The Effect of Resource Services on Academic Achievement in Reading and Math in South Texas

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Abstract

Accountability measures with increased emphasis placed on assessment for all students have led more special education students to be placed in the general education classroom. The sample included students identified with specific learning disabilities at two high schools, 4A or larger, in South Texas. ANCOVA was utilized to analyze the data. This quantitative study, utilizing ex-post facto data, determined there was no significant difference between grade 9 students with learning disabilities who received resource services and those who did not receive resource services on academic achievement in reading and math for the 2013-14 school years, while controlling for their grade 8 test scores. This suggests that instructional arrangement may not be a significant contributing factor to academic achievement.

Keywords: *Accountability measures; State assessment; Resource services; Special education; Texas education; STAAR*

1. Introduction

The increased emphasis placed on the state assessment and accountability for all students has caused districts to examine the placement of students with disabilities and the services provided to those students. However, the academic success of these students in the general education setting has yet to be determined (Dieker, 2001; Keefe & Moore, 2004; Mastropieri & Scruggs, 2001). Districts with a low performing special education population, as measured by the STAAR EOC reading and math tests, would benefit from successful strategies on implementation of inclusion services in the general education setting or suggestions of alternate service models. This problem impacts students with disabilities, who are entitled to supports and services necessary to make them successful academically. There are many possible factors contributing to this problem, among which are educational placement and inclusion support services. This study contributed to the body of knowledge needed to address this problem by identifying educational settings where students with disabilities have been academically successful, as measured by the STAAR EOC assessment. This study sought to determine if there was a significant difference in academic achievement between students who received resource services and students who did not receive resource services on academic achievement as measured by the STAAR EOC or the STAAR-M EOC exam in reading and math while controlling for the grade 8 test scores in reading and math respectively for ninth grade students with learning disabilities.

1.1 Materials Studied

The No Child Left Behind Act of 2001 (NCLB) increased district and campus accountability for all students, including those with disabilities. NCLB mandated that states develop and implement accountability systems and standards for reading and mathematics, with the goal of all students obtaining proficiency in both subjects by the 2013-14 school year. Schools must look at the annual progress of individual subgroups of students, including students with disabilities. Adequate yearly progress is determined by state assessments given yearly to all students, including those with disabilities. NCLB forced administrators to see the importance behind inclusion of students with disabilities in the general education classroom. Students with disabilities must be granted access to regular

education curriculum if they are to meet state assessment standards (Ross-Hill, 2009). The Individuals with Disabilities Education Act (IDEA) and NCLB both encourage inclusive instruction.

1.1.1 Special Education Service Models

Special education service models can be described as a continuum of placements and services. The regular education classroom is the least restrictive placement along the continuum, but it may not be the appropriate placement for every child. In many instances, in order for a student's needs to be met, the student may need a variety of services and potential placements (Farris, 2011; Lindsay, 2003). Students may receive services in the general education classroom with one general education teacher meeting all needs. A special education teacher may provide consultative services or have more extensive involvement. Co-teaching or collaborative teaching models involve general education and special education teachers working together to meet the students' needs in the general education setting. In this model, the student is seldom removed from the general education setting. In the resource model, students attend general education classes most of the day but go to a special education class for a period of time. Students in a self-contained model attend special education classes most of the day with minimal inclusion in general education settings. Students in this type of class have been unsuccessful in the general education setting. The expectation is that the student will benefit from small group instruction with more attention from the teacher. There are only special education students in this type of instructional setting.

Instruction is less individualized in the general education classroom, so academic progress for students with disabilities comes into question. Students with disabilities are prescribed accommodations and/or modifications outlined in their individualized education plan (IEP). Not all students with disabilities enter the classroom with the same academic abilities. The teacher is charged with the task of determining the starting level and individualizing instruction from that point (Worrell, 2008). Kamens, Loprete and Slostad (2003) outlined areas of educational need for teachers including classification of disabilities, types of accommodations and modifications, and the developmental history of each student with disabilities in their classroom. Teachers have reported that they lack training to effectively modify instruction or implement accommodations in the classroom (Galano, 2012). Galano (2012) also found a significant correlation between the level of teacher training and their attitude towards inclusion.

