INSTRUCTIONAL EXPENDITURES RATIO AND STUDENT ACHIEVEMENT: IS 60% A BETTER INDICATOR?[*]

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Abstract

In this study, the extent to which Texas public school districts complied with the 65% instructional expenditure ratio mandate was related to student achievement on the Texas Assessment of Knowledge and Skills Science, Math, Reading, Social Studies, and Writing tests for the 2007-2008 school year. Following the grouping of Texas public school districts into seven instructional expenditure categories (i.e., below 60%, 60-60.99%, 61-61.99%, 62-62.99%, 63-63.99%, 64-64.99%, and 65% and greater), statistical analyses were conducted. Statistically significant differences, with small to moderate effect sizes, were revealed for Black, Hispanic, and White students in their achievement scores as a function of school district instructional expenditures. School districts that spent less than 60% on instruction had lower passing rates in all five subject areas than districts that spent more than 65%. Implications for further research are discussed.

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1 Sumario en espanol

En este estudio, el punto hasta que distritos de escuela de público de Tejas se conformaron con el 65% de mandato instruccional de proporción de gasto fue relacionado al logro del estudiante en la Evaluación de Tejas del Conocimiento y la Ciencia de Habilidades, de las Matemáticas, de Leer, de estudio social, y de Escribir las pruebas para el 2007-2008 año escolar. Seguir la colocación de Tejas distritos públicos de escuela en siete categorías instruccionales de gasto (es decir, abajo de 60%, 60-60.99%, 61-61.99%, 62-62.99%, 63-63.99%, 64-64.99%, y 65% y más grande), estadístico analiza fueron realizados. Las diferencias estadísticamente significativas, con pequeño moderar tamaño de efecto, fueron revelados para Negro, hispano, y estudiantes Blancos en sus cuentas de logro como una función de distrito de escuela gastos instruccionales. Eduque distritos que gastaron menos de 60% en la instrucción tenida pasando más bajo las tasas en todas cinco áreas sujetas que distritos que gastaron más de 65%. Las implicaciones para la investigación adicional son discutidas.

> NOTE: Esta es una traducción por computadora de la página web original. Se suministra como información general y no debe considerarse completa ni exacta.

2 Introduction

The 65% instructional expenditure initiative began when Patrick Byrne, the founder of Overstock.com, began to advocate for the issue in 2005. Byrne (2005) suggested that schools need to reallocate their resources to increase classroom spending from 61.5% (National Center for Education Statistics, 2003) to 65% of total operational budget. According to Byrne, this spending reallocation would improve the school system by paying teachers higher salaries, buying more computers and textbooks, and creating an environment that *inspires learning*. George Will (2005b) followed with two articles advocating for the new 65% rule because it would reallocate resources with no increase in taxes, even though little evidence existed the funding mandate would improve student achievement. In a second article in the New York Times, Will coined the term "The 65 percent solution" (Will, 2005a). This issue was important, according to Will, because no new funds were required to implement the 65% solution. Schools simply had to reallocate their funding resources closer to the classroom by increasing teachers' salaries, instructional supplies, and textbook materials.

Texas was quick to respond to this new issue. On August 22, 2005, Texas Governor Rick Perry issued an Executive Order requiring Texas to revise the financial accountability and reporting system for public schools to include an instructional expenditure component (Perry, 2005). The purpose, according to Perry, was to make school financial accountability more transparent. Further, the order mandated that amount of funding be used for instructional purposes be maximized so efficiency of public education funds would be improved. The executive order required that the fiscal accountability system include a requirement that 65% of school funds be spent for instructional purposes as defined by the National Center for Education Statistics (2003). Instructional purposes, according to NCES, include salaries and benefits for teachers and teacher aides, textbooks, supplies, and purchased services related to the interaction between teachers and students.

In response to the executive order, Commissioner of Education Shirley Neeley convened a task force that revised the accountability documentation procedures to include the new 65% directive. Beginning in 2006, the FIRST accountability worksheet, completed annually by all Texas districts, included a new budgeting indicator, indicator 16, which incorporated the Governor's executive order. Districts were directed to budget at least 65% of their operational funds to instructional categories over a 3-year period beginning in 2006 (Texas Education Code (TEC), §39.204).

