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An evaluation of instructional coaching at selected middle schools in south Texas and effects on student achievement

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ABSTRACT

The purpose of this study was to compare two middle schools in one school district in south Texas to determine if presence or absence of instructional coaches has an effect on student achievement. The research design was a quantitative pre experimental study: a nonequivalent (posttest only) control group design in which the experimental group and the control group are selected without random assignment. While only the experimental group received the treatment, both groups were given a posttest, the Spring 2011 Texas Assessment of Knowledge and Skills Test (TAKS) (Creswell, 2003). Comparisons were made between the two groups' performances in the area of student achievement. The scores for the two groups in the content areas of math and reading for 6th; math, reading and writing for 7th; and math, reading, science and social studies for 8th grade students, was analyzed using a multivariate analysis of variance (MANOVA) statistical analysis. Results of the study demonstrate that there are significant results associated with the presence or absence of instructional coaches in specific content areas at the two middle schools in the grades indicated, particularly in 6th grade math and reading, 7th grade writing and 8th grade science and social studies.

KEY WORDS: Instructional Coaching, Professional Development, School Improvement, Assessment, Accountability

INTRODUCTION

The No Child Left Behind Act (NCLB), authorized in 2002, brings attention to the problems facing public schools in the area of student achievement and the role teachers play in closing the achievement gap. To meet the goal, federal policy dictated that by the 2005-06 school year school districts have plans to ensure all teachers are highly qualified (Department of Ed, 2011). Criteria to be deemed highly qualified included: a) holding a bachelor's degree; b) state licensure or certification; and c) ability to prove knowledge of the subject or content they teach (Department of Ed, 2011).

Furthermore, since NCLB calls for a “highly qualified” teacher in every classroom, states must establish protocols to ensure that all students, particularly minorities and the economically disadvantaged, have highly qualified teachers. In the event that the percentage of qualified teachers is disproportionate between high and low income districts, the state must adopt goals and plans to ensure all teachers eventually meet the highly qualified criteria. Additionally, districts must make public the strategy and progress made in ensuring teacher quality goals.

From a policy perspective, ensuring that all teachers are “highly qualified” should facilitate increased achievement for all students, but research shows little correlation between the policy and higher levels of student achievement (Phillips, 2011). Instead, the focus needs to shift from ensuring that all classrooms have a “highly qualified” teacher to ensuring that all teachers understand what teaching and learning looks like for the 21st century learner (Department of Ed, 2011). Today’s teachers must teach content and motivate students to attend to learning in an environment dominated by external influences. In addition, teachers need to be able to develop new skills, or modify existing ones, to ensure learner needs are met. Particularly when students are vastly different from their teachers socially, culturally and economically; and who are used to learning through technology (Dea, Hubbell, Pitler & Stone, 2011).

Quality of teacher instruction seems to be the one factor that is within the locus of control of education systems and has proven to have a significant impact on student achievement (Boykin & Noguera, 2011). Teacher effectiveness can be improved by the strategic use of professional development (Boykin & Noguera, 2011). Professional development needs to be grounded on researched based strategies, focused on direct observation of teacher practice, and incorporate training that is tailored to specific teacher needs. When combined with other forms of targeted professional development, instructional coaching appears to have the most promise for improving teacher capacity, since the underlying focus becomes improving teacher learning (Cantrell & Hughes, 2008).

PURPOSE OF THE STUDY

The main goal of this study was to highlight the achievements and barriers of previous applications of the instructional coaching model by determining the influence on the achievement of students as measured by the Texas Assessment of Knowledge and Skills (TAKS) in the subjects of math, reading, writing, science, and social studies at two middle schools in one south Texas school district. Educational stakeholders, including regional and state education agencies and local school leaders, need data to inform their decisions on the utilization of instructional coaches as an alternative to traditional professional development that might have a significant positive effect on student achievement.

METHOD

The principal objective of this study was to determine the impact on student achievement, as measured by the Texas Assessment of Knowledge and Skills (TAKS), in the subjects of math, reading, writing, science and social studies at the middle school level in one south Texas school district. The study sought to address the following research questions:

1. Is there a difference between the school that utilizes an instructional coach (IC) and the school that does not utilize an IC on the 6th grade math and reading TAKS scores?
2. Is there a difference between the school that utilizes an instructional coach (IC) and the school that does not utilize an IC on the 7th grade math, reading and writing TAKS scores?
3. Is there a difference between the school that utilizes an instructional coach (IC) and the school that does not utilize an IC on the 8th grade math, reading, science and social studies TAKS scores?

