

STUDENT ACHIEVEMENT IN A CO-TEACHING SERVICE DELIVERY MODEL  
IN SPECIAL EDUCATION

A DISSERTATION

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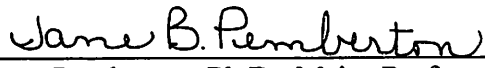
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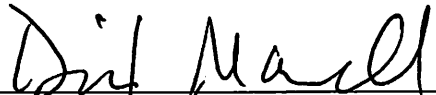
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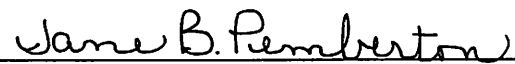
I am submitting herewith a dissertation written by Denise McCrummen entitled "Student Achievement in a Co-Teaching Service Delivery Model in Special Education." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Special Education.

  
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Dean of the Graduate School

## DEDICATION

For my mom, who passed away very unexpectedly during my dissertation process. She was an amazing role model and support for me always, and especially during this journey. I miss the phone calls on my way to and from Denton. I know she is reading this from Heaven.

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## ABSTRACT

DENISE MCCRUMMEN

### STUDENT ACHIEVEMENT IN A CO-TEACHING SERVICE DELIVERY MODEL IN SPECIAL EDUCATION

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Federal legislation requires that all students with disabilities have access to the general education curriculum and be included in teachers' accountability for achievement outcomes. The co-teaching service delivery model is one model to address access to the general education classroom. This service delivery model allows students with disabilities to have access to the general education curriculum and still receive the specialized instructional strategies necessary for them to be successful. The purpose of this study was to investigate the outcomes of students with disabilities in a co-teaching classroom by examining performance on state-mandated assessments in language arts and mathematics. The perceptions of teachers involved in the implementation of co-teaching models of instruction were also investigated. Federal law requires the successful integration of students with disabilities into the general population and accountability for student performance on standardized assessment. The literature suggests that co-teaching strategies represent a potentially valuable approach to access the general education curriculum and accountability issues.

## TABLE OF CONTENTS

	Page
DEDICATION .....	iii
ACKNOWLEDGMENTS .....	iv
ABSTRACT .....	vi
TABLE OF CONTENTS .....	vii
LIST OF TABLES .....	ix
LIST OF FIGURES .....	x
Chapter	
I. INTRODUCTION .....	1
Purpose of the Study .....	4
Research Questions .....	5
Definitions .....	6
Assumptions of the Study .....	8
II. REVIEW OF THE LITERATURE .....	9
Research Studies: Student Achievement in a Co-Teaching Model of Instruction .....	12
Research Studies: Perceptions of a Co-Teaching Model of Instruction .....	15
Research Studies: Teacher Perceptions and Student Achievement in a Co-Teaching Model of Instruction .....	18
Summary .....	20
III. RESEARCH METHODOLOGY .....	22
Purpose of the Study and Research Questions .....	22
Participants .....	23
Data Collection Procedures .....	26
Research Design .....	27
Statistical Choices .....	29

IV.	RESULTS .....	30
	Overview of the Study .....	30
	Research Question One.....	32
	Research Question Two .....	38
	Research Question Three .....	44
	Positive Comments from Teacher Survey .....	47
	Limitation from Teacher Survey.....	49
	Summary of Findings.....	55
V.	DISCUSSION .....	56
	Overview of the Study .....	56
	Research Question One.....	57
	Research Question Two .....	59
	Research Question Three .....	60
	Limitations of the Study.....	67
	Implication for Future Research .....	68
	Conclusion .....	69
	REFERENCES .....	70
	APPENDICES .....	74
	A. Consent to Participate in Survey.....	74
	B. Teacher Perception Survey .....	76
	C. Models of Co-Teaching .....	80



## LIST OF TABLES

Table	Page
1. Global design of study .....	25
2. Model of student level and achievement data collected .....	25
3. Total number of teachers by setting and content area of STAAR test.....	31
4. Descriptive statistics for STAAR reading performance data – Scaled Scores .....	34
5. Group One reading scaled scores.....	35
6. Group Two reading scaled scores .....	35
7. Group Three reading scaled scores .....	36
8. Group Four reading scaled scores.....	36
9. Descriptive statistics for STAAR math performance data – Scaled Scores .....	39
10. Group One math scaled scores.....	40
11. Group Two math scaled scores .....	40
12. Group Three math scaled scores .....	41
13. Group Four math scaled scores.....	41
14. Correlational analysis of STAAR Reading and Math scaled scores across test years.	43
15. Demographic information from teacher participants .....	44
16. Teacher perception data .....	46
17. Cross-tabulation analysis of teacher level and setting by perception of additional training needed.....	52
18. Teacher perception on models of co-teaching most frequently used.....	53
19. Teacher perception on models of co-teaching most effective for student learning .....	54

## LIST OF FIGURES

Figure	Page
1. Reading across years between groups.....	37
2. Math across years between groups .....	42

## CHAPTER I

### INTRODUCTION

There are federal mandates for educating students with disabilities in the least restrictive setting and accountability for student achievement on state assessments. Co-teaching is a service delivery option that can support both objectives. Students have access to the general education curriculum, with instruction being provided by both general and special educators. Students with disabilities have been included in the general education classroom for years, but the last decade of educational reform has changed the parameters of the inclusion classroom. No longer should co-teaching just be considered as a good way to make sure students with disabilities are exposed to the general education curriculum, because there is now a much higher purpose for school systems to support the implementation of co-teaching in classrooms, and that is higher student achievement for all students (Walsh, 2012).

The No Child Left Behind Act (NCLB) of 2001 (Pub. L. No. 107–110) requires that all students with disabilities be included in teachers' accountability for achievement outcomes. Also, with the most recent reauthorization of the Individuals with Disabilities Education Improvement Act of 2004 (Pub. L. No. 107–110), students with disabilities are not only mandated to have access to the general education curriculum, but the Act reiterated the requirements for students with disabilities to participate in statewide assessments (Simmons & Magiera, 2007). The co-teaching service delivery model is one model to address access to the general education classroom.

*Co-teaching* is defined as the partnering of a general education teacher and a special education teacher or another specialist for the purpose of jointly delivering instruction to a diverse group of students, including those with disabilities or other special needs, in one educational setting and in a way that flexibly and deliberately meets students' learning needs (Friend & Cook, 2010). This service delivery model can support students with disabilities by providing access to the general education curriculum and still delivering the specialized instructional strategies necessary for students to be successful. The general educator has knowledge of the academic content area, while the special educator adds knowledge and experience related to learning strategies, behavior, and an understanding of the disability.

In a co-teaching environment, teachers address the goals and objectives of students with disabilities while at the same time meeting the needs of other students in the class. The number of class periods, the content area of co-teaching instruction, the role of the two teachers, and the instructional materials are all decisions that are campus-specific. The success or failure of co-teaching is typically determined by student achievement outcomes, teacher training, administrative support, and teacher attitudes.