The No Child Left Behind Act of 2001 (NCLB) directs that school districts be held accountable for their student achievement rates. Students are evaluated based on their ethnic membership and economically disadvantaged status in math, reading, and science. Texas evaluates and rates school districts on their performance on the Texas Assessment of Academic Skills tests in Science, Math, Reading, Social Studies, and Writing, using four groups of students to determine accountability: All students, Black, Hispanic, and

White. Therefore, the 65% instructional expenditure directive should be assessed using these four student groups to determine if statistically significant differences existed between instructional expenditure group and student achievement. Does the percent of money spent closest to students (i.e., instructional expenditures) make a difference in their achievement?

3 Review of Related Literature

The relationship between money and student achievement, often called education production function (Hanushek, 1994) has been studied with mixed results. In a metananalysis, Hanushek (1989) utilized data from 38 different research articles and revealed that 20 of 65 measures involving per-pupil-expenditure had positive and statistically significant relationships to student outcome. The overall conclusion of the study, however, was that money did not matter. Roper (1996) conducted a study of 127 Alabama school districts. Roper utilized Stanford Achievement Test results and instructional support expenditures. An analysis of the correlation coefficients revealed no statistically significant relationship existed between the Stanford test results and instructional support expenditures. Turner (1999) examined the relationship between fifth grade reading scores and per pupil expenditures in Georgia. In this study, 40 school districts were analyzed using several variables such as district enrollment, teacher experience, percent of budget used for salaries, and per pupil expenditure. Turner revealed that a moderate correlation existed between reading scores and per pupil expenditure. In a study conducted using data from all school districts in Texas, Rodriguez and Slate (2009) examined which differences were present between school district spending for instruction and accountability rating. The authors revealed that school districts with Academically Unacceptable accountability ratings spent a statistically significant smaller amount of money on instruction than districts rated Academically Acceptable, Recognized, or Exemplary.

The literature regarding the *65 Percent Solution* is still limited, but several current studies are adding to the knowledge base. During the fall of 2005, Standard and Poor's completed a study that examined the relationship between nine states' testing data and their instructional expenditures. Officials in these nine states (i.e., Arizona, Colorado, Florida, Kansas, Kentucky, Texas, Louisiana, Minnesota, and Ohio) were currently considering mandating a 65% policy in their state. Using linear regression, Standard and Poor's revealed no statistically significant relationship between instructional spending and student performance. An additional study, adding Arkansas to the list of states (Standard and Poor's, 2006) revealed similar findings.

In a series of studies conducted by Jones and Slate (2010a, 2010b, 2010c) the Texas instructional expenditure ratio mandated by Governor Perry in 2005 was examined as a function of achievement of students with special learning needs, accountability rating, and Texas Assessment of Academic Skills (TAKS) scores. Jones and Slate (2010a) examined TAKS scores for Economically Disadvantaged, At-Risk, Limited English Proficient, and Special Education students. Utilizing a Multivariate Analysis of Variance procedure, districts that spent less than 60% of their operating budgets on instructional expenditures had statistically significant lower TAKS scores for all student groups. Jones and Slate (2010b) examined three years of data regarding instructional expenditure ratio and school accountability rating. The authors revealed that Academically Unacceptable districts had statistically significantly lower instructional expenditure ratios than did Recognized and Academically Acceptable school districts for two of the three years used for the study. In addition, the percent of school districts that used greater than 65% of their operational funds for instruction increased as the school district accountability rating increased. Finally, Jones and Slate (2010c) conducted a study examining the extent to which the 65% instructional expenditure ratio was related to student success on the TAKS tests. Jones and Slate revealed that school districts that spend less than 60% on instructional expenditures had statistically significantly lower TAKS scores for all ethnic groups.

In another recent study, Schulte and Slate (2011) analyzed instructional expenditure ratios and their relationship with college-readiness rates in Texas for the 2008-2009 school year. They documented that schools districts in the less than 60% instructional expenditures group had statistically significantly lower college-readiness rates in reading, in math, and in both subject areas than school districts that spent 60% or more of their dollars in instructional expenditures. Schulte and Slate (2011) also reported that these results were consistent for White, Hispanic, and for Black students. Jones and Slate (2010a, 2010c) suggested in

their findings that the benchmark of 60% might be a better indicator than the original 65% percent mandate.