RESEARCH DESIGN

Prior to conducting a multivariate analysis of variance (MANOVA), an independent-sample t-test was conducted on the 2010 Spring results of TAKS at the two middle schools to conclude if there was a distinction between the means of the two independent groups. The grouping variable, school with an instructional coaches and school without, was used to divide the population into two mutually exclusive groups, while the dependent variable, student achievement as measured by TAKS, was used to describe each case on a quantitative dimension.

A quantitative pre-experimental study research design (posttest only) was then employed to determine the impact of instructional coaches on student achievement, as measured by the TAKS, at the middle school level in one south Texas school district in grades 6th thru 8th in the subjects of math, reading, writing, science, and social studies. The design was appropriate for the current study as the two groups used in comparison were formed prior to the beginning of the investigation and the independent variable was beyond manipulation (Crowl, 1996). The independent variable was represented by the presence, or absence, of instructional coaches at the schools represented. The dependent variable was student achievement as reflected on the TAKS measures. Two schools were selected - one with instructional coaches and one without instructional coaches. Student achievement data were taken from the 2011 Spring administration of the TAKS 6th, 7th and 8th grade math and reading; 7th grade writing; and 8th grade science and social studies.

Population and Sample

Although the nationwide use of instructional coaches seems to be increasing, the implementation of the position within the south Texas region remains small by comparison. The schools identified for this study are located in the same school district in south Texas.
The area is identified as being on the United States/Mexico border and consists of seven counties. The two schools have demographic similarities, which include enrollment, racial makeup, and socio-economic distribution that make the two schools appropriate for comparison.

See Table 1 (Appendix). The sample population is a convenience sample, since the investigator must use naturally formed groups provided to by the school district (Creswell, 2009).

Instrumentation

Students across the State of Texas participated in the Spring of 2011 standardized testing in grades three through twelve. The TAKS was administered to students, at the middle school level, to determine each student's proficiency in the core content areas. For the purpose of this study, student achievement was determined by the percentage of students at each school who met Standard or Commended Performance levels in the contents of reading, math, writing, science and social studies. As defined by TAKS Accountability Manual of 2011 (Texas Education Agency, 2011b), there are a series of raw scores for each assessment to identify three performance categories.

Every portion of the test includes some open-ended questions but mainly consists of multiple-choice questions. The writing portions include a written component that is evaluated on a scale from 1-4. The math and science tests permit use of formula charts and calculators. Proficient students are those who have the raw scores to Meet Standard or Commended Performance. Non –proficient students are those students whose raw scores rank in the Did Not Meet Standard range.

Validity

The Texas Education Agency (TEA) released the Technical Digest (Texas Education Agency, 2007) to elaborate on the transition, content and accountability for the TAKS. To ensure validity, for the state assessment, committees made up of educators from districts across the state were convened to serve as advisors for each grade level and content area. Furthermore, to identify TEKS student expectations that were of relevance to assess, committees were formed with test development specialists, teachers and staff members from TEA. Additionally, the committee was also responsible for establishing test objectives, item development guidelines, and test-item types.

To review and edit TAKS items for content and bias, and review data from field-testing, annual committees began to convene in 2001. Furthermore, all items chosen for inclusion on a TAKS assessment underwent extensive review by TEA, its testing contractor, and approximately 40 independent Texas educators in terms of its alignment to the specific content standard and sub-content area. In addition to the alignment process described above, current federal regulations require an independent alignment study as part of the peer review process (TEA, 2007, p. I-33).

Reliability

The reliability of TAKS is based on internal consistency measures, in particular on the Kuder-Richardson Formula 20 (KR-20). The KR-20 is used for tests involving dichotomously scored (multiple-choice) items to measure the reliability of binary measures to see if the items within the instruments have the same results over a population of testing subjects. Most internal consistency reliabilities for the TAKS are in the high .80s to low .90s range with 1.0 being perfectly reliable (Texas Education Agency, 2007).

Procedures

The researcher requested permission from the Institutional Review Board (IRB) at the Texas A&M University- Kingsville to conduct the study. The Superintendent from the participating district was contacted by letter to inform him of the study, and to request permission to contact the district data department regarding participation in the study. Each student's TAKS score were accessed via the school district with a raw score, as identified by the Texas Education Agency, for each of the content areas from the Spring 2010 and 2011 test administration and were recorded. The names of the students were masked as to not reveal the identity of the students.