A review of the literature yielded articles on both inclusive special education and co-teaching service provisions. Articles were found in both peer-reviewed journals and educational periodicals. Topics included in the articles ranged from support for co-teaching instruction, training on co-teaching, assessment of current co-teaching practices, to perceptions of co-teaching and efficacy of co-teaching instructional models. For the purpose of this study, articles were selected that included investigations related to student

achievement in a co-teaching model and teacher perceptions regarding co-teaching instruction.

Five studies on student achievement in a co-teaching model of instruction were reviewed in this study. In their meta-analysis of co-teaching, Murawski and Swanson (2001) investigated achievement outcomes for students educated in a co-teaching classroom. The analysis demonstrated an increase in reading scores, improved grades, improved scores on competency tests, and increased math achievement scores. The authors proposed, based on evidence in six studies, that co-teaching had a positive effect on student achievement. Rea, McLaughlin, and Walther-Thomas (2002) reported that 36 students with learning disabilities in co-taught classes demonstrated higher report card grades than did 22 students with learning disabilities in a single-teacher resource class environment. Idol (2006) investigated the effects of inclusion practices on the state assessment scores of students in general and special education. This investigation reported that there was not a significant change in scores on high-stakes tests for students in a co-teaching environment. Murawski (2006), compared the achievement of 100 high school students with disabilities in pull out classes, co-taught classes, and general education classes without co-teaching. Murawski found no significant differences in observations or on pre/post-test results across settings. Hang and Rabren (2009) demonstrated that 58 elementary and high school students with disabilities who were in co-teaching classrooms for one year had significantly higher Scholastic Aptitude Test (SAT) scores in reading and math than they did before being co-taught.

Four investigations into teacher perceptions about a co-teaching model of instruction were also reviewed in this study. Utilizing longitudinal, qualitative case studies, Mastropieri et al, (2005), evaluated efficacy and challenges associated with co-teaching practices in science and social studies classes. Using qualitative information, the authors identified three main elements that determine the success or failure of co-teach instruction: content knowledge of the teachers, presence of high-stakes testing, and co-teacher compatibility. Students in secondary schools were surveyed by Wilson and Michaels (2006), regarding their perceptions of co-teaching. The students reported that more help was available in the co-taught class and that different teaching approaches were used. In a synthesis of qualitative research on co-teaching roles, relationships, and teacher perceptions, by Scruggs, Mastropieri, and McDuffie (2007), teachers reported that the emphasis on high stakes testing had a negative impact on the co-teaching experience. Twenty-four school districts were surveyed by Nichols, Dowdy and Nichols (2010), to determine their utilization of a co-teaching model and the amount of preparation that district instructional and leadership personnel had prior to its initiation. In addition to the influence of high stakes testing and reduced planning time, staff training was reported as another requirement to successful implementation of a co-teaching model of student instruction.

### **Purpose of the Study**

The purpose of this study was to investigate the achievement outcomes of students with disabilities, in a co-teaching classroom, by examining their performance on state-mandated assessments in language arts and mathematics. The perceptions of

teachers involved in the implementation of co-teaching models of instruction were also investigated. Federal law requires the successful integration of students with disabilities into the general population to the maximum extent appropriate, and accountability for student performance on standardized assessment. The literature suggests that a co-teaching service delivery option may represent a potentially valuable approach to access the general education curriculum and impact accountability issues.

Research participants included 17 elementary and 13 secondary teachers in Grades 3 through 8, who taught a math and/or language arts class and were included in the co-teaching service delivery model continuum. Teachers included 17 general and 13 special educators in both elementary and secondary classroom settings. Performance data from 82 third through eighth grade students, who received special education services in a co-teaching classroom, were also obtained and analyzed. Students met the eligibility criteria for special education services as outlined by the Texas Education Agency.

### **Research Questions**

Specific research questions for this study include the following:

1. Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in Reading from assessment prior to and following full implementation of co-teaching strategies for students receiving special education services in Grades 3 through 8t?
2. Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in

- Mathematics from assessment prior to and following full implementation of co-teaching strategies for students receiving special education services in Grades 3 through 8?
3. Is there a significant relationship between perceptions of teachers involved in co-teaching and STAAR scaled scores obtained during the implementation of a co-teaching model, by students receiving special education services in Grades 3 through 8?

### **Definitions**

Co-Teaching – The partnering of a general education teacher and a special education teacher or another specialist for the purpose of jointly delivering instruction to a diverse group of students, including those with disabilities or other special needs, in one educational setting and in a way that flexibly meets students’ learning needs with specialized instruction (Cook & Friend, 2005).

IDEIA – The Individuals with Disabilities Education Improvement Act is a federal law ensuring services to students with disabilities throughout the nation. IDEIA governs how states and public agencies provide early intervention, special education, and related services to more than 6.5 million eligible infants, toddlers, children, and youth with disabilities (Pub. L. No. 107–110).

Inclusion – A school’s belief system about educating diverse learners, implying that all students are members of the learning community. Inclusion is a service, not a location. Inclusion is about how students receive instruction and not just about where they are seated in the educational setting (Fischer & Schumaker, 1995).



Mainstreaming – The practice of educating students with special needs in regular classes during specific time periods based on their skills (Cook & Friend, 1995).

NCLB – The No Child Left Behind Act (NCLB) is federal legislation which was enacted in 2001 and requires all public schools receiving federal funding to administer statewide standardized test annually to all students. The act requires states to provide “highly qualified” teachers to all students (Pub. L. No. 107–110).

Resource Instruction – A resource room is a separate, remedial classroom in a school where students with disabilities, such as specific learning disabilities, are given direct, specialized instruction and academic remediation and assistance with homework and related assignments as individuals or in groups (Causton-Theoharis, Theoharis, Orsatie, & Cosier, 2011).

STAAR – State of Texas Assessments of Academic Readiness (STAAR). STAAR is a series of state-mandated standardized tests used in Texas public elementary and secondary schools to assess a student’s achievements and knowledge learned in the grade level. The tests evaluate curriculum taught from the Texas Essential Knowledge and Skills (TEKS). Students in Grades 3 through 8 take a math and reading STAAR test annually. In addition, fourth and seventh graders take a writing STAAR test. Fifth and eighth graders take a science STAAR test, and eighth graders also take a social studies STAAR test. Texas has offered a statewide student assessment since 1980 (<http://www.tea.org>).

TEA – The Texas Education Agency (TEA) is the state agency that oversees primary and secondary public education in the state of Texas by providing leadership, guidance and

resources to help schools meet the educational needs of all students and prepare them for success in the global economy (<http://www.tea.org>).