4 Statement of the Problem

Several researchers have revealed limited linkage between allocation of financial resources and student achievement. Recent researchers, however, revealed different results (Jones & Slate, 2010a, 2010b, 2010c; Schulte & Slate, 2011). Jones and Slate revealed that the 65% percent mandate might indeed make a difference in student achievement. Schulte and Slate (2011) reported that the 65% mandate was related to students' college-readiness rates. As such, both sets of researchers indicate that further examination of the range of instructional expenditures warrants further examination. Even though the 65% instructional expenditures mandate was recently repealed in Texas, other states continue to follow it. Thus, it is important to continue to study the 65% mandate to determine if reallocating resources makes a difference in student performance. If money does or does not matter, further research could guide policy decisions. Regardless, school districts continue to be held accountable, and resources are always limited. The 65% instructional expenditure mandate could possibly be strengthened or clarified through further analysis, possibly leading to improved achievement results for students.

5 Purpose of the Study

The purpose of this study was to determine how student achievement might differ as a function of school district instructional expenditure ratio. Jones and Slate (2010c) suggested that 60% might be a better benchmark than the original 65% value previously advocated by Byrne (2005). Thus, the specific focus of this study involved the examination of different levels of instructional expenditures and their effect on student performance on state-mandated assessments by ethnic membership.

6 Research Questions

In this study, the following research questions were addressed:

a. What is the difference in TAKS Science passing rates as a function of instructional expenditure ratio?;
b. What is the difference in TAKS Math passing rates as a function of instructional expenditure ratio?;
c. What is the difference in TAKS Reading passing rates as a function of instructional expenditure ratio?;
d. What is the difference in TAKS Social Studies passing rates as a function of instructional expenditure ratio?;
e. What is the difference in TAKS Writing passing rates as a function of instructional expenditure ratio?; and
f. To what extent are differences consistent in student achievement among demographic and ethnic groups (i.e., all students, Black, Hispanic, and White)?

7 Method

7.1 Participants

Data from every public school in Texas for the 2007-2008 school year were utilized for this study. The research questions were addressed for all students, then separately by ethnic membership for the three largest categories of student enrollment. For this study, 871 public school districts were examined. For Black students, 335 school districts provided analyzable data. For Hispanic students, data from 603 school districts were analyzed. Finally, for White students, 707 school districts provided analyzable data. The number of schools in each group was different due to the way that Texas measures school accountability. If a school contains small numbers of a certain population (i.e., usually less than 30), then these data are masked to ensure student confidentiality. Passing rates for all five TAKS tests were utilized (i.e., Science, Math,

Reading, Social Studies, and Writing). The passing rates for each subject test are defined each year by a cut score set by the Texas Education Agency, determined by the percentage of correctly answered questions on each test. Readers are referred to the Texas Education Agency website for specific passing rates cut scores.

7.2 Instrumentation and Procedures

Archival data from the Texas Education Agency Academic Excellence Indicator System (AEIS) were utilized. Data on the instructional expenditure ratio and student performance for each TAKS subject for the 2007-2008 school year were downloaded and analyzed. Because these data were reported to the state by the individual districts, errors are assumed minimal. Readers are referred to the technical manuals located on the Texas Education Agency website for score reliability and score validity information. The instructional expenditure ratio is defined to be the ratio between direct instructional expenditure (i.e., teachers, textbook materials, classroom supplies, and purchased services related to the interaction between teachers and students) and the total operating expenses of the district. The Texas Education Agency (2008) definition is as follows:

This measure, required by TEC 44.0071, indicates the percentage of the district's total actual expenditures for the 2007-2008 fiscal year that were used to fund direct instructional activities. The instructional expenditure ratio is a district-level only measure, and is calculated as follows: expenditures reported in function codes 11, 12, 13, 31 and object codes 6112 through 6499 *divided by* expenditures reported in function codes 11-52, 92, and 95 and object codes 6112 through 6499. (http://ritter.tea.state.tx.us/perfreport/aeis/2008/glossary.html)

To access the data, the Texas Education Agency AEIS website was utilized. Data from each file (instructional expenditure and student achievement) were downloaded as .dat files and merged using the Statistical Package for the Social Sciences (SPSS) – Version 16. Prior to conducting the statistical procedures, the normality of data was checked. The standardized skewness coefficients (i.e., the skewness value divided by the standard error of skewness) and the standardized kurtosis coefficients (i.e., the kurtosis value divided by the standard error of kurtosis) were computed. Although most of the standardized skewness and kurtosis values exhibited a departure from normality (i.e., +/-3, Onwuegbuzie & Daniel, 2002), a series of parametric one-way Multivariate Analysis of Variance (MANOVA) procedures were chosen because MANOVA procedures are considered robust enough to withstand violations of normality (Field, 2009).