Data Analysis

The researcher utilized a multivariate analysis of variance (MANOVA) to examine differences between the presence of instructional coaches and student performance utilizing the raw scores of the TAKS for 6th, 7th, and 8th grade students. The TAKS scores from students in one school with instructional coaches were compared to the TAKS scores of students in another school without instructional coaches. The scores that were analyzed only included the data reported for the 2011 administration of TAKS. The statistical analyses were conducted using Statistical Package for the Social Sciences (SPSS) to yield partial main effect sizes. Ary, Jacobs, Bazavieh, and Sorenson (2006) explain how effect size can be "used to compare the direction and the relative magnitude of the relationships" and "to help decide whether the difference an independent variable makes on the dependent variable is strong enough to recommend its implementation in practice" (p. 155-156). An advantage of using effect size measurements is the availability of information about the degree of impact an independent variable has had. Thus, this complements tests of statistical significance, which give only an indication of the presence or absence of an effect of an independent variable. For all tests, significance was set at the .05 level. To determine effect sizes partial eta squared ranges were used.

RESULTS

First, to determine if there was a difference between the means of the two independent groups on the previous years TAKS scores, an independent-sample t-test was conducted on the 2010 Spring results of TAKS at the two middle schools. The purpose of the independent t-test was to identify if the students at two middle schools, in the same school district, had similar populations and consequently would score similarly in the Texas Assessment of Knowledge and Skills. The test was not significant $t\ (6315) = 1.27$, $p = .204$. Students in one school ($M = 34.64$, $SD = 8.93$) scored similarly to the second school ($M = 34.36$, SD 8.90). The 95% confidence interval for the difference in means was small, ranging from -.15 to .71, as represented in Table 2. See Table 2 (Appendix).

A multivariate analysis of variance was computed to investigate differences in student achievement in a school that utilized an instructional coaches and a school that did not utilize instructional coaches. The independent variable was the presence or absence of an instructional coach in the school (school w/ IC or school w/no IC). The dependent variable was student achievement as measured by the 2011 Spring administration of TAKS in the contents of reading and math for 6th grade; reading, math and writing for 7th grade; and reading, math, science and social studies for grade 8th.

Instructional Coaching and Student Achievement in 6th grade in Math and Reading

The first goal in this study was to investigate the relationship between instructional coaching and student achievement in 6th grade in the contents of math and reading at two middle schools. Student achievement data from each school was subject to statistical comparison using a MANOVA to determine the effect of instructional coaching on two levels of students' achievement, math and reading. Equivalency of covariance matrices of the dependent variable was tested using Box's Test of Equality of Covariance Matrices. Box's M = 81.21, $p < .001$, therefore the covariance matrices of the dependent variable are not equal. The analysis was continued because the MANOVA has been proven to be robust; violating this assumption is the large sample size of 523 (Bray & Maxwell, 1985).

A one way MANOVA revealed a multivariate main effect for schools, Wilkes's $\Lambda = .97$, $F(2, 520) = 7.96$, $p < .01$, partial eta squared = .03. There was a significant difference between the school that utilized an instructional coach (IC) and the school that did not utilize an IC on the 6th grade math and reading TAKS scores. Given the significance of the overall tests, the univariate main effects were examined. Lavene's Test of Equality of Error Variances was utilized to compare and ensure equality of error variances. In math, $F(1, 521) = 10.0$, $p = .002$ and in reading, $F(1, 521) = .41$, $p = .52$. In math there were significant differences between error variances while in reading there was no significance and the results were mixed.

Significant univariate main effects for the school utilizing an instructional coach were obtained for Math $F(1, 521) = 14.06$, $p < .00$, partial eta square =. 03; and for Reading, $F(1, 521) = .28$, $p > .05$, partial eta square = .00. In Math, the school that utilized an instructional coach had a lower mean (Mean = 33.17, SD = 9.93) than the school that did not utilize an instructional coach (Mean = 36.88, SD = 8.51). The school that did not utilize an IC performed better when compared with the school that utilized an IC in the content of math. The results for the content of reading between the school that utilized an IC and the school that did not utilize an IC are mixed; no significance was found. The effect size of .03 represents a small effect size in the content of Math in 6th grade. Since the size of the effect size was small, the significance has to be questioned. Table 3 contains the descriptive statistics for the dependent variables. See Table 3 (Appendix). The comparisons for the dependent variables are also shown in Figure 2. See Figure 2 (Appendix). Table 4 (pg. 46) contains the analysis of variance of math and reading for 6th grade. See Table 4 (Appendix).