### **Assumptions of the Study**

The following assumptions are made for this study:

- All existing performance data collected from the Texas Education Agency (TEA) were accurate because scaled scores on district data management systems were imported directly from TEA. Scaled scores were imported directly from district data management systems to Statistical Package for the Social Sciences (SPSS) for analysis.
- Educator's responses to the survey questions were accurate and represent their perceptions regarding the co-teaching model of instruction because confidential survey responses on the PsychData survey tool were imported directly to Statistical Package for the Social Sciences (SPSS).
- Educators were free to respond without outside influence because teacher survey responses were anonymous.

## CHAPTER II

### REVIEW OF THE LITERATURE

Special education's legal guidelines were established in 1975 with the passage of Public Law 94-142, which guaranteed a free and appropriate public education to students with disabilities. This law was amended in 1990 to the Individuals with Disabilities Act (IDEA) and reauthorized again in 1997 and 2004. With the most recent reauthorization of the Individuals with Disabilities Education Improvement Act of 2004 (Pub. L. No. 107-110), students with disabilities are not only mandated to have access to the general education curriculum, but the Act also reiterated the requirements for students with disabilities to participate in statewide assessments (Simmons & Magiera, 2007). Additional legislation passed during this time included The No Child Left Behind Act of 2001 (Pub. L. No. 107-110), which requires that all students with disabilities be included in teachers' accountability for achievement outcomes and that educators are highly qualified to teach their content area.

Co-teaching affords a solution beyond having every special education teacher who teaches more than one subject certified in multiple core content areas (Bouck, 2007). Bouck proposed that, when special education teachers co-teach with a general education teacher, collaboration is with a highly qualified teacher in that content area. Given the empirical and legal preference for inclusive schooling, educating students in the general education classroom with appropriate supports and services should be seriously

considered (Caustan-Theoharis et al. 2011). Co-teaching is a service delivery option that meets least restrictive environment and accountability objectives. Students are exposed to the general education curriculum with instruction being provided by both general and special educators, and students also participate in state standardized testing.

Information in the late 1990's and early 2000's on inclusive programming, and co-teaching specifically, is limited. Descriptive information exists about what co-teaching is supposed to look like, as well as instructional strategies for teachers, but there is a dearth of databased literature about the procedures and outcomes of co-teaching in practice (Fuchs & Fuchs, 1992; Rea, P., McLaughlin, V. L., & Walther-Thomas, C. S., 2002; Simmons, R., & Magiera, K., 2007; Walsh, 2012,; Tremblay, 2013).

Previous studies on inclusive programming were reviewed by Fisher and Schumaker (1995) who determined that, until more validated inclusive practices were developed, educators and policy makers need to consider carefully the amount of support one teacher realistically could provide to any group of students. These authors concluded that, although solid inclusion practices existed; this was not enough to improve the academic achievement of all students in the general education classroom. Johnson (1999) referenced a definition of *inclusion* as “the provision of appropriate instruction for pupils with special needs in regular classrooms” (p. 72) and stated that inclusion is about “educational access, equity, and quality for all students” (p. 72). As students with disabilities enter general education classrooms, educators must develop and implement instructional approaches that benefit all students (Porter, 1997). As the trend toward inclusive school practices has become more firmly established, teacher educators and

practitioners have sought appropriate strategies for ensuring that students with disabilities receive the support they need within the context of instruction in the general education classroom (Johnson, 1999). Co-teaching as a service delivery strategy was promoted to meet the needs of all students in the classroom.

Co-teaching was defined by Cook and Friend (1995) as two or more professionals delivering substantive instruction to a diverse, or blended group of students in a single physical space. Their rationale for co-teaching instruction included the following: increased instructional options for all students, improved program intensity and continuity, and increased support for teachers and related service specialists. When in a co-taught environment, it is theoretically possible that while the general educator is ensuring the lessons are content-driven and standards-based, the special educator is ensuring that explicit and direct instruction are infused into the lesson where appropriate by using approaches such as alternative teaching or station teaching as described by Cook and Friend (1995).

Co-teaching includes the professionals planning and delivering instruction with the option of using six approaches. The selection of the approach is based on student needs and instructional intent (Friend & Cook, 2010). The six approaches, as outlined by Friend and Cook, include:

1. One teach/One observe - One teacher leads large-group instruction while the other teacher gathers academic, behavioral, or social data on specific students or the class group.
2. Station teaching - Instruction is divided into three stations and students

- rotate from station to station, being taught by the teachers at two stations and working independently at the third.
3. Parallel teaching - The two teachers, each with half the class group, present the same material for the primary purpose of fostering instructional differentiation and increasing student participation.
  4. Alternative teaching - One teacher works with most students while the other teacher works with a small group for remediation, enrichment, assessment, pre-teaching, or another purpose.
  5. Teaming - Both teachers lead large-group instruction by both lecturing, representing opposing views in a debate, illustrating two ways to solve a problem, etc.
  6. One teach/One assist - One teacher leads instruction while the other circulates among the students offering individual assistance (p. 12).

Although these are the six most commonly cited models of co-teaching instruction, not every model is appropriate for all grade levels, content areas, or co-teaching instructional partners. Selecting the best instructional models for students is important for effective teaching of students with disabilities.

### **Research Studies: Student Achievement in a Co-Teaching Model of Instruction**

Research studies investigating student achievement in a co-teaching model are limited. Due to the nature of this service delivery, most research involves case studies or archival studies. Most of the literature reviewed investigated secondary students. Studies reviewed mostly math and language arts achievement through standardized

scores or report card grades, but a few reviewed scores in science and/or social studies. In general, most studies documented improvement in student achievement for students participating in a co-teaching service delivery model.

In their meta-analysis of co-teaching, Murawski and Swanson (2001) investigated achievement outcomes for students educated in a co-teaching classroom. Their study included a literature review that initially had 89 articles. After refining the criteria, the actual meta-analysis involved six articles. Criteria for inclusion into the study included: sufficient quantitative data to calculate effect sizes, a minimum of four characteristics of co-teaching interventions, and co-teaching programming which occurred for longer than two weeks. Dependent measures evaluated in five of the six studies included academic achievement in reading and math and course grades. The dependent measure evaluated in one study involved social skills. The analysis demonstrated an increase in reading scores, improved grades, improved scores on competency tests, and increased math achievement scores. The authors proposed, based on evidence in the six studies, that co-teaching had a positive effect on student achievement.

Two models of educational programming for students with learning disabilities (LD) were used in a comparison study by Rea, et al. (2002). They investigated 36 students in a co-teaching environment and 22 students in a resource class environment. Students in the study met the state guidelines for eligibility of a learning disability. Outcomes measured included: academic achievement (standard scores on the Iowa Test of Basic Skills - ITBS); student report card grades; behavior (number of referrals for suspension) and attendance. Standard scores on the Iowa Test of Basic Skills (ITBS) for

the students in a co-teaching setting were better in language arts, math, and science, when compared to their peers in a resource setting. This study also determined that students with learning disabilities in co-taught classes performed better on report card grades than did students taught in a resource classroom. Student performance on the ITBS showed that students with learning disabilities achieved higher standard scores in a co-teaching model of service delivery than did students in a resource setting (Rea, et al. 2002).