8 Results

8.1 All Students

When the statistical procedures were performed, the assumption for the Box's Test of Equality of Covariance was violated. Levene's Test of Equality of Error Variances revealed that assumptions were met for Science, Math, Reading, and Writing; whereas the assumption was violated for Social Studies. To determine whether a difference was present between TAKS scores as a function of instructional expenditure group, the MANOVA procedure yielded a statistically significant difference for all students, Wilks' Λ, $F(30, 3470) = 1.75$, $p = .007$, $n^2 = .01$. The effect size was small, using Cohen's (1988) criteria. Further, five statistically significant differences were revealed between instructional expenditures and TAKS passing rates for Science, $F(6, 871) = 3.47$, $p = .002$, $n^2 = .02$; instructional expenditures and TAKS passing rates for Math, $F(6, 871) = 4.93$, $p < .001$, $n^2 = .03$; instructional expenditures and TAKS passing rates for Reading, $F(6, 871) = 2.13$, $p = .04$, $n^2 = .01$; instructional expenditures and TAKS passing rates for Social Studies, $F(6, 871) = 3.72$, $p < .001$, $n^2 = .03$; and instructional expenditures and TAKS passing rates for Writing, $F(6, 871) = 2.88$, $p = .009$, $n^2 = .02$. Effect sizes for all TAKS passing rates were small (Cohen, 1988).

Scheffé post hoc procedures revealed that the less than 60% expenditure districts had statistically significant lower passing rates for all TAKS tests than the greater than 65% expenditure districts, with the exception of Reading, where no statistical significance was revealed. Further, the less than 60% expenditure districts had statistically significant lower Math passing rates scores than the 63-63.99% expenditure districts. No additional statistically significant differences were revealed between the seven instructional expenditure groups. Table 1 denotes the descriptive statistics for the seven instructional expenditure groups and TAKS passing rates for Science, Math, Reading, Social Studies, and Science for all students.

Descriptive Statistics for TAKS Passing Percentages for Science, Math, Reading, Social Studies, and Writing by Instructional Expenditure Ratios Group for All Students

Subject	n	M	SD
Science			
Below 60%	371	72.96	11.85
60-60.99%	110	74.36	8.84
61-61.99%	120	73.05	9.27
62-62.99%	110	74.90	10.05
63-63.99%	97	75.34	10.22
64-64.99%	75	74.87	8.76
65% and Above	135	76.11	10.21
Math			
Below 60%	379	79.79	9.89
60-60.99%	111	81.12	7.91
61-61.99%	121	80.49	8.08
62-62.99%	110	81.46	8.13
63-63.99%	97	82.16	8.37
64-64.99%	76	81.58	9.34
65% and Above	135	82.53	7.87
Reading			
Below 60%	371	91.50	5.55
60-60.99%	110	92.14	4.19
61-61.99%	120	91.12	4.54
62-62.99%	110	91.95	4.53
63-63.99%	96	92.41	4.51
64-64.99%	75	92.03	3.96
65% and Above	132	92.24	4.39
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Social Studies			
Below 60%	330	90.22	6.12
60-60.99%	106	91.39	4.96
61-61.99%	118	90.94	4.65
62-62.99%	107	91.96	4.30
63-63.99%	93	91.75	4.50
64-64.99%	72	91.03	4.61
65% and Above	125	91.98	4.52
Writing			
Below 60%	306	91.44	6.08
60-60.99%	100	93.39	5.03
61-61.99%	111	92.12	6.30
62-62.99%	101	92.73	4.21
63-63.99%	92	92.97	4.96
64-64.99%	74	92.76	6.35
65% and Above	127	93.26	5.27

