quantitative research design **??**Schenker & Remrill, 2004) was used because it allowed for the testing of intact independent variables that are not amenable to experimental manipulation. Archival data from the Texas Education Agency Academic Excellence Indicator System database were analyzed for this article. The independent variable of school district size had already occurred, along with the passing rates on the

TAKS tests. Accordingly, neither the independent variable nor the dependent variables were amenable to being manipulated.

Enrollment and academic data for the ??006-2007, 2007-2008, 2008-2009, 2009-2010, and 2010-2011 school years were extracted from the Texas Education Agency Academic Excellence Indicator System database. Texas Assessment of Knowledge and Skills test score data were analyzed to measure student performance rather than the STAAR (State of Texas Assessment of Academic Readiness) because of difficulties in implementation of the STAAR exam. Passing rate data for students enrolled in special education were obtained, along with school district enrollment numbers.

School district size was coded into three separate groups, using the definition provided by Cullen (2012). Enrollment was divided into small-size, moderate-size, and large-size districts (Cullen, 2012). Small-size school districts were identified as containing up to 1,599 students, moderate-size school districts had 1,600-9,999 students, and large-size school districts had 10,000 or more students (Cullen, 2012). These groupings were utilized so that results from this investigation could be compared to Cullen's (2012) study.

8 b) Participants and Instrumentation

All data were downloaded from the Texas Education Agency Academic Excellence Indicator System for the ??006-2007, 2007-2008, 2008-2009, 2009-2010, and 2010-2011 school years. From this website, the following variables were downloaded: school district student enrollment, student programmatic enrollment in special education, and passing rates on the TAKS Reading, Mathematics, Science, Social Studies, and Writing passing rates. Data on the TAKS Writing test are not available for the 2011-2012 school year because that exam was not administered during that school year.

9 III. Results

To answer the five research questions previously delineated, a Multivariate Analysis of Variance (MANOVA) procedure was conducted, using school district size as the independent variable and the five TAKS measures as the dependent variables. Prior to conducting the MANOVA procedures for the five school years, its underlying assumptions were checked. Data normality, Wilks' Lambda, Box's Test of Equality of Covariance, and the Levene's Test of Equality of Error Variances were specifically examined. These assumptions were not met, however, Field (2005) contends that the MANOVA procedure is sufficiently robust to be able to withstand these violations For the 2006-2007 school year, a MANOVA revealed a statistically significant overall difference, Wilks' ? = .94, p= .05, partial ? 2 = .03, a small effect size (Cohen, 1988), as a function of school district size. Following this overall analysis, univariate follow up analysis of variance (ANOVA) procedures were calculated. A statistically significant difference was present for only the TAKS Writing test, F(2, 313) = 5.73, p = .004, partial ? 2 = .04, small effect size (Cohen, 1988). Statistically significant differences were not revealed for the TAKS Reading test, F(2, 313) = 0.50, p = .61; the TAKS Mathematics test, F(2, 313) = 0.61, p= .54; the TAKS Science test, F(2, 313) = 1.16, p= .32; and the TAKS Social Studies test, F(2, 313) = 0.29, p= .74. Average passing rates on the TAKS Reading, Mathematics, Science, and Social Studies exams were congruent for students enrolled in special education across the three school district sizes.

For the one statistically significant ANOVA, a Scheffé post hoc procedure was calculated to determine which pair of school district sizes differed. This post hoc procedure revealed that the TAKS Writing passing rates for students enrolled in special education were highest in large-size school districts in comparison to small-size and moderate-size school districts. Moderate-size school districts did not differ in their TAKS Writing passing rates from small-size school districts. Readers are directed to Table 1 for the descriptive statistics for the TAKS passing rates in the 2006-2007 school year by school district size for students enrolled in special education. For the 2007-2008 school year, a MANOVA revealed a statistically significant overall difference, Wilks' ? = .87, p< .001, partial ? 2 = .066, a medium effect size (Cohen, 1988), in overall student performance by school district size. Following the overall analysis, follow-up univariate ANOVA procedures were calculated. A statistically significant difference was yielded on the TAKS Science test, F(2, 370) = 4.05, p = .018, partial ? 2 = .021, small effect size; and on the TAKS Writing test, F(2, 656) = 13.41, p< .001, partial ? 2 = .068, medium effect size (Cohen, 1988). Statistically significant differences were not revealed for the TAKS Reading test, F(2, 370) = 0.01, p = .99; the TAKS Mathematics test, F(2, 370) = 2.38, p = .09; and the TAKS Social Studies test, F(2, 370) = .624, p= .54. Students in special education had similar average passing rates on the TAKS Reading, Mathematics, and Social Studies exams across the three school district sizes.