The effects of co-teaching on high-stakes testing were investigated by Idol (2006). The program evaluation study of inclusive practices in 8 schools included qualitative data from interviews with 79 general education teachers and 24 special education teachers. The study also included quantitative test score data from 311 students. One of the biggest concerns of many educators and the general public was the possible adverse effect that the presence of students with disabilities in the general education classroom might have on the statewide testing results of other students (Idol, 2006). There was not a significant change in test score data during the investigation. This was true both for students in general and special education, in the eight elementary and secondary schools that were included in the study. In addition to high stakes testing, Idol discovered common concerns expressed by special educators in a co-teaching setting. These included feeling like an instructional assistant, not having much input in curricular planning, not being able to effectively modify or individualize instruction for students in the general education class, and not knowing how to successfully interact with the general education teacher during class time. The results of this study also clearly imply that teachers need to be trained in how to co-teaching effectively and



efficiently. The ultimate goal for any service delivery model is to benefit students (Idol, 2006).

A research study on outcomes of students in a co-teaching setting was conducted by Murawski in 2006. Participants included 67 ninth grade students in general education, 34 ninth grade students in special education and four teachers in language arts classes. The study examined pre and post-testing scores as well as classroom observations of co-teaching, mainstream, resource and general education instructional settings. While students with learning disabilities in co-taught classrooms did not achieve higher scores on state standardized tests than did those in self-contained special education classrooms, their report card grades demonstrated that they were improving their content knowledge as compared to their counterparts in the general education classroom without co-teachers (Murawski, 2006). Murawski hypothesized that the failure to find increased achievement on standardized tests in co-taught classes may have been the result of lack of training among professionals. Receiving the appropriate training was a common concern for teachers reported in studies that investigated teacher perceptions on a co-teaching model of service delivery (Murawski & Swanson, 2001; Wilson & Michaels, 2006; Friend & Cook, 2010).

### **Research Studies: Perceptions of a Co-Teaching Model of Instruction**

There were more articles regarding teacher perceptions on a co-teaching service delivery model than articles on student achievement outcomes in a review of the literature. Few articles, however, were research-based. Many articles reported on methods for effective co-teaching, ways to improve co-teaching instruction, and

evaluation of co-teaching. Investigations of teacher perceptions of co-teaching gathered data through surveys, interviews and observations.

Utilizing longitudinal, qualitative case studies, Mastropieri et al. (2005) evaluated efficacy and challenges associated with co-teaching practices in science and social studies classes. Observations and interviews were conducted with 10 special education and general education teachers in middle and high school. The study involved 2 teachers in a middle school class of 30 students, 6 teachers in a high school class of 22 to 25 students and 2 teachers in another high school class of 22 to 27 students. Using qualitative information, the authors identified three main elements that determine the success or failure of co-teaching instruction: content knowledge of the teachers, presence of high-stakes testing, and co-teacher compatibility. The researchers reported that if both teachers had strong content knowledge, there was equal representation in the classroom. Otherwise, the special education teacher's role was more reflective of an instructional assistant. In classrooms where high-stakes testing was required and instructional guidelines included calendars or timelines for teaching standards, instruction was fast-paced and adaptations/modifications were frequently negated or completed outside of the general education classroom. Finally, with regards to co-teacher compatibility, the researchers reported that volunteerism, respect, planning time, and administrative support impacted the co-teaching relationship. A substantial number of factors, both within and outside of the province of the co-teachers, are required to be in place to make co-teaching successful (Mastropieri et al. 2005).

Students in secondary schools (127 students with disabilities and 219 students without disabilities) were surveyed by Wilson and Michaels (2006), regarding their perceptions of co-teaching. The students reported that they favored co-teaching, would participate in another co-taught class if given the opportunity, and received better grades in co-taught classes when compared with other classes. The students reported that more help was available in the co-taught class and different teaching approaches were used. Students also reported that a co-teaching model allowed for more skill development, which could lead to improved achievement on state mandated standardized tests (Wilson & Michaels, 2006).

Twenty-four school districts were surveyed by Nichols, et al. (2010) to determine their utilization of a co-teaching model and the amount of preparation that district instructional and leadership personnel had prior to its initiation. Eight of the twenty-four districts had less than 1000 students. Eight districts had between 1000 to 2000 students. Eight districts had more than 2000 students. The authors reported that 21 out of 24 schools initiated co-teaching service delivery models without appropriate training or staff development for special or general education teachers or campus administrators. In addition to the influence of high-stakes testing and reduced planning time, staff training was reported as another requirement to successful implementation of a co-teach model of student instruction.

Nichols, et al (2010) concluded, based on their data from the school districts surveyed; that there was support for the premise that co-teaching is being initiated primarily for compliance with federal mandates and less for quality instruction for

students with disabilities and their non-disabled peers. Co-teaching can help schools comply with federal provisions by arranging for teachers with content expertise to jointly plan and deliver instruction with special educators to ensure the success of all students (Conderman, 2011). Adding strategy components to co-taught classrooms may be one way to systematically improve student outcomes in co-taught settings. (Conderman & Hedin, 2014).

### **Research Studies: Teacher Perception and Student Achievement in Co-Teaching Model of Instruction**

In a meta-synthesis of 32 qualitative research reports between 1995 and 2005, on kindergarten through high school co-teaching models, Scruggs, et al. (2007) reported studies that included 454 co-teachers, 42 administrators, 142 students, and 26 parents from the United States, Canada and Australia. Teachers reported more cooperation among their students in co-taught classes and that students with and without disabilities benefited from the co-teaching model. This synthesis by Scruggs et al. (2007) on qualitative co-teaching research provided information on teacher roles, relationships, and perceptions. The authors documented that co-teachers generally reported their practices were beneficial to students, but the educators indicated that co-teaching should only be voluntary, not an assignment forced on educators who do not want to participate. They reported that successful co-teaching teams were able to share information during planning time and had strong administrative support. Teacher satisfaction was high with supportive administrators.

Scruggs, et al. (2007) also documented that teachers reported how high-stakes testing had a negative impact on the co-teaching experience, because the state assessments directed how content was covered, how co-teachers collaborated, the pace of instruction, and the amount of specialized instruction for students with learning needs. The expectation to cover the content that appeared on state mandated assessments pressured teachers to move through material quickly. Speed of instruction reduced the amount of modifications, accommodations and specialized instruction that occurred in the general education classroom (Scruggs, et al. 2007). Twenty-five of the thirty-two synthesized studies indicated that special education teachers reported their role transitioned to that of an assistant.