Table 1

8.2 Black Students

When the statistical procedures were performed, the assumption for the Box's Test of Equality of Covariance was violated. Levene's Test of Equality of Error Variances revealed that assumptions were met for Science, Math, Reading, and Writing; whereas the assumption was violated for Social Studies. To determine whether a difference was present between Black students' TAKS scores as a function of instructional expenditure group, the MANOVA procedure yielded a statistically significant difference, Wilks' Λ, $F(30, 1326) = 2.23$, $p < .001$, $n^2 = .04$. The effect size was small (Cohen, 1988). Follow-up ANOVA procedures yielded five statistically significant differences in instructional expenditures and Black students' TAKS passing rates for Science, $F(6, 335) = 5.86$, $p < .001$, $n^2 = .10$; instructional expenditures and Black students' TAKS Math passing rates, $F(6, 335) = 3.74$, $p = .001$, $n^2 = .06$; instructional expenditures and Black students' TAKS Reading passing rates, $F(6, 335) = 2.69$, $p = .015$, $n^2 = .05$; instructional expenditures and Black students' TAKS Social Studies passing rates, $F(6, 335) = 3.33$, $p = .003$, $n^2 = .06$; and instructional expenditures and Black students' TAKS Writing passing rates, $F(6, 335) = 4.01$, $p < .001$, $n^2 = .07$. Effect sizes for TAKS passing rates were moderate for Science, Math, Social Studies, and Writing; and small for Reading (Cohen, 1988).

Scheffé post hoc procedures revealed that the less than 60% expenditure districts had statistically significant lower Black student passing rates for all TAKS tests than the greater than 65% expenditure districts. Further, the less than 60% expenditure districts had statistically significant lower Science and Social Studies scores than the 63-63.99% expenditure districts. No additional statistically significant differences were revealed between the seven instructional expenditure groups. Table 2 denotes the descriptive statistics for the seven instructional expenditure groups and TAKS passing rates for Science, Math, Reading, Social Studies, and Science for Black students.

Descriptive Statistics for TAKS Passing Percentages for Science, Math, Reading, Social Studies, and Writing by Instructional Expenditure Ratios Group for Black Students

Subject	n	M	SD
Science			
Below 60%	133	54.53	15.50
60-60.99%	72	56.01	13.93
61-61.99%	70	57.96	13.25
62-62.99%	67	60.67	12.72
63-63.99%	64	57.80	15.58
64-64.99%	52	60.46	14.96
65% and Above	104	62.18	13.28
Math			
Below 60%	171	67.36	13.01
60-60.99%	82	69.65	11.24
61-61.99%	84	68.14	12.62
62-62.99%	79	69.53	11.36
63-63.99%	70	70.54	11.65
64-64.99%	60	71.47	12.83
65% and Above	110	71.95	10.40
Reading			
Below 60%	147	83.90	8.87
60-60.99%	75	85.73	7.16
61-61.99%	73	85.58	7.51
62-62.99%	68	86.22	9.19
63-63.99%	64	87.55	6.80
64-64.99%	53	86.47	6.91
65% and Above	101	88.20	6.07
Social Studies			
Below 60%	103	82.36	9.18
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60-60.99%	54	83.54	9.53
61-61.99%	55	84.89	8.84
62-62.99%	54	86.35	7.45
63-63.99%	54	82.57	12.53
64-64.99%	46	83.15	10.64
65% and Above	87	87.36	7.30
Writing			
Below 60%	74	85.88	8.32
60-60.99%	45	83.36	8.67
61-61.99%	43	86.58	9.63
62-62.99%	40	86.32	9.04
63-63.99%	47	88.81	6.95
64-64.99%	40	88.60	8.31
65% and Above	75	90.51	6.56

Table 2

8.3 Hispanic Students

When the statistical procedures were performed, the assumption for the Box's Test of Equality of Covariance was violated. Levene's Test of Equality of Error Variances revealed that assumptions were met for Math, Reading, Social Studies, and Writing; while the assumption was violated for Science. The MANOVA yielded a statistically significant difference, Wilks' Λ, $F(30, 2398) = 1.67$, $p = .013$, $n^2 = .02$, between Hispanic students 'TAKS passing rates as a function of instructional expenditure group. The effect size was small (Cohen, 1988). Further, four statistically significant differences were revealed between instructional expenditures and Hispanic TAKS passing rates for Science, $F(6, 603) = 2.70$, $p = .014$, $n^2 = .03$; instructional expenditures and Hispanic TAKS Math passing rates, $F(6, 603) = 4.36$, $p < .001$, $n^2 = .04$; instructional expenditures and Hispanic TAKS Social Studies passing rates, $F(6, 603) = 2.23$, $p = .04$, $n^2 = .02$; and instructional expenditures and TAKS Writing passing rates, $F(6, 603) = 4.46$, $p < .001$, $n^2 = .04$. Effect sizes for all four TAKS passing rates were small (Cohen, 1988). No statistically significant differences were revealed between instructional expenditures and Hispanic TAKS passing rates for Reading.