Instructional Coaching and Student Achievement in 7th Grade in Math, Reading, and Writing

The second goal of this study was to investigate the relationship between instructional coaching and student achievement in 7th grade in the contents of math, reading, and writing at two middle schools. Student achievement data from each school was subject to statistical comparison using a MANOVA to determine the effect of instructional coaching on three levels of students' achievement: math, reading and writing.

Equivalency of covariance matrices of the dependent variable were tested using Box's Test of Equality of Covariance Matrices. Box's M = 63.99, $p < .001$, therefore the covariance matrices of the dependent variable are not equal. We concluded to continue with the analysis because the MANOVA has been proven to be robust; violating this assumption is the large sample size of 586 (Bray & Maxwell, 1985).

A one way MANOVA revealed a multivariate main effect for schools, Wilkes's $\Lambda = .97$, F (3, 582) = 6.18, p < .01, partial eta squared = .03. There was significance difference between the school that utilized an instructional coach (IC) and the school that did not utilize an IC on the 7th grade math and writing TAKS scores only. Mixed results were found for the content of reading. Given the significance of the overall tests, the univariate main effects were examined. Lavene's Test of Equality of Error Variances was utilized to compare and ensure equality of error variances. In math, F (1, 584) = 5.12, p = .02; in reading, F (1, 584) = .32, p = .57; and in writing, F (1, 584) = 1.57, p = .21. In math there was a significant difference between error variances, while in reading and writing there was no significant difference and the results were mixed.

Significant univariate main effects for school that utilized and instructional coach were obtained for Math *F* (1, 584) = 5.09, *p* = .02, partial eta square =. 01; and for Writing, *F* (1, 584) = 7.60, *p* = .01, partial eta square = .01. Mixed results were found for Reading, *F* (1, 584) = 71/03, *p* = .31, partial eta square = .002. The effect size of .01 is considered small for math and writing. Since the size of the effect size is small, the significance has to be questioned.

The school that did not utilize an IC performed better when compared with the school that utilized an IC in the content of math. In Math, the school that utilized an instructional coach had a lower mean (Mean = 30.14, SD = 10.17) than the school that did not utilize an instructional coach (Mean = 31.94, SD = 9.15). The results for the content of reading between the school that utilized an IC and the school that did not utilized an IC are mixed. No significant difference was found.

In contrast, in the content of writing, the school that utilized an IC performed better when compared to the school that did not utilize an IC. In Writing, the school that utilized an instructional coach had a higher mean (Mean = 31.02, SD = 7.15) than the school that did not utilize an instructional coach (Mean = 29.37, SD = 7.22). Table 5 contains the descriptive statistics for the dependent variables. See Table 5 (Appendix). The comparisons for the dependent variables are also shown in Figure 3. See Figure 3 (Appendix). Table 6 contains the analysis of variance of math, reading, and writing for 7th grade. See Table 5 (Appendix).

Instructional Coaching and Student Achievement in 8th Grade in Math, Reading, Science, and Social Studies

The final goal of the study was to investigate the relationship between instructional coaching and student achievement in 8th grade in the contents of math, reading, science, and social studies at two middle schools. Student achievement data from each school was subject to statistical comparison using a MANOVA to determine the effect of instructional coaching on four levels of students' achievement: math, reading, science and social studies.

Equivalency of covariance matrices of the dependent variable were tested using Box's Test of Equality of Covariance Matrices. Box's M = 68.78, p < .001, therefore the covariance matrices of the dependent variable are not equal. We concluded to continue with the analysis, because the MANOVA has been proven to be robust; violating this assumption is the large sample size of 635 (Bray & Maxwell, 1985).

A one way MANOVA revealed a multivariate main effect for schools, Wilkes's Λ= .95, F (4, 630) = 7.99, p < .01, partial eta squared = .05. There was a significant difference between the school that utilized an instructional coach (IC) and the school that did not utilize and IC on the 8th grade science and social studies TAKS scores only. Given the significance of the overall tests, the univariate main effects were examined. Lavene's Test of Equality of Error Variances was utilized to compare and ensure equality of error variances. In math, F (1, 633) = .003, p = .95; in reading, F (1, 633) = 3.10, p = .08; in science, F (1, 633) = .58, p = .45; and in social studies, F (1, 633) = 21.28, p = .00. In math, reading and social studies there were significant differences between error variances, while in science there was no significance.

Significant univariate main effects for school were obtained for Science, *F* (1, 633) = 4.33, *p* = .04, partial eta square = .01; and for Social Studies, *F* (1, 633) = 20.51, *p* = .00, partial eta square = .03. The effect size in science of .01 is considered small, as well as the effect size in social studies of .03. Since the size of the effect size is small, the significance has to be questioned. Mixed results were found for Math (1, 633) = 3.43, *p* = .07, partial eta square = .01; and for Reading (1, 633) = 1.82, *p* = .18, partial eta square = .01.