According to Estes-Jones (2013) needed components for successful inclusion include visionary leadership, collaboration among all stakeholders, support for staff members, funding, the use of effective teaching models in the classroom, careful use of assessment data, and parental involvement. Administrators perceive key factors in the implementation of inclusive programs to be a strong belief in inclusion, knowledge of best practice strategies, and state accountability, along with the right teachers and staff, and campus buy in. Most administrators acknowledge that their schools do not have formal policies regarding inclusion, as the Admission, Review and Dismissal committee guides decision making (Estes-Jones, 2013). The attitude of the campus administrator can either increase the opportunities available to students with disabilities or limit the effectiveness of inclusion services (Praisner, 2003). In her work with elementary school principals, Praisner found that more had a positive attitude towards inclusion. With this positive thinking, more inclusive placements were observed. Galano (2012) and Smith (2012) had similar findings in their research. All correlated the attitude of the principal with the promotion of inclusive settings. Additionally, the more positive experiences a principal had with students with disabilities, the more likely the principal was to choose a less restrictive educational setting. Moreover, principals with limited training in special education had more negative attitude scores towards inclusion (Galano, 2012). Principals' areas of need include training on inclusive procedures (Praisner, 2003).

Hammel and Hourigan (n.d.) suggest many strategies for success. The first is to get to know future students. The second is to plan ahead for services that will be needed by reviewing the students' accommodations, modifications and individualized education plan with the case manager or special education teacher. Classroom arrangement must be considered in advance based on the needs of the students in the classroom. Next, become familiar with the special education faculty and build a collaborative relationship with them. They can provide teaching strategies, methods of modifying assignments and discipline techniques. Teachers must familiarize themselves with discipline procedures for students with disabilities by working with administrators. Good teaching strategies for all students will promote success in the classroom (Hammel & Hourigan, n.d.).

A qualitative study conducted by Dieker (2001) identified six co-teaching practices that contribute to successful implementation. A positive climate was created between the teachers and the students by using peer tutoring, cooperative learning, an attitude of acceptance and the provision of special education services. The positive perception of inclusion created by all staff created an environment where students accepted this method of instruction. Student centered, active learning kept students engaged and allowed opportunities for peer tutoring.

Activity based instruction allowed for integration of accommodations to meet the needs of all students. Teachers must have high behavioral and academic expectations for students with and without disabilities. Dieker (2001) noted that co-teaching allowed greater time to work with students to help them meet these expectations. Co-teachers also must use their mutual planning time effectively to plan lessons. Finally, the use of multiple evaluation methods like performance tasks, projects and presentations in addition to written assessment was used to gauge student learning.

Numerous researchers have cited concerns regarding measured academic success of co-teaching at the secondary level (Dieker, 2001; Keefe & Moore, 2004; Magiera, Smith, Zigmond & Gebauer, 2005; Mastropieri & Scruggs, 2001). Austin (2001) found that teachers believed that co-teaching has had a positive effect on academic achievement due to smaller teacher to pupil ratios, the benefit of instruction from two teachers and the cooperative learning opportunities available in integrated settings. In comparing co-teaching and small group instructional methods, Doran (2008) found that co-teaching was an effective method for increasing academic achievement in special education students. This quantitative study conducted in a county within the southern region of the United States compared End of Course Assessment scores in four academic areas. Results were limited due to sample size.

A 2011 study conducted by Farris examined educational setting of special education students and academic growth, as measured by the Texas Assessment of Knowledge and Skills test (TAKS). Findings indicate that mainstreamed and mostly mainstreamed students did not grow academically as expected in reading or math. Students in the resource setting grew more than expected in both areas. These findings are limited to effect size, as other factors besides educational placement may account for some of the difference (Farris, 2011).

McLeod (2007) compared the achievement of students with and without disabilities in co-taught classrooms and small group (resource) and co-taught classrooms. Achievement was measured using the End of Course Exams in five academic areas. Results of the study indicated that there was no significant difference between achievement of students with and without disabilities in co-teaching placements or students with disabilities in co-taught and small group classes. In all of the co-taught content area classes, with the exception of ninth grade literature and composition, students with disabilities achieved at a level commensurate with students without disabilities. There was a significant difference between ninth grade literature and composition pre and post test scores of students with and without disabilities in co-taught classes. Students with disabilities in co-taught classes demonstrated a loss between pre and post test scores. Students with disabilities in small group (resource) settings achieved at a level comparable to students with disabilities in co-taught classes in all subject areas.