Scheffé post hoc procedures revealed that the less than 60% expenditure districts had statistically significant lower Hispanic students' passing rates for Math and Writing than the greater than 65% expenditure districts. No statistically significant differences were revealed for TAKS Science and Social Studies passing rates. Further, the less than 60% expenditure districts had statistically significant lower Hispanic students' Writing scores than the 64-64.99% expenditure districts. Table 3 denotes the descriptive statistics for the seven instructional expenditure groups and TAKS passing rates for Science, Math, Reading, Social Studies, and Science for Hispanic students.

Descriptive Statistics for TAKS Passing Percentages for Science, Math, Reading, Social Studies, and Writing by Instructional Expenditure Ratios Group for Hispanic Students

Subject	n	M	SD
Science			
Below 60%	316	64.35	13.68
60-60.99%	100	62.94	12.01
61-61.99%	110	63.30	11.30
62-62.99%	101	64.11	11.57
63-63.99%	92	65.21	11.14
64-64.99%	71	64.62	9.97
65% and Above	121	66.33	13.24
Math			
Below 60%	349	75.20	11.23
60-60.99%	106	75.56	8.53
61-61.99%	115	76.30	9.21
62-62.99%	105	76.83	8.87
63-63.99%	94	77.28	8.55
64-64.99%	71	77.25	9.44
65% and Above	126	77.40	8.73
Reading			
Below 60%	325	87.09	7.50
60-60.99%	100	87.47	5.76
61-61.99%	111	87.37	5.62
62-62.99%	99	88.09	4.49
63-63.99%	91	88.41	5.06
64-64.99%	70	89.04	5.19
65% and Above	121	88.74	4.46
Social Studies			
continued on next page			

Below 60%	238	85.24	8.24
60-60.99%	86	86.16	6.83
61-61.99%	100	85.84	8.40
62-62.99%	91	87.25	6.67
63-63.99%	83	87.06	6.93
64-64.99%	66	86.96	6.29
65% and Above	106	88.08	5.01
Writing			
Below 60%	188	88.32	7.43
60-60.99%	75	88.75	8.95
61-61.99%	87	89.66	5.74
62-62.99%	73	90.85	4.41
63-63.99%	75	90.48	4.83
64-64.99%	58	92.19	4.32
65% and Above	96	91.26	5.99

Table 3

8.4 White Students

When the statistical procedures were performed, the assumption for the Box's Test of Equality of Covariance was violated. Levene's Test of Equality of Error Variances revealed that assumptions were violated for all TAKS passing rates. The MANOVA yielded a statistically significant difference, Wilks' Λ, $F(30, 2814) = 2.83$, $p < .001$, $n^2 = .02$, small effect size (Cohen, 1988) between the TAKS scores of White students as a function of instructional expenditure group. Further, five statistically significant differences were revealed between instructional expenditures and TAKS passing rates for Science, $F(6, 707) = 10.54$, $p < .001$, $n^2 = .08$; instructional expenditures and White TAKS Math passing rates, $F(6, 707) = 7.69$, $p < .001$, $n^2 = .06$; instructional expenditures and White TAKS Reading passing rates, $F(6, 707) = 5.26$, $p < .001$, $n^2 = .04$; instructional expenditures and White TAKS Social Studies passing rates, $F(6, 707) = 8.19$, $p < .001$, $n^2 = .07$; and instructional expenditures and White TAKS Writing passing rates, $F(6, 707) = 3.72$, $p = .001$, $n^2 = .03$, for White students. Effect sizes for Science, Math, and Social Studies were moderate, and small for Reading and Writing (Cohen, 1988).

Scheffé post hoc procedures revealed that the less than 60% expenditure districts had statistically significant lower passing rates for all five TAKS tests than the greater than 65% expenditure districts for White students. Further, the less than 60% expenditure districts had statistically significant lower scores than the 63-63.99% and the 64-64.99% expenditure districts for Science and Math. For Social Studies, post hoc procedures revealed differences between the less than 60% and the 60-60.99% expenditure group and the less than 60% and the 62-62.99% group. Table 4 denotes the descriptive statistics for the seven instructional expenditure groups and TAKS passing rates for Science, Math, Reading, Social Studies, and Science for White students.