In Science, the school that utilized the instructional coach had a lower mean (Mean = 34.69, SD = 9.07) than the school that did not utilize an instructional coach (Mean = 36.18, SD = 8.85). In Social Studies, the school that utilized the instructional coach had a lower mean (Mean = 33.52, SD = 8.90) than the school that did not utilize an instructional coach (Mean = 36.44, SD = 7.39). Meaning that the school that did not utilize an IC performed better when compared with the school that utilized an IC in the contents of science and social studies.

The results for the content of reading and math between the school that utilized an IC and the school that did not utilize an IC were mixed. No significant difference was found. Table 7 contains the descriptive statistics for the dependent variables. See Table 7 (Appendix). The comparisons for the dependent variables are also shown in Figure 4. See Table 4 (Appendix) Table 8 contains the analysis of variance of math, reading, science and social studies for 8th grade. See Table 8 (Appendix).

CONCLUSIONS

Results of the study demonstrate that there were significant results associated with the presence or absence of instructional coaches in specific content areas at the two middle schools in the grades indicated. In 6th grade the school without the IC had a higher mean score (M = 36.88, SD = 8.51) than the school with the IC (Mean = 33.17, SD = 9.93) for the content area of math. Similarly, a significant difference was uncovered with the mean student achievement in the 8th grade content areas of science and social studies. In science, the school that utilized an IC had a lower mean score (M = 34.69, SD = 9.07) than the school that did not utilize an instructional coach (Mean = 36.18, SD = 8.85). In Social Studies, the school that utilized the instructional coach had a lower mean (M= 33.52, SD = 8.90) than the school that did not utilize an instructional coach (M = 36.44, SD = 7.39).

In 7th grade math, the school that utilized an instructional coach had a lower mean (Mean = 30.14, SD = 10.17) than the school that did not utilize an instructional coach (Mean = 31.94, SD = 9.15). In contrast, a different pattern emerged in the content of 7th grade writing. In this grade level and content a significant difference emerged between the school that utilized an IC, which had a higher mean (M = 31.02, SD = 7.15) than the school that did not utilized an IC (M =

29.37, SD = 7.22). Table 9 contains a summary of the findings by grade level and content. See Table 9 (Appendix).

The means in student achievement were found to be significant in 6th grade, in the content of math. The effect size of .03 represents a small effect size, the instructional coach thus can explain 3% of the variance. In 7th grade there was a significant difference in the contents of math and writing, and the effect size of .01 in both contents is also considered small, or less than 1% of the variance can be explained by the presence or absence of the instructional coach. Finally, in 8th grade the null hypothesis was rejected, since there was a significant difference in the contents of science and social studies, with an effect size of .01 in science and an effect size of .03 in social studies, both considered to be small. Since the size of the effect size for all the groups is small, the significance has to be questioned and furthered studied.

Also of consideration is the data of the instructional coach having a positive significance in only one grade level and only in the content of writing. The school that did not utilize the instructional coach had a higher performance in 6th and 7th grade math, and 8th grade science and social studies. Mixed results were found in reading for 6th, 7th and 8th grade and for 8th math.

IMPLICATIONS FOR PRACTICE

Stock and Duncan (2010) identify three main activities of instructional facilitators: (1) provide professional development; (2) directly work with teachers to improve practice; (3) lead instruction with curriculum alignment standards and assessment tools. The researcher must take into consideration that the population in the Stock and Duncan study is different from the population in the two middle schools studied in one south Texas school district. The researcher did not survey the teachers and coaches to evaluate effectiveness of professional development, amount of coaching dosage per day or week, and perceptions of coaching effectiveness based on the educational and teaching background of the coach. Without a clear understanding of the educational and pedagogical background of the coach assigned to the school, along with how the instructional coach spent his time at their respective school, and the type of professional development that was provided to teachers on the campus, it is difficult to determine which of the activities listed has the potential for most impact when it comes to student achievement.

Cornett and Knight (2011) agree that coaching has a significant impact on teacher attitudes, teacher practice and efficacy, and student achievement. The majority of the research conducted by Cornett and Knight took place in the state of Kansas where both the teacher and student demographics differ from the population and sample studied in south Texas. Cornett and Knight do not expand on the role that culture and social economic background, of the teachers and students, plays in their attitude towards teaching and self-efficacy. These two variables need to be taken into consideration when examining the impact of coaching on student achievement.