Surveys, observations, and record reviews were performed by Hang and Rabren (2009). They investigated 31 general education and 14 special education teachers and 58 special education students, elementary through high school, who participated in co-teaching classrooms. Results demonstrated that high school students with disabilities who had been co-taught for one year had significantly higher scores in reading and math on the Scholastic Aptitude Test (SAT) than did students in special education who did not participate in a co-teaching classroom. The comparison of standardized test scores was only one component of their investigation. In comparing the outcomes on report cards of elementary and secondary students with special needs, Hang and Rabren (2009) found that these students scored higher in reading and math classes when instructed in a co-teaching model.

Hang and Rabren's (2009) investigation results from standard scores on the SAT and report card grades suggest that the academic achievements of co-taught students with disabilities matched those of students in general education. Co-teaching as an instructional approach can provide students with disabilities adequate support for their achievements on state-mandated standardized tests and/or college readiness exams (Hang & Rabren, 2009). In addition, the authors reported that teachers and students interviewed agreed with statements that students with disabilities increased their self-confidence, learned more, had sufficient support, and exhibited positive behaviors in co-taught classrooms. This study also supports data from Murawski & Swanson (2001) and Wilson & Michaels (2006). Positive student attitudes in co-taught classrooms may impact student achievement outcomes.

### **Summary**

The requirements that all students are instructed by highly qualified, content certified teachers, that schools demonstrate adequate yearly progress with all student groups, including students with disabilities; and that schools use research-based strategies that differentiate content, instruction, and assessments all support the use of the co-teaching service delivery model that provides special education supports and instruction in general education classrooms (Villa, et al. 2005). The literature reviewed included information on the early stages of co-teaching models, studies on achievement outcomes of students who participated in a co-teaching service delivery model, and studies on teacher perceptions of a co-teaching service delivery model. Investigations varied on achievement data, which included report cards grades, state

mandated assessments, college readiness tests, and pre-post content tests. Improved student achievement was indicated in the literature. The studies reviewed also included qualitative data on student and teacher perceptions of a co-teaching service delivery model. The teachers reported positive attributes as well as limitations to a co-teaching model of instruction.

## CHAPTER III

### RESEARCH METHODOLOGY

#### **Purpose of the Study and Research Questions**

The purpose of this study was to investigate the outcomes of students in a co-teaching classroom by examining their performance on state-mandated assessments in language arts and mathematics. The perceptions of teachers involved in the implementation of co-teaching models of instruction were also investigated. Current law requires the use of strategies that allow for the successful integration of students with disabilities into the least restrictive environment and accountability for student performance on standardized assessment (Pub. L. No. 108-466) and (Pub. L. No. 107–110). Co-teaching models may represent a potentially valuable approach to access the general education curriculum and increase student achievement. This study is important because co-teaching is considered a viable service delivery model in special education for meeting the needs of students in the general education classroom. Students, educators, and administrators can benefit from evidence-based information relating to the co-teaching model of service delivery as it relates to student achievement on state standardized assessments.

Specific research questions for this study include the following:

1. Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in Reading from assessment prior to and following full implementation of co-



- teaching strategies for students receiving special education services in Grades 3 through 8?
2. Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in Mathematics from assessment prior to and following full implementation of co-teaching strategies for students receiving special education services in Grades 3 through 8?
  3. Is there a significant relationship between perceptions of teachers involved in co-teaching and STAAR scaled scores obtained during the implementation of a co-teaching model, by students receiving special education services in Grades 3 through 8?

### **Participants**

Participants included 82 third through eighth grade students with disabilities who received special education services in a co-teaching classroom. Students met the eligibility criteria for special education services as outlined by the Texas Education Agency. Research participants also included 17 elementary and 13 secondary teachers in Grades 3 through 8, who taught a math and/or language arts class and were included in the co-teaching service delivery model continuum. Teachers and students were located on seven campuses from an independent public school district in a suburb of a large, southern metropolitan area. The district educates 7900 students, with 2.1% identified as economically disadvantaged, 9.8% identified as at-risk, and 7.9% receiving special education services. All procedures for this study were approved by the Institutional

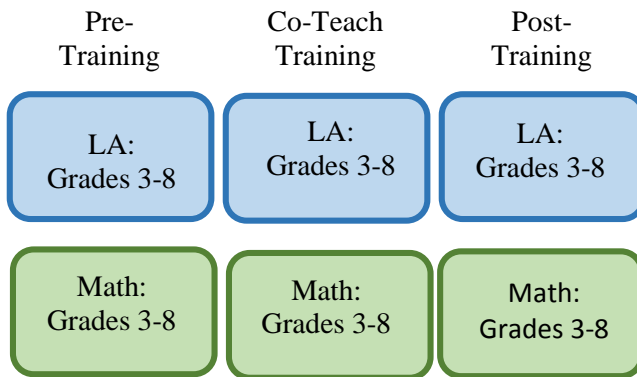
Review Board of Texas Woman's University. Consent for utilization of performance data and teacher participation was provided by the school district participating in the study.

The district was involved in a Co-Teaching Training Initiative begun in 2012-13. Prior to training, inclusive programming was in place with a combination of co-teaching and instructional assistants in the general education classroom. Grant funding was obtained for the first year of teacher training on the co-teaching service delivery model. Training included one and two-day workshops for co-teaching teams, reference materials provided to campuses, and information provided to administrators through leadership meetings. Training continued through the 2013-2014 school year, with classroom observations and follow-up meetings between the co-teaching consultant and classroom teachers. Training focused on the six approaches to co-teaching instruction as outlined by Friend and Cook (2010).

The global design of this study resembled the following chart. Scaled scores on standardized assessments (STAAR) in the areas of reading and math were analyzed prior to training on the co-teaching model, during training on the co-teaching model, and post training on the co-teaching model of instruction.

Table 1

*Global Design of the Study.*



A more definitive model of student levels and the achievement data collected over time (pre-training, during training and post training) during implementation of the co-teaching service delivery model continuum is presented below.

Table 2.