Descriptive Statistics for TAKS Passing Percentages for Science, Math, Reading, Social Studies, and Writing by Instructional Expenditure Ratios Group for White Students

Subject	n	M	SD
Science	345	79.90	10.11
Below 60%	108	81.91	7.41
60-60.99%	116	81.68	7.63
61-61.99%	103	82.36	6.66
62-62.99%	95	84.32	6.31
63-63.99%	73	84.07	5.64
64-64.99%	132	84.89	8.06
65% and Above			
Math			
Below 60%	363	83.92	8.58
60-60.99%	110	85.65	6.34
61-61.99%	116	85.32	6.69
62-62.99%	106	85.75	6.34
63-63.99%	96	87.25	6.19
64-64.99%	75	87.01	7.15
65% and Above	135	87.60	6.60
Reading			
Below 60%	344	93.90	4.96
60-60.99%	109	94.94	2.85
61-61.99%	111	94.42	2.95
62-62.99%	104	94.78	3.03
63-63.99%	93	95.31	3.22
64-64.99%	72	95.18	2.32
65% and Above	131	95.23	3.02
Social Studies			
continued on next page			

Below 60%	272	92.24	5.70
60-60.99%	98	93.97	4.36
61-61.99%	103	93.68	3.76
62-62.99%	96	94.50	2.98
63-63.99%	82	94.35	4.34
64-64.99%	69	94.49	3.38
65% and Above	117	95.47	3.07
Writing			
Below 60%	238	91.89	6.01
60-60.99%	91	93.45	4.60
61-61.99%	93	92.70	8.31
62-62.99%	92	93.25	5.24
63-63.99%	81	93.86	4.03
64-64.99%	68	93.76	5.48
65% and Above	122	94.58	4.93

Table 4

9 Discussion

The instructional expenditures ratio was examined in this study to determine if statistically significant differences were present as a function of TAKS passing rates for all students and then separately by ethnic membership (i.e., Black, Hispanic, and White). Statistically significant results, yielded for all students and then for each ethnic group, were consistent with previously discussed studies (Jones et al., 2010a, 2010b, 2010c; Schulte & Slate, 2011). School districts that spent less than 60% of their operating budgets on instructional expenditures had statistically significantly lower TAKS passing rates than school districts that spent greater than 65% on instructional expenditures for every ethnic group and every category with the single exception of Hispanic students on the TAKS Reading measure. The largest mean differences occurred for White students in Science, Math, and Social Studies.

Whereas only a limited number of statistically significance differences were revealed within the five middle instructional expenditure groups (i.e., 60-60.99%, 61-61.99%, 62-62.99%, 63-63.99%, and 64-64.99%) and the less than 60% groups, differences were revealed that warrant attention. For White students, the less than 60% group had statistically significantly lower Math and Science TAKS passing rates than both the 63-63.99% and the 64-64.99% groups. In addition, the less than 60% group had statistically significant lower Reading passing rates than the 63-63.99% group, and lower Social Studies passing rates than both the 60-60.99% and the 62-62.99% instructional expenditure groups. For Black students, the less than 60% instructional expenditure group had statistically significantly lower Science and Social Studies passing rates than the 63-63.99% group.

As such, these findings provide strong evidence, particularly considering their congruence with other researchers' findings, that monies allocated for instructional expenditures are related to student achievement. Given the mandates of the No Child Left Behind Act of 2001 (NCLB), it is important that the performance of subgroups be examined on an annual basis, not only in terms of making adequate annual progress, but also clearly in terms of how instructional monies are spent. School districts that are not preparing their students adequately are encouraged to examine their instructional expenditures. It is clear from this study and the Jones and Slate (2010a, 2010b, 2010c) and the Schulte and Slate (2011) study that how school dollars

are spent are directly related to student achievement. That is, as more monies were spent on instruction, student learning improved on state-mandated assessments.

Readers should be cautious in the extent to which they generalize from the findings of this study. First, the data constituted only one year of TAKS achievement data from one state. Further, the extent to which findings hold true across multiple years is not known. Caution is warranted until further research is conducted using multiple years of data. The results of this study, however, are congruent with the results of Jones and Slate (2010a, 2010b, and 2010c). The 60% level may be a better benchmark than the 65% level previously suggested in the literature and mandated by the Governor of Texas. Further study is warranted in this area, as the results indicate that money used to support classroom instruction does indeed make a difference.

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