Concerning the two statistically significant ANOVAs, Scheffé post hoc procedures were calculated to determine which pair of school district sizes differed. For the TAKS Science test, passing rates for students enrolled in special education were highest in large-size school districts in comparison to small-size school districts. No differences were observed on the TAKS Science exam between large-size districts and moderate-size districts or small-size and moderate-size school districts. Students in special education had higher passing rates on the TAKS Writing test in moderate-size school district in comparison to smallsize school districts. Students in special education had higher passing rates on the TAKS Writing exam in largesize school districts than in small-size school districts. Readers are directed to Table 2 for the descriptive statistics for the TAKS passing rates in the 2007-2008 school year by school district size for students enrolled in special education. For the 2008-2009 school year, a MANOVA yielded a statistically significant overall difference, Wilks' ? = .85, p< .001, partial ? 2 = .079, a medium effect size (Cohen, 1988), on the TAKS exams as a function of school district size. Following the overall analysis, followup univariate ANOVA procedures were calculated. A statistically significant difference was yielded on the TAKS Mathematics test, F(2, 314) = 4.86, p = .008, partial ? 2 = .03, small effect size; on the TAKS Science test, F(2, 314) = 4.93, p = .008, partial ? 2 = .03, small effect size; on the TAKS Social Studies test, F(2, 314) = 3.20, p = .04, partial ? 2 = .02, small effect size; and on the TAKS Writing test, F(2, 314) = 17.38, p< .001, partial ? 2 = .10, medium effect size (Cohen, 1988). A statistically significant difference was not present on the TAKS Reading test, F(2, 314) = 0.75, p = .47. Average passing rates on the TAKS Reading exam were congruent across the three school district sizes for students enrolled in special education.

For each of the four statistically significant ANOVAs, Scheffé post hoc procedures were calculated to determine which pair of school district sizes differed. The average TAKS Mathematics passing rates for students in special education were higher in large-size school districts in comparison to small-size school districts. Moderate-size school districts also had higher average passing rates than small-size school districts. Higher average TAKS Science passing rates were present for students in special education in large-size school districts than in small-size school districts. No differences were observed in Science passing rates between moderate-size and large-size school districts or between small-size and moderate-size school districts. With respect to the TAKS Writing passing rates, students in large-size school districts had higher averages than moderate-size and small-size school districts. Students in small-size school districts also differed in their TAKS Writing passing rates in comparison to moderate-size school districts. No differences were observed in Social Studies passing rates between small-size, moderatesize, and large-size school districts. Readers are directed to Table 3 for the descriptive statistics for the TAKS passing rates in the 2008-2009 school year by school district size for students enrolled in special education. For the 2009-2010 school year, a statistically significant overall difference was revealed, Wilks' ? = .93, p< .001, partial ? 2 = .038, a small effect size (Cohen, 1988), on the TAKS exams as a function of school district size. Following the overall analysis, followup univariate ANOVA procedures were calculated. A statistically significant difference was yielded on the TAKS Mathematics test, F(2, 502) = 5.02, p = .007, partial ? 2 = .02, small effect size; on the TAKS Science test, F(2, 502) = 2.97, p = .052, partial ? 2 = .012, medium effect size; and on the TAKS Writing test, F(2, 502) = 8.79, p< .001, partial ? 2 = .034, small effect size (Cohen, 1988). A statistically significant difference was not present on either the TAKS Reading test, F(2, 502) = 1.19, p = .31; or the TAKS Social Studies exam, F(2, 502) = 2.05, p =.13. Students enrolled in special education, regardless of school district student enrollment, had similar average passing rates on the TAKS Reading and Social Studies exams.