*Model of Student Levels and Achievement Data Collected.*

	Pre-Training (2011-2012)	Co-Teach Training (2012-2013)	Post-Training (2013-2014)
Language Arts Achievement			
Elementary Schools	Grade 3 <i>STARR</i> Grade 4 <i>STAAR</i>	Grade 4 <i>STAAR</i> Grade 5 <i>STAAR</i>	Grade 5 <i>STAAR</i> Grade 6 <i>STAAR</i>
Elementary/Secondary Schools	Grade 5 <i>STAAR</i> Grade 6 <i>STAAR</i>	Grade 6 <i>STAAR</i> Grade 7 <i>STAAR</i>	Grade 7 <i>STAAR</i> Grade 8 <i>STAAR</i>
Mathematics Achievement			
Elementary Schools	Grade 3 <i>STARR</i> Grade 4 <i>STAAR</i>	Grade 4 <i>STAAR</i> Grade 5 <i>STAAR</i>	Grade 5 <i>STAAR</i> Grade 6 <i>STAAR</i>
Elementary/Secondary Schools	Grade 5 <i>STAAR</i> Grade 6 <i>STAAR</i>	Grade 6 <i>STAAR</i> Grade 7 <i>STAAR</i>	Grade 7 <i>STAAR</i> Grade 8 <i>STAAR</i>

Students were grouped by grade level across years of training, which resulted in scaled scores from four student groups being analyzed. Two groups were elementary grade levels and two groups were mixed elementary and secondary grade levels.

## **Data Collection Procedures**

State of Texas Assessments of Academic Readiness (STAAR) results in Reading and Math (2012-2014), for the students identified in the study were reviewed and analyzed. Performance data were collected from the district's data management system and did not require direct contact with students. Information obtained from the data management system included type of test taken and scaled score. Performance data were collected, logged, and analyzed using a six-digit number so that confidentiality was maintained. For the purpose of this study, only the scaled scores were utilized for analysis. Achievement scores were divided into four groups, with each group having scores pre-training, during training, and post-training. Students not participating in all three years of state assessment for a particular group were eliminated from the study.

Survey research involves collecting data to answer questions about people's opinions or perceptions on a given topic (Gay, Mills, & Airasian, 2012). Survey questions were drafted and then reviewed for content, relevance, and clarity by the dissertation committee, five general and special education teachers, and a district assistant superintendent. The survey content was considered valid by those who reviewed it. Three survey questions addressed setting and grade level of the teacher. Survey respondents were asked six questions related to years of service and amount and/or type of training in the area of co-teaching. Three questions inquired about co-teaching models used during service delivery. Finally, respondents were asked eight questions to learn their opinions and perceptions on co-teaching instruction.

PsychData was the survey tool selected for distribution and data collection from the survey. PsychData is an online survey tool designed for research in psychology and social sciences. The survey contained a description of the research study, as well as affirmation of anonymity and consent. Surveys were sent to 51 educators using PsychData, and they were given a two week window to complete the survey. A second notice was sent after that deadline and additional surveys were returned for a total of 30 surveys collected (N=30). This resulted in a return rate of 58.8%.

Teachers took approximately 20 minutes to read about the study and take the survey. No identifiable data was collected from teachers and surveys were anonymous. Performance and survey data were stored on a drive that was kept in a locked file cabinet. The data drive was deleted when all analyses were completed. All participants were provided access to summary information when the study was complete.

Performance data (STAAR scaled scores) were obtained from the district's student data management system. Scores were recorded on a laptop computer and transferred to a zip drive. Excel and SPSS Statistics 22.0 were downloaded to the laptop for statistical analysis of both performance and survey data. At the conclusion of the study, the zip drive was re-formatted to permanently erase the original data.

### **Research Design**

This investigation was a cross-sectional survey research design of teacher perceptions on co-teaching and a correlational study of achievement scores over time. Cross-sectional survey research design is used to collect data from selected individuals at a single point in time to gather information on behaviors, attitudes and

beliefs in a given population (Gay, et al. 2012). Correlational research design involves collecting data to determine whether and/or to what degree a relationship exists between variables. “Correlational studies typically investigate a number of variables believed to be related to a major, complex variable, such as achievement (Gay, Mills, & Airasian, 2012) (p. 205).

The focus of the study was to examine if a significant relationship existed between student performances on statewide standardized assessment and the perceptions of teachers involved in a co-teaching model of service delivery. Student achievement data were collected at three points over time: prior to co-teaching training of teachers, at the end of the first year of co-teaching training, and at the end of the second year of co-teaching implementation. Teacher survey data was collected during the third year of co-teaching implementation.

Performance scores were obtained from STAAR Math and Reading tests and organized by pre-training, training, and post-training years; and paired scores were correlated for each of the grade levels specified in the definitive design of the study (elementary grades 3-6, and secondary grades 7-8). The grade levels correspond to those used in the school district for alignment purposes. The data were used to compare achievement scores from pre-co-teaching instruction, to the end of the first year of training on co-teaching instructional strategies and early implementation of the service delivery model, and then to the second year of implementation with follow up training. Achievement test scores were then compared to teacher perception information gained from the survey.

## Statistical Choices

Descriptive statistics were used to analyze the data. Nominal and ordinal data from the survey were analyzed using nonparametric measures. Univariate and bivariate statistics were used to describe, compare and determine patterns of relationships among survey questions related to teacher perceptions on co-teaching, as well as on performance data from standardized tests. Cross-tabulation and correlational analysis were used to understand the degree of association between variables. Cross-tabulation is the most common measure of association between variables (Alreck & Settle, 2004). Cross-tabulation and correlational analysis was performed on survey items as well as on student achievement scaled scores. Chi-square statistics were used to determine significance of the associations within data groups. Pearson's product-moment correlation (coefficient  $r$ ) was used to analyze STAAR scaled scores. "The single most common type of correlation is the Pearson product-moment correlation coefficient, which measures the degree of relationship between two continuous variables (Coolidge, 2013, p. 184).

## CHAPTER IV

### RESULTS

#### **Overview of the Study**

Current law requires the use of strategies that allow for the successful integration of students with disabilities into the general population and accountability for student performance on standardized assessments (Pub. L. No. 108-466) and (Pub. L. No. 107-110). The purpose of this study was to investigate the achievement outcomes of students with disabilities in a co-teaching classroom by examining their performance on state-mandated assessments in reading and mathematics. The perceptions of teachers involved in the implementation of co-teaching models of instruction were also investigated through the use of a survey research tool.

Participants included 82 elementary and secondary students with disabilities (third through eighth grade) who received special education services in a co-teaching classroom and took the State of Texas Assessments of Academic Readiness (STAAR) in reading and/or mathematics. Students met the eligibility criteria for special education services as outlined by the Texas Education Agency. Research participants also included 17 elementary and 13 secondary teachers in grades three through eight, who taught a math and/or language arts class and were included in the co-teaching service delivery model continuum. Of the 30 teachers included in the investigation, 17 were general education teachers and 13 were special education teachers, in both elementary and secondary classroom settings. In addition, 19 of the respondents were math teachers and 11 were



language arts (reading) teachers. Table 3 identifies the breakdown of teachers by setting and content area taught.

Table 3

*Total Number of Teachers by Setting and Content Area of STAAR Test.*

	Number of Teachers	Percent of Teachers
Elementary Math	14	46.7
Elementary Reading	3	10
Secondary Math	5	16.7
Secondary Reading	8	26.7
Total	30	100

Special and general education teachers and students with disabilities who participated in the co-teaching classroom were located on nine campuses from an independent public school district in a suburb of a large, southern metropolitan area. Seven of the campuses were elementary schools and two of the campuses were secondary schools.