When evaluating instructional coaching, it is not sufficient to simply study the approach and dosage of the coach. The backgrounds of both the coach and students need to be examined, along with the influence that culture, race, and economic background might play in the coaching interactions between teacher and students. As concluded by the researcher, the results of the study are not conclusive, but contribute additional evidence that supports the use of coaches to increase student achievement.

Veenman and Denessen (2001) explain how the role of the coach is one who can establish mutual trust, improve instructional practice by providing feedback and stimulate teachers to be more reflective by increasing teachers' autonomy and self-reflection. Although further empirical evidence is needed that measures the effect of instructional coaching on student achievement, Collet (2012) offers both qualitative and quantitative data that found coaches to be more effective in affecting teacher practice. Collet's work resonates with the research of Darling-Hammond and McLaughlin (2011), which examines how professional development for teachers must provide opportunities for them to analytically reflect on their practice to allow for the formation of new points of view about pedagogy, content and learners. The literature indicates that changing how teachers approach their practice will eventually lead to a positive relation in student achievement, but the predictors of how and when this happens need to be further studied and analyzed.

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Figure 2. Distributions of 6th Grade Reading and Math Scores for the Two School Groups.

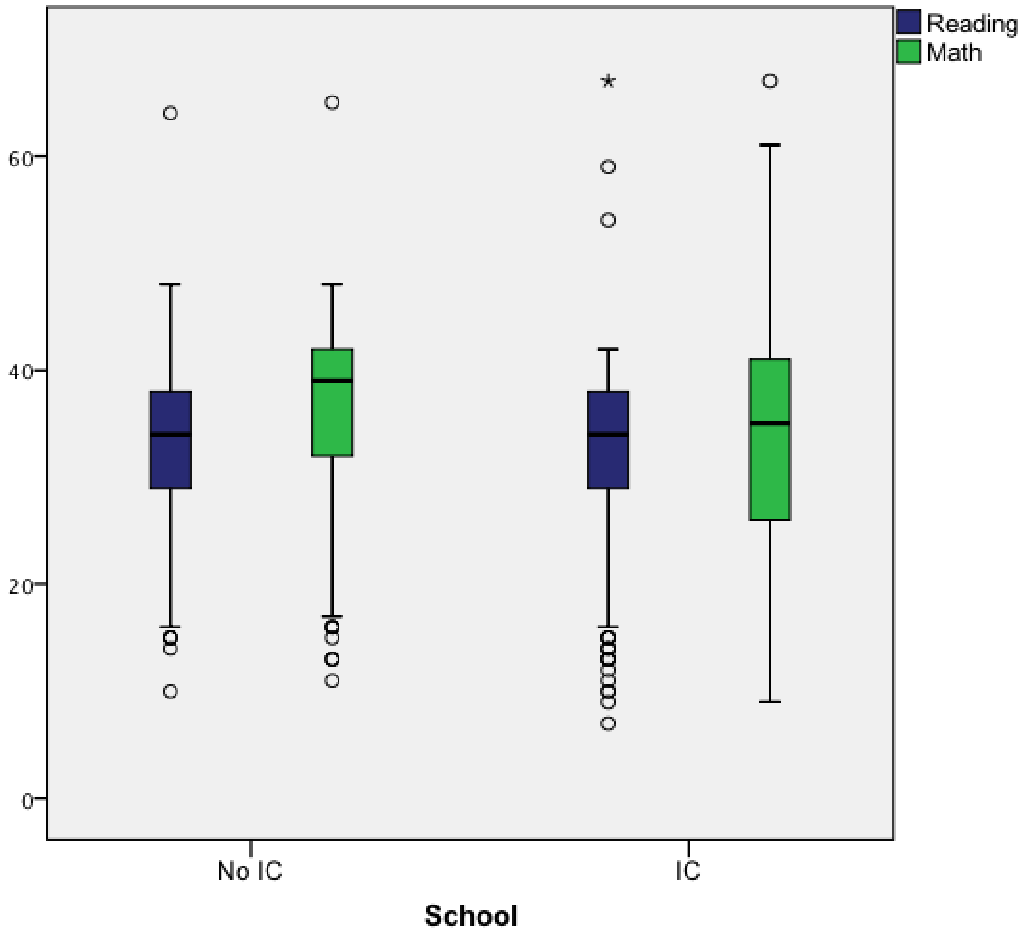
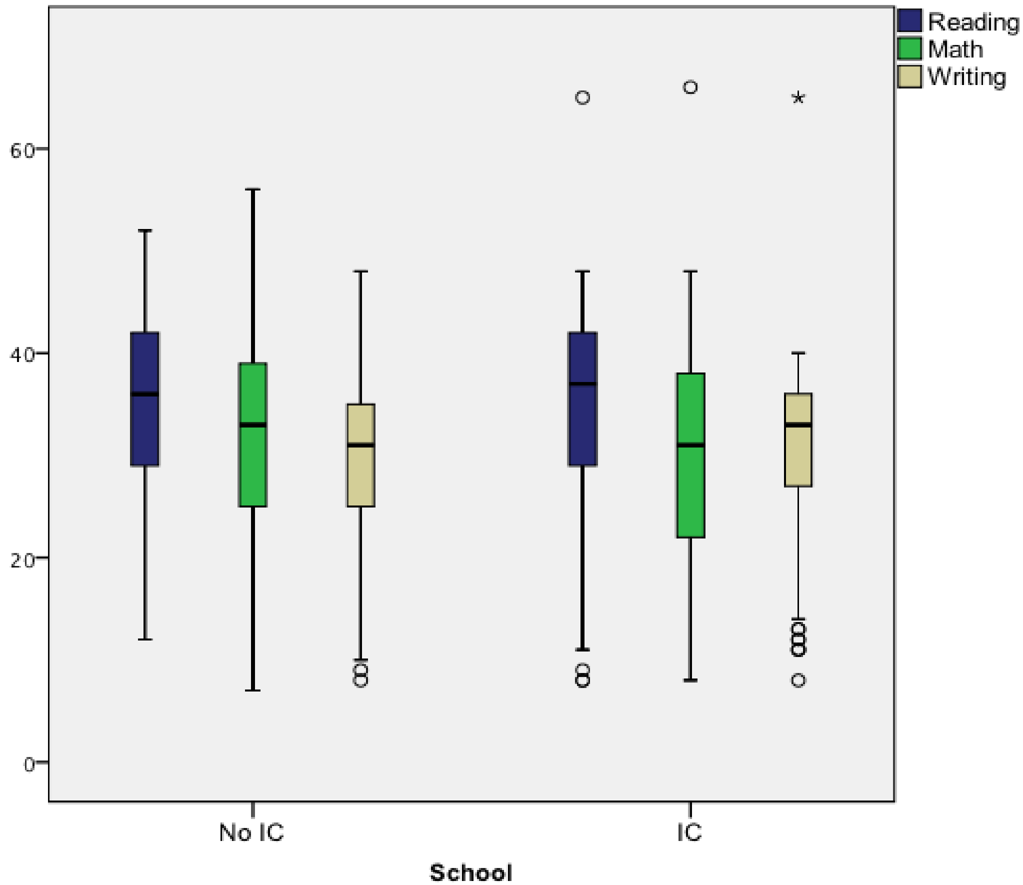