Concerning the three statistically significant ANOVAs, Scheffé post hoc procedures were calculated to determine which pair of school district sizes differed. For the TAKS Mathematics passing rates, students in special education who were enrolled in large-size school districts had higher passing rates than in small-size school districts. No differences were observed in TAKS Mathematics passing rates between small-size and moderate-size school districts and between moderatesize and large-size school districts. Average passing rates on the TAKS Science exam were commensurate for the small-size, moderate-size, and large-size school districts. With respect to the TAKS Writing passing rates, students in special education in large-size school districts had higher passing rates than small-size school districts. The TAKS Writing passing rates for moderatesize school districts were lower than large-size school districts. Small-size school districts did not differ in their TAKS Writing passing rates from moderate-size school districts. Delineated in Table 4 are the descriptive statistics for the TAKS passing rates in the 2009-2010 school year by school district size for students enrolled in special education. For the 2010-2011 school year, a statistically significant overall difference was yielded, Wilks' ? = .94, p< .001, partial ? 2 = .029, a small effect size (Cohen, 1988), on the TAKS exams as a function of school district size. Following the overall analysis, follow-up univariate ANOVA procedures were calculated. A statistically significant difference was yielded on the TAKS Social Studies test, F(2, 673) = 6.35, p = .002, partial ? 2 = .02, small effect size; and on the TAKS Writing test, F(2, 673) = 6.82, p = .001, partial ? 2 = .02, small effect size (Cohen, 1988). A statistically significant difference was not present on the TAKS Reading exam, F(2, 673) = 0.61, p = .54; the TAKS Mathematics exam, F (2, 673) = 1.52, p = .22; and the TAKS Science test, F(2, 673) = 1.24, p = .29. Average passing rates were congruent for students enrolled in special education, regardless of school district student enrollment, on the TAKS Reading, Mathematics, and Science exams.

For the two statistically significant ANOVAs, Scheffé post hoc procedures were calculated to determine which pair of school district sizes differed. Students enrolled in special education had higher average passing rates on the TAKS Social Studies exam in small-size school districts than in moderate-size school districts. Higher average TAKS Social Studies passing rates were present in large-size school districts than in moderate-size school districts. Average passing rates on the TAKS Social Studies exam did not differ between small-size and large-size school districts. With respect to TAKS Writing passing rates, students in largesize school districts had higher averages than in both small-size and moderate-size school districts. Small-size and moderate-size school districts did not differ in their TAKS Writing passing rates. Readers are directed to Table 5 for the descriptive statistics for the TAKS passing rates in the 2010 -2011 school year by school district size for students enrolled in special education.

10 IV. Discussion

In this empirical analysis, the extent to which differences were present in the academic achievement of students enrolled in special education as a function of school district student enrollment was addressed. Five years of Texas statewide data for the 2006-2007 through 2010-2011 school years were obtained and analyzed. A summary of the results for the five school years and the extent to which trends were present will now be discussed.

11 a) Small-size School Districts

For the 2006-2007 school year, school district size was not related to the academic achievement of students who were enrolled in special education. In the 2007-2008 school year, students in special education and who were enrolled in small-size school districts had lower average passing rates on the TAKS Science exam than their peers who were enrolled in large-size school districts. During the same school year, small-size school districts also had lower passing rates on the TAKS Writing exam than either moderate-size or large-size school districts. Students enrolled in special education in small-size school districts had lower passing rates on the TAKS Mathematics and Writing exams than their peers in either moderate-size or large-size school districts in the 2008-2009 school year. Also in the 2008-2009 school year, small-size school districts had lower passing rates than large-size school districts on the TAKS Science exam. During the 2009-2010 school year, students enrolled in special education in small-size school districts had lower passing rates on the TAKS Mathematics exam than students in large-size school districts. Small-size school districts also had lower average passing rates on the TAKS Writing exam than moderate-size and large-size school districts. Students in special education who were enrolled in small-size school districts had lower passing rates on the TAKS Reading exam than their peers in moderate-size school districts. Similarly, small-size school districts had lower average passing rates on the TAKS Writing exam than did large-size school districts.

12 b) Moderate-size School Districts

Moderate-size school districts did not differ in their passing rates from either the small-size or largesize school districts on any of the TAKS exams in the 2006-2007 school year. Students in special education who were enrolled in moderate-size school districts during the 2007-2008 school year had higher average passing rates than small-size school districts but lower average passing rates than large-size school districts on the TAKS Writing exam. During the 2008-2009 school year, moderate-size school districts had higher average passing rates than small-size school districts on the TAKS Mathematics and Writing exams. Moderate-size school districts had lower average passing rates than large-size districts on the TAKS Writing exam during the 2008-2009 and 2009-2010 school years. In the 2010-2011 school year, moderate-size school districts had lower passing rates on the TAKS Reading and Mathematics exams than large-size school districts. Moderate-size school districts had higher passing rates than small-size school districts on the TAKS Reading exam.