This study utilized a cross sectional design that analyzed the perceptions of training provided for co-teaching instruction, as well as perceptions on experiences in co-teaching. A correlational study design was used to determine associations and distinctions between student performances on statewide standardized assessments as well as between teacher perceptions. Data was collected at three points over time: prior to co-teaching training of teachers, at the end of the first year of co-teaching training, and at the

end of the second year of co-teaching implementation. Teacher demographics were collected in a survey and included educator setting, certification, experience, and amount/type of training on co-teaching strategies. Teacher perceptions of aspects of the co-teaching training and aspects of the delivery of co-teaching strategies were also surveyed.

Performance data were obtained from scaled scores on STAAR Math and Reading tests, organized by pre-training, training and post-training years, and paired scores were correlated for each of the grade levels specified in the definitive design of the study (Group One, Group two, Group Three and Group Four). The data were used to compare achievement scores from pre-co-teaching status, to the end of the first year of implementation, and then to the second year of implementation, with additional training implemented throughout the year. Nonparametric measures were used to analyze the changes in scaled scores on the STAAR tests in Reading and Mathematics from 2012 to 2013 and 2013 to 2014. Achievement test scores were then compared to teacher perception information gained from the survey. Cross-tabulation and correlational analysis were used to determine if a statistical significance existed between perceptions of teachers, separated out by content and educational setting, and achievement scores, which were also aggregated by content and educational setting.

### **Research Question One**

The first research question asked the following: Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in Reading from assessment prior to and following full implementation of co-

teaching strategies for students receiving special education services in Grades 3 through 8?

Data interpretation and presentation are in Tables 4-14. Statistical Package for the Social Sciences (SPSS) 22.0 software was used for statistical analysis of quantitative performance data. Table 4 represents the descriptive statistics for the STAAR scaled scores analyzed. Table 5 represents Group One students through their third, fourth and fifth grade performance scores on the STAAR Reading test. Table 6 represents Group Two students through their fourth, fifth and sixth grade performance scores on the STAAR Reading test. Table 7 represents Group Three students through their fifth, sixth and seventh grade performance scores on the STAAR Reading test. Table 8 represents Group Four students through their sixth, seventh and eighth grade performance scores on the STAAR Reading test. Figure 1 demonstrates the increase in STAAR scores from 2012 to 2013 and 2013 to 2014.

Table 4

*Descriptive Statistics for STAAR Reading Performance Data – Scaled Scores.*

Descriptive Statistics				
	Group	Mean	Std. Deviation	N
ScaleScore2012r	1.00	1400.50	74.532	4
Scale Score2012r	2.00	1507.05	102.544	20
	3.00	.00	.000	18
	4.00	1568.00	91.482	25
	Total	1118.55	688.926	67
ScaleScore2013r	1.00	1545.00	51.042	4
Scale Score2013r	2.00	1527.90	106.342	20
	3.00	1590.06	101.211	18
	4.00	1626.76	93.676	25
	Total	1582.51	104.641	67
ScaleScore2014r	1.00	1536.50	98.781	4
Scale Score2014r	2.00	1564.90	94.090	20
	3.00	1646.89	69.522	18
	4.00	1691.24	107.562	25
	Total	1632.37	108.402	67

Group 1.00 – Student group (Pre-training/Training/Post-training test administrations)

Group 2.00 – Student group (Pre-training/Training/Post-training test administrations)

Group 3.00 – Student group (Pre-training/Training/Post-training test administrations)

Group 4.00 – Student group (Pre-training/Training/Post-training test administrations)

Table 4 shows the mean and the standard deviation in scaled scores on STAAR Reading tests for Group 1 students, Group 2 students, Group 3 students, and Group 4 students. It also shows the number of students included in each student group. Student scaled scores were only included in the study if the student took all three years of test administration.

Table 5

*Group One Reading Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Reading Test 2012 (Pre-training)</b>	1247	1484	1400.5	4
<b>STAAR Reading Test 2013 (Training)</b>	1346	1633	1545	4
<b>STAAR Reading Test 2014 (Post-training)</b>	1409	1667	1536.5	4

There was a 10.3% increase in scaled scores from 2012 to 2013 on the STAAR Reading Test. There was a .5% decrease in scaled scores from 2013 to 2014 on the STAAR Reading test. Overall, from 2012 to 2014, there was a 9.7% increase in scaled scores on the STAAR Reading test.

Table 6

*Group Two Reading Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Reading Test 2012 (Pre-training)</b>	1314	1664	1507	20
<b>STAAR Reading Test 2013(Training)</b>	1337	1749	1527	20
<b>STAAR Reading Test 2014 (Post-training)</b>	1369	1704	1564	20

There was a 1.3% increase in scaled scores from 2012 to 2013 on the STAAR Reading Test. There was a 2.4% increase in scaled scores from 2013 to 2014 on the STAAR Reading test. Overall, from 2012 to 2014, there was a 3.8% increase in scaled scores on the STAAR Reading test.

Table 7

*Group Three Reading Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Reading Test 2012 (Pre-training)</b>	*	*	*	18
<b>STAAR Reading Test 2013(Training)</b>	1389	1749	1590	18
<b>STAAR Reading Test 2014 (Post-training)</b>	1472	1729	1647	18

\*Scaled scores not reported for this administration because passing standards were not set until January 2013.