Conversely, Murawski (2006) utilized standardized test scores to compare English Language Arts Achievement in students with and without disabilities in different instructional settings. She concluded that co-teaching at the secondary level exhibited potential for benefit for students with disabilities. She recommended additional studies to measure academic effectiveness of co-teaching at the secondary level.

2. Methods

The study included the statistical analysis of 9th grade Reading and Math STAAR EOC exam scores from the 2012-2013 and 2013-2014 school years in order to determine if a significant academic difference exists between students who received resource services and students who did not receive resource services on academic achievement as measured by the STAAR EOC or the STAAR-M EOC exam in reading and math while controlling for the grade 8 test scores in reading and math respectively for ninth grade students with learning disabilities in districts 4A and larger in the South Texas Region.

Special education services and educational placement for students with disabilities are determined by an Admission, Review and Dismissal (ARD) committee. Based on the educational placement of the student, a Public Education Information Management System (PIEMS) code is assigned. Students who receive all special education services in the general education setting receive a mainstream code of 40. These students may receive inclusion support in the general education classroom, or may only receive accommodations and/or modifications. Special education students who are removed from the general education setting up to 21% of the school day receive the code of 41. These students may be removed for any number of services that can include resource instruction, instructional services like speech and language therapy, or related services such as occupational therapy or physical therapy. Students with disabilities who are removed from the general education setting for 22%- 50% of the school day receive a PIEMS code of 42. These students are removed for the same reasons as those coded a 41, but are removed for a longer period of time.

STAAR EOC test score data in reading and math was requested from each district for the 2012-13 and 2013-14

school years. The district noted the students who received inclusion services and those instructed in a separate location for reading and/or math.

2.1 Data Analysis

Scale scores of students with learning disabilities in resource educational settings taking the regular STAAR EOC in reading and/or math, students in resource educational settings taking the modified STAAR EOC exam in reading and/or math, students not in resource educational settings taking the regular STAAR EOC in reading and/or math, and students not in resource educational settings taking the modified STAAR EOC in reading and/or math. An ANCOVA was used to determine if a significant difference existed between two or more unrelated groups. The dependent variable in the study was the 2013-14 test score obtained by the students. The independent variable in this study was the instructional setting of the student. The covariate in this study was the 2012-13 school year test score in reading and math obtained by the students.

3. Results

The total data collected for the quantitative portion of this study was 43 students (N=43). Twenty five students took the STAAR EOC exam in reading, 18 students took the STAAR-M EOC exam in reading. Twenty eight students took the STAAR EOC exam in math and 15 took the STAAR-M EOC exam in math. Figure 1 depicts this information.