13 c) Large-size School Districts

Students in special education who were enrolled in large-size school districts had higher average passing rates on the TAKS Reading exam than did their peers in moderate-size school districts during the 2006-2007 school year. Large-size school districts had higher passing rates on the TAKS Science and TAKS Writing exams than did small-size school districts in the 2007-2008 school year. They also had higher average passing rates on the TAKS Reading test than moderate-size school districts. Large-size school districts had higher average passing rates on the TAKS Mathematics, Science, and Writing exams than small-size school districts for the 2008-2009 school year. They also had higher passing rates on the TAKS Writing exam than their peers in moderate-size school districts. In the 2009-2010 school year, large-size school districts had higher average passing rates on the TAKS Mathematics and Writing tests than small-size school districts. Largesize districts also had higher passing rates on the TAKS Writing test than moderate-size school districts. Higher passing rates were present for large-size school districts in comparison to moderate-size school districts on the TAKS Reading and Mathematics exams during the 2010-2011 school year. Large-size school districts also had higher average passing rates on the TAKS Mathematics test than small-size school districts for the 2010-2011 school year. Presented in Table 6 is the summary of the statistical analyses for the TAKS measures of students enrolled in special education across the 2006 -2007 through the 2010 -2011 school years.

14 d) Implications for Policy and Practice

Based upon the five years of data analyzed, implications are present for policy and for practice. In this empirical investigation, statistically significant differences were present in the academic achievement as a function of school district size for students who were enrolled in special education. With the passing rates of students in special education who were enrolled in small-size school districts being lower than the passing rates for students in special education who were enrolled in either moderate-size or large-size school districts, the possibility of school districts being consolidated merits consideration.

Students in special education had higher average passing rates on the TAKS Reading, Mathematics, Science, Social Studies, and Writing exams in large-size school districts than in either smallsize or moderate-size school districts. With the rise in the academic expectations for students enrolled in special education in Texas schools, state policymakers and educational leaders should consider the results delineated herein regarding the relationship of school district size to the academic performance of students in special education. Students enrolled in special education had their lowest passing rates in small-size school districts. Small-size school districts had the lowest passing rates for students in special education on the TAKS Reading, Mathematics, Science, and Social Studies tests for four of the five years analyzed. In 19 of the 25 TAKS passing rates calculated, smallsize school districts had the lowest average passing rates. School district consolidation may merit discussion as a possible remedy for districts that are not meeting Texas state academic standards. Policymakers should consider the facts presented in this research when new bills are introduced related to school district reconstitution and school district size.

15 e) Suggestions for Future Research

Because the focus of this study was only on school district size for students enrolled in special education, several suggestions for future research are provided. First, researchers are encouraged to examine the issue of school district size for other groups of students such as English Language Learners, students in poverty, and at-risk. Second, because the data that were analyzed in this investigation were aggregated at the school district level, researchers are encouraged to obtain and analyze individual student level data. Analyses at the individual student level would permit a more refined analysis than was possible in this study. Third, Texas changed its state-mandated assessment from the TAKS to the State of Texas Assessment of Academic Readiness (STAAR). Due to problems in the implementation of STAAR, data from its administration were not analyzed in this investigation. Researchers are encouraged to extend this investigation by examining results of the STAAR, once it has been properly implemented.

Fourth, no attempt was made in this investigation to determine any causal factors in the relationship of school district size with student performance. Researchers are encouraged to delve more deeply into any underlying mechanisms that might explain why large-size school districts have higher passing rates than do small-size school districts. Finally, researchers are encouraged to conduct mixedmethods studies to obtain a more in-depth understanding of the relationship between school district size and the academic performance of students enrolled in special education.

16 V. Conclusion

In conclusion, the purpose of this research investigation was to determine the extent to which school district size was related to the academic achievement of students who were enrolled in special education. Specifically analyzed were the statemandated assessments in reading, mathematics, science, social studies, and writing for a 5-year period. Higher average passing rates were typically present for students in special education who were enrolled in large-size school districts than for either small-size or moderate-size school districts. Accordingly, policymakers and educational leaders are encouraged to use these results in their deliberations on school district consolidation.