Figure 3. Distributions of 7th Grade Reading, Math and Writing Scores for the Two School Groups



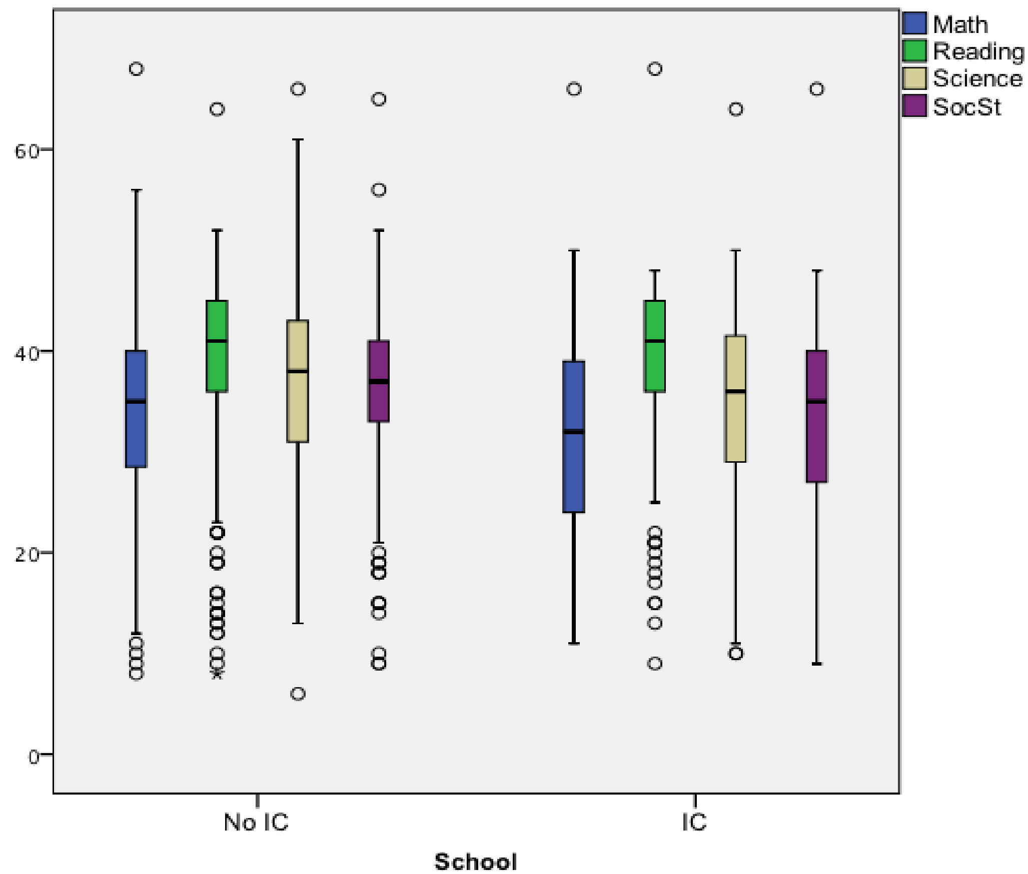


Figure 4. Distributions of 8th Grade Reading, Math, Science and Social Studies Scores for the Two School Groups.

Table 1

School Population Samples

School with IC	Percentage of Students			School w/o IC	Percentage of Students		
	Hispanic	ECD	LEP		Hispanic	ECD	LEP
IC	98.9	84.4	23	No-IC	99.8	92.7	33.6

Note. ECD = Economically Disadvantaged. LEP = Limited English Proficient

Table 2

2010 Spring TAKS Scores Comparing Means of Two Middle Schools

	M	*SD*
School with IC	34.64	8.93
School with no IC	34.36	8.90

Table 3
Descriptive Statistics on the Dependent Variable for 6th Grade for the Two Groups (School with IC/ School with NO IC)

	School with IC N = 303		School with no IC N = 220	
Achievement Test	*M*	*SD*	*M*	*SD*
6th Math	33.17	9.93	36.28	8.51
6th Reading	32.46	8.03	32.82	7.47

Table 4
Analysis of Variance for Math and Reading for 6th Grade.

Content	df	F	η^2	p
Math	1	14.06	.03	.00
Reading	1	00.27	.00	.60

Table 5
Descriptive Statistics on the Dependent Variable for 7th Grade for Two Groups (School with IC/ School with NO IC)

	School with IC N = 264		School with no IC N = 322	
Achievement Test	*M*	*SD*	*M*	*SD*
7th Math	30.14	10.17	31.94	9.14
7th Reading	35.11	9.12	34.38	8.48
7th Writing	31.01	7.15	29.37	7.22

Table 6
Analysis of Variance for Mat, Reading and Writing for 7th Grade.

Content	df	F	η^2	p
Math	1	5.10	.01	.02
Reading	1	1.03	.00	.31
Writing	1	7.60	.01	.01

Table 7
Descriptive Statistics on the Dependent Variable for the 8th Grade for Two Groups (School with IC/ School with NO IC)

	School with IC N = 295		School with no IC N = 340	
Achievement Test	*M*	*SD*	*M*	*SD*
8th Math	31.81	9.78	33.26	9.96
8th Reading	39.70	7.33	38.84	8.66
8th Science	34.69	9.04	36.18	8.85
8th Social Studies	33.52	8.91	36.44	7.39

Table 8
Analysis of Variance for Math, Reading, Science and Social Studies for 8th Grade.

Content	df	F	η^2	p
Math	1	3.43	.01	.07
Reading	1	1.82	.00	.18
Science	1	4.33	.01	.04
Social Studies	1	20.51	.03	.00

Table 9
Comparisons of Instructional Coach by Grade and Content

Grade and Content	p < or > than .05	Mean IC	 No IC	Affected by
6th Math	<	33.17	36.28	No IC
7th Math	<	30.14	31.94	No IC
8th Math	>	31.81	33.26	None
6th Reading	>	32.46	32.82	None
7th Reading	>	35.11	34.38	None
8th Reading	>	39.70	38.84	None
7th Writing	<	31.01	29.37	IC
8th Science	<	34.69	36.18	No IC
8th Social Studies	<	33.52	36.44	No IC