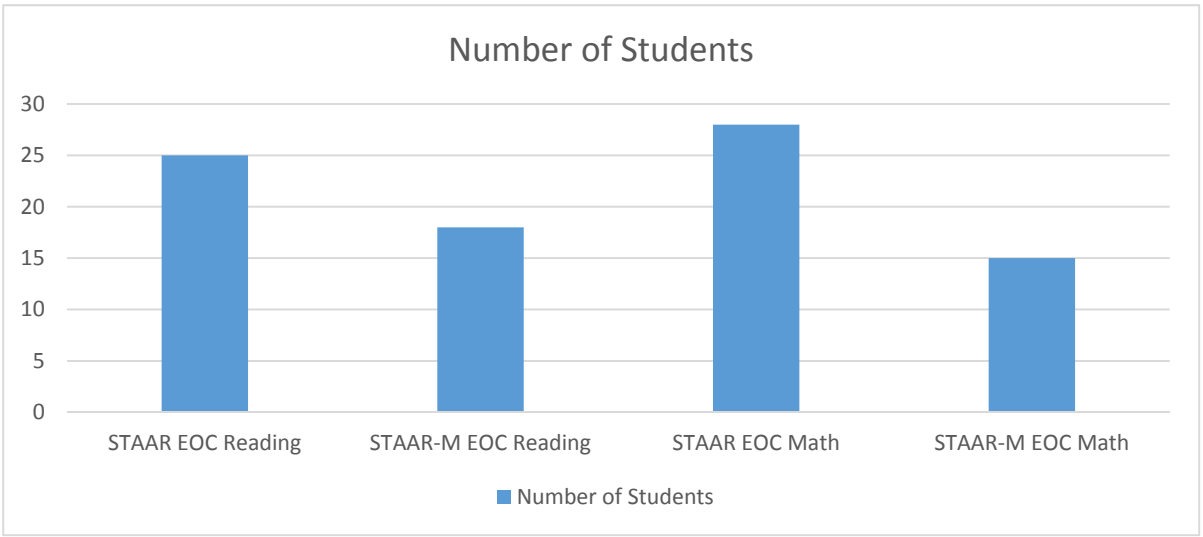

Figure 1. Number of Students Participating in Each Version of the STAAR EOC Exam

Figure 2 depicts the mean test score for students in the resource setting and students who are not in the resource setting on the STAAR-M EOC exam in reading and the STAAR and the STAAR-M EOC exam in math.

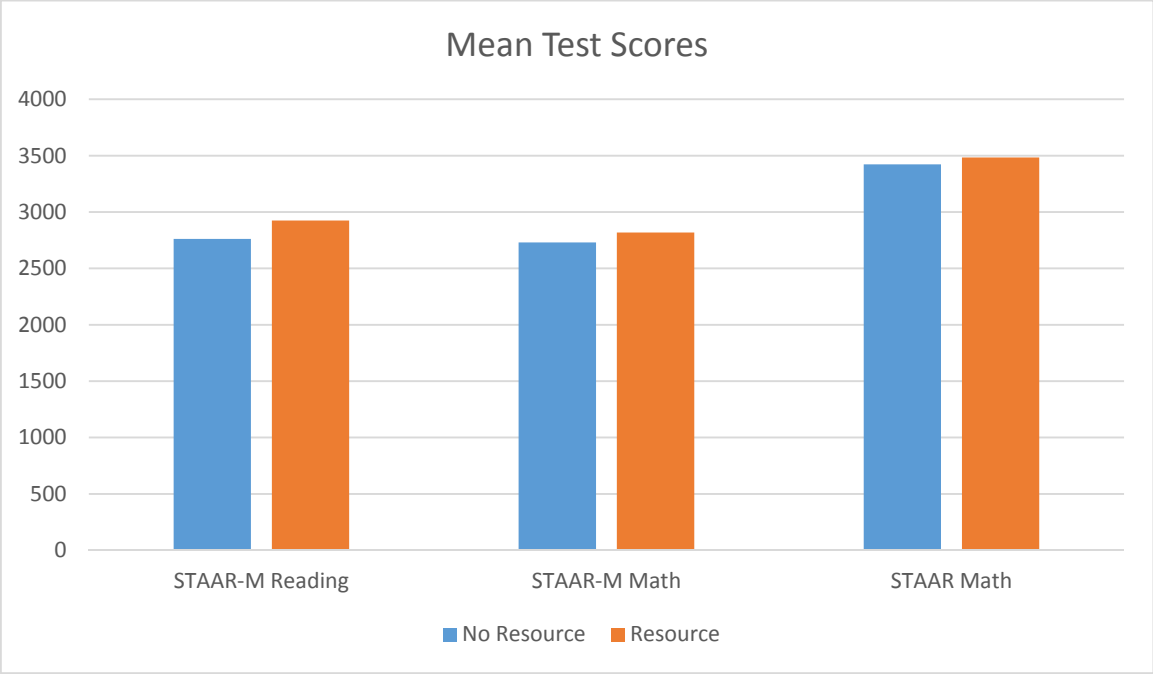

Figure 2. Mean Test Score on Each Version of the STAAR EOC Exam

On the STAAR-M EOC in reading, students in the resource setting had a higher mean test score (M = 2925) than those who are not in a resource setting (M = 2761). The mean test score on the STAAR EOC in math was very close between students who are in the resource setting (M = 3486) and students who are not in the resource setting (M = 3423). Students in the resource setting achieved a higher mean score on the STAAR-M EOC in math (M = 2818) than those who are not in the resource setting (M = 2730).