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[1] Differences in Academic Performance by School District Size for Students in Special Education: A Multiyear, Statewide Investigation

1

School District Size	n of school districts	M	SD
Reading			
Up to 1,500 students	28	71.64	10.77
1,600 to 9,999 students	198	70.89	11.67
10,000 or more students	90	72.30	10.04
Mathematics			
Up to 1,500 students	28	56.39	16.89
1,600 to 9,999 students	198	57.79	13.61
10,000 or more students	90	59.30	12.62
Science			
Up to 1,500 students	28	45.32	21.51
1,600 to 9,999 students	198	50.06	18.14
10,000 or more students	90	51.03	14.40
Social Studies			
Up to 1,500 students	28	70.54	17.64
1,600 to 9,999 students	198	71.09	14.71
10,000 or more students	90	72.31	10.02
Writing			
Up to 1,500 students	28	76.32	13.65
1,600 to 9,999 students	198	76.02	14.05
10,000 or more students	90	81.38	8.17

Figure 1: Table 1 :

2

School District Size	n of school districts	M	SD
Reading			
Up to 1,500 students	61	73.70	13.07
1,600 to 9,999 students	219	74.00	12.62
10,000 or more students	93	74.02	10.42
Mathematics			
Up to 1,500 students	61	57.48	16.16
1,600 to 9,999 students	219	62.01	15.13
10,000 or more students	93	61.75	12.26
Science			
Up to 1,500 students	61	34.34	15.17
1,600 to 9,999 students	219	37.87	15.89
10,000 or more students	93	41.42	13.85

Figure 2: Table 2 :

3

School District Size	n of school districts	M	SD
Reading			
Up to 1,500 students	41	75.17	13.61
1,600 to 9,999 students	181	76.62	11.01
10,000 or more students	95	77.66	9.81
Mathematics			
Up to 1,500 students	41	60.29	13.37
1,600 to 9,999 students	181	66.48	14.23
10,000 or more students	95	68.01	11.83
Science			
Up to 1,500 students	41	39.44	14.74
1,600 to 9,999 students	181	44.81	16.59
10,000 or more students	95	48.58	14.76
Social Studies			
Up to 1,500 students	41	68.73	16.68
1,600 to 9,999 students	181	69.46	14.66
10,000 or more students	95	73.68	11.78
Writing			
Up to 1,500 students	41	70.71	16.51
1,600 to 9,999 students	181	76.49	14.68
10,000 or more students	95	84.05	7.43

Figure 3: Table 3 :

4

School District Size	n of school districts	M	SD
Reading			
Up to 1,500 students	153	64.32	13.28
1,600 to 9,999 students	255	63.67	13.35
10,000 or more students	97	66.08	12.29
Mathematics			
Up to 1,500 students	153	50.10	15.04
1,600 to 9,999 students	255	52.82	15.06
10,000 or more students	97	56.09	12.66
Science			
Up to 1,500 students	153	49.92	16.47
1,600 to 9,999 students	255	52.87	16.00
10,000 or more students	97	54.60	13.34
Social Studies			
Up to 1,500 students	153	76.08	13.79
1,600 to 9,999 students	255	76.64	12.09
10,000 or more students	97	79.12	8.88
Writing			
Up to 1,500 students	153	65.33	18.51
1,600 to 9,999 students	255	67.47	15.83
10,000 or more students	97	73.74	9.63

Figure 4: Table 4 :

5

School District Size	n of school districts	M	SD
Reading			
Up to 1,500 students	310	75.12	10.84
1,600 to 9,999 students	266	74.24	10.49
10,000 or more students	100	75.22	8.73
Mathematics			
Up to 1,500 students	310	66.26	12.69
1,600 to 9,999 students	266	66.12	11.80
10,000 or more students	100	68.43	9.02
Science			
Up to 1,500 students	310	59.76	15.03
1,600 to 9,999 students	266	58.19	13.21
10,000 or more students	100	60.16	9.98
Social Studies			
Up to 1,500 students	310	78.05	12.64
1,600 to 9,999 students	266	74.89	11.06
10,000 or more students	100	78.26	7.89
Writing			
Up to 1,500 students	310	71.09	15.85
1,600 to 9,999 students	266	72.90	12.99
10,000 or more students	100	76.95	8.31

Figure 5: Table 5 :

6

TAKS Measure	Statistically Significant Differences Present	Lowest Performing School District Size	Frequency of Small Effect Size
Reading	0/5 = 0%	Moderate	0/5 = 0%
Mathematics	2/5 = 40%	Small	2/5 = 40%
Science	3/5 = 60%	Small	3/5 = 60%
Social Studies	2/5 = 40%	Small	2/5 = 40%
Writing	5/5 = 100%	Small	5/5 = 100%

Figure 6: Table 6 :

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