An ANCOVA was utilized to seek significant difference between students who received resource services and students who did not receive resource services on academic achievement as measured by the modified STAAR EOC (STAAR-M) exam in reading while controlling for the grade 8 STAAR-M scores in reading for ninth grade students with learning disabilities. A preliminary analysis was conducted to evaluate homogeneity of slopes between the 8th grade reading test score and the 9th grade reading test score across groups. The slopes were not considered homogeneous, F (1, 14) = 10.04, p = .01, the population slopes differ and the ANCOVA should not be conducted. Table 1 includes these results.

Table 1. Reading STAAR-M EOC: Homogeneity of Slopes

Source	df	F	Sig	Partial Eta Squared
Instructional Arrangement	1	10.04	.01	.42

Therefore, simple main effects tests were conducted at low (M = 2309), medium (M= 2803) and high values (M = 3297) on the covariate. The results show no indication that the corresponding population means differ, F (1, 15) = 4.05, p = .06, η^2 = .22. The partial η^2 of .22 is large, suggesting that with a larger sample size significance may have been found. Given the nonsignificance among means, pairwise differences among groups were not examined. Results are shown below in Table 2.

Table 2. Reading STAAR-M EOC: Main Effects

Source	df	F	Sig	Partial Eta Squared
Instructional Arrangement	1	4.05	.06	.22

An ANCOVA was utilized to seek significant difference between students who received resource services and students who did not receive resource services on academic achievement as measured by the STAAR EOC exam in math while controlling for the grade 8 STAAR scores in math for ninth grade students with learning disabilities. A preliminary analysis evaluating the homogeneity-of-slopes assumption indicated that the relationship between the 8th grade math STAAR EOC score and the 9th grade math STAAR EOC score did not differ significantly as a function of instructional arrangement, $F(1, 24) = .01$, $p = .93$, partial $\eta^2 = .00$. The ANCOVA was not significant $F(1, 25) = .04$, $p = .84$, partial $\eta^2 = .00$. An effect size of .00 is negligible, meaning that 0% of the variance on 9th grade test scores was due to the instructional arrangement. Table 3 illustrates these findings.

Table 3. Math STAAR EOC: ANCOVA

Source	df	F	Sig	Partial Eta Squared
Instructional Arrangement	1	.04	.84	.00

An ANCOVA was conducted to seek a significant difference between students who received resource services and students who did not receive resource services on academic achievement as measured by the STAAR-M EOC exam in math while controlling for the grade 8 STAAR-M scores in math for ninth grade students with learning disabilities. A preliminary analysis evaluating the homogeneity-of-slopes assumption indicated that the relationship between the 8th grade math STAAR-M EOC score and the 9th grade math STAAR-M EOC score did not differ significantly as a function of instructional arrangement, $F(1, 11) = .19$, $p = .67$, partial $\eta^2 = .02$. See Table 4.

Table 4. Math STAAR-M EOC: Homogeneity of Slopes

Source	df	F	Sig	Partial Eta Squared
Instructional Arrangement	1	.19	.67	.02

The ANCOVA was not significant $F(1, 12) = 1.53$, $p = .24$, partial $\eta^2 = .11$. An effect size of .11 is moderately large, meaning that the instructional arrangement accounted for 11% of the variance in 9th grade test scores. With a larger sample size, significance may have been found. Table 5 illustrates these results.

Table 5. Math STAAR-M EOC: ANCOVA

Source	df	F	Sig	Partial Eta Squared
Instructional Arrangement	1	1.53	.24	.11

4. Conclusions

The findings of this study suggest that one educational setting may not be the solution for all students with learning disabilities. The fact that there was no significant difference in math STAAR EOC and STAAR-M EOC scores between students who receive resource services and those who do not receive resource services shows that progress is being made by students in both educational settings.

The results of this study provided information to be used by administrators, lead special education personnel, and Admission, Review, and Dismissal committees in planning to meet the educational needs of students with learning disabilities. Results of the research indicated no significant difference in math test scores between students who received resource services and those who did not. This data should lead stakeholders to select educational settings to best meet the needs of each student. While improving academic achievement of students with learning disabilities is still an important dilemma to contend with, this research suggests that instructional arrangement may not be a significant contributing factor to academic achievement.

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