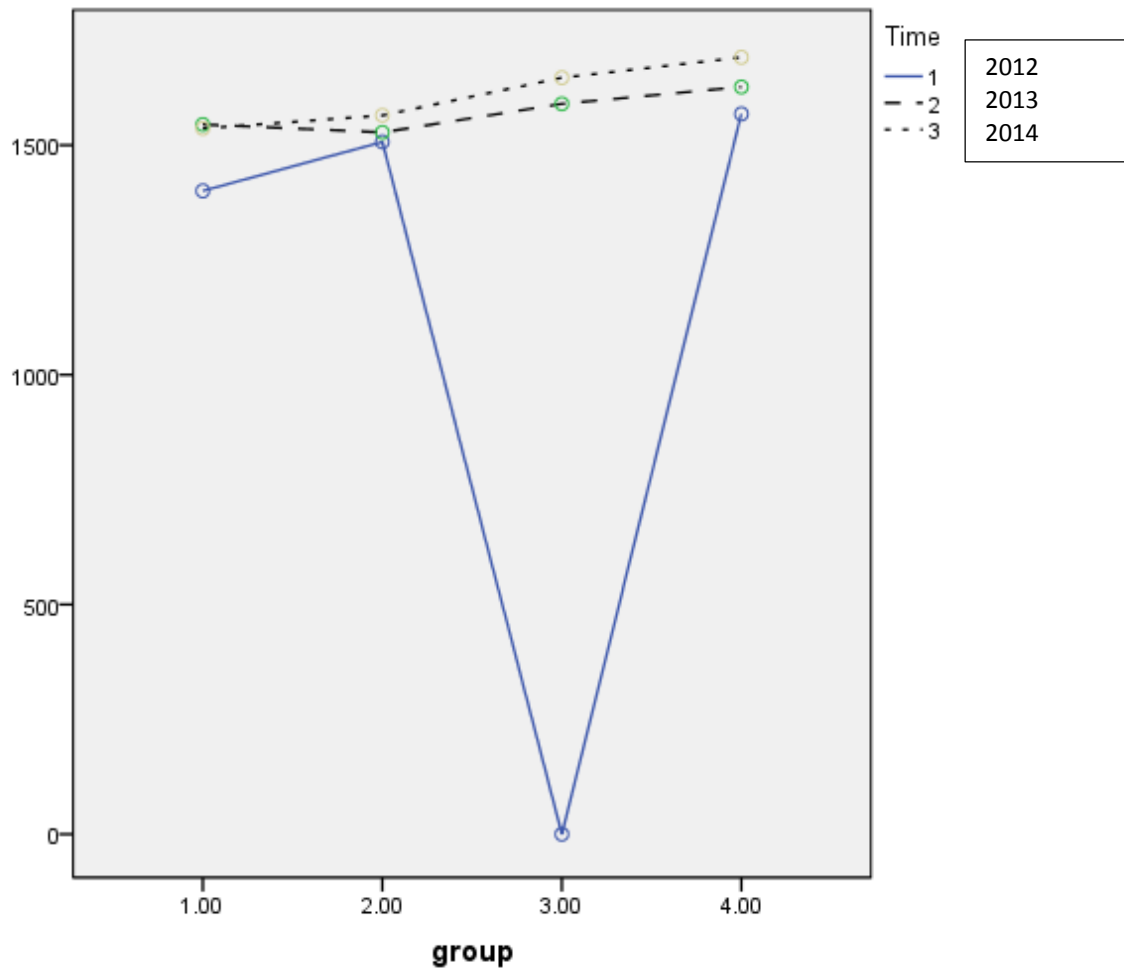
There was a 3.6% increase in scores from 2013 to 2014 on the STAAR Reading test.

Table 8

*Group Four Reading Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Reading Test 2012 (Pre-training)</b>	1387	1808	1568	26
<b>STAAR Reading Test 2013(Training)</b>	1402	1869	1627	30
<b>STAAR Reading Test 2014 (Post-training)</b>	1492	1956	1691	33

There is a 3.8% increase in scaled scores from 2012 to 2013. There is a 3.9% increase in scaled scores from 2013 to 2014 on STAAR Reading test. Overall, from 2012 to 2014, there was a 7.8% increase in scaled scores on the STAAR Reading test.



*Figure 1: Reading Across Years Between Groups.*

[Note: No data available for Group 3 during 2012. Scaled scores not reported for this administration because passing standards were not set until January 2013.]

## **Research Question Two**

The second research question asked the following: Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in Mathematics from assessment prior to and following full implementation of co-teaching strategies for students receiving special education services in Grades 3 through 8?

Data interpretation and presentation are in Tables 5 -8. Table 9 represents the descriptive statistics for the STAAR scaled scores analyzed. Table 10 represents Group One students through their third-, fourth- and fifth-grade performance scores on the STAAR Math test. Table 11 represents Group Two students through their fourth-, fifth- and sixth-grade performance scores on the STAAR Math test. Table 12 represents group three students through their fifth-, sixth- and seventh-grade performance scores on the STAAR Math test. Table 13 represents group four students through their sixth-, seventh- and eighth-grade performance scores on the STAAR Math test. Figure 2 demonstrates the increase in STAAR scores from 2012 to 2013 and 2013 to 2014.



Table 9

*Descriptive Statistics for STAAR Math Performance Data – Scaled Scores.*

Descriptive Statistics				
	group	Mean	Std. Deviation	N
ScaleScore2012m	1.00	1420.26	101.254	19
Scale Score2012m	2.00	1552.11	107.448	19
	3.00	.00	.000	19
	4.00	1611.62	96.289	21
	Total	1157.94	670.677	78
ScaleScore2013m	1.00	1521.74	100.567	19
Scale Score2013m	2.00	1557.68	101.337	19
	3.00	1602.53	135.630	19
	4.00	1635.10	82.693	21
	Total	1580.69	112.935	78
ScaleScore2014m	1.00	1567.11	67.174	19
Scale Score2014m	2.00	1627.00	95.348	19
	3.00	1636.21	119.446	19
	4.00	1724.24	92.025	21
	Total	1640.83	109.571	78

Group 1.00 – Student group (Pre-training/Training/Post-training test administrations)

Group 2.00 – Student group (Pre-training/Training/Post-training test administrations)

Group 3.00 – Student group (Pre-training/Training/Post-training test administrations)

Group 4.00 – Student group (Pre-training/Training/Post-training test administrations)

Table 9 shows the mean and the standard deviation in scaled scores on STAAR Math tests for Group One students, Group Two students, Group Three students and Group Four students. The table also shows the number of students included in each student group. Student scaled scores were only included in the study if the student took all three years of test administration.

Table 10

*Group One Math Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Math Test 2012 (Pre-training)</b>	1229	1667	1420	19
<b>STAAR Math Test 2013 (Training)</b>	1252	1710	1522	19
<b>STAAR Math Test 2014 (Post-training)</b>	1411	1800	1567	19

There was a 7.1% increase in scaled scores from 2012 to 2013 on the STAAR Math test. There was a 3.0% increase in scaled scores from 2013 to 2014 on the STAAR Math test. Overall, from 2012 to 2014, there was a 10.4% increase in scaled scores on the STAAR Math test.

Table 11

*Group Two Math Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Math Test 2012 (Pre-training)</b>	1377	1800	1552	21
<b>STAAR Math Test 2013 (Training)</b>	1377	1764	1557	20
<b>STAAR Math Test 2014 (Post-training)</b>	1488	1787	1627	20

There was a .3% increase in scaled scores from 2012 to 2013 on the STAAR Math test. There was a 4.5% increase in scaled scores from 2013 to 2014 on the STAAR

Math test. Overall, from 2012 to 2014, there was a 4.8% increase in scaled scores on the STAAR Math test.

Table 12

*Group Three Math Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Math Test 2012 (Pre-training)</b>	*	*	*	19
<b>STAAR Math Test 2013 (Training)</b>	1413	1926	1602.5	19
<b>STAAR Math Test 2014 (Post-training)</b>	1453	1968	1636	19

\* Scaled scores not reported for this administration because passing standards were not set until January 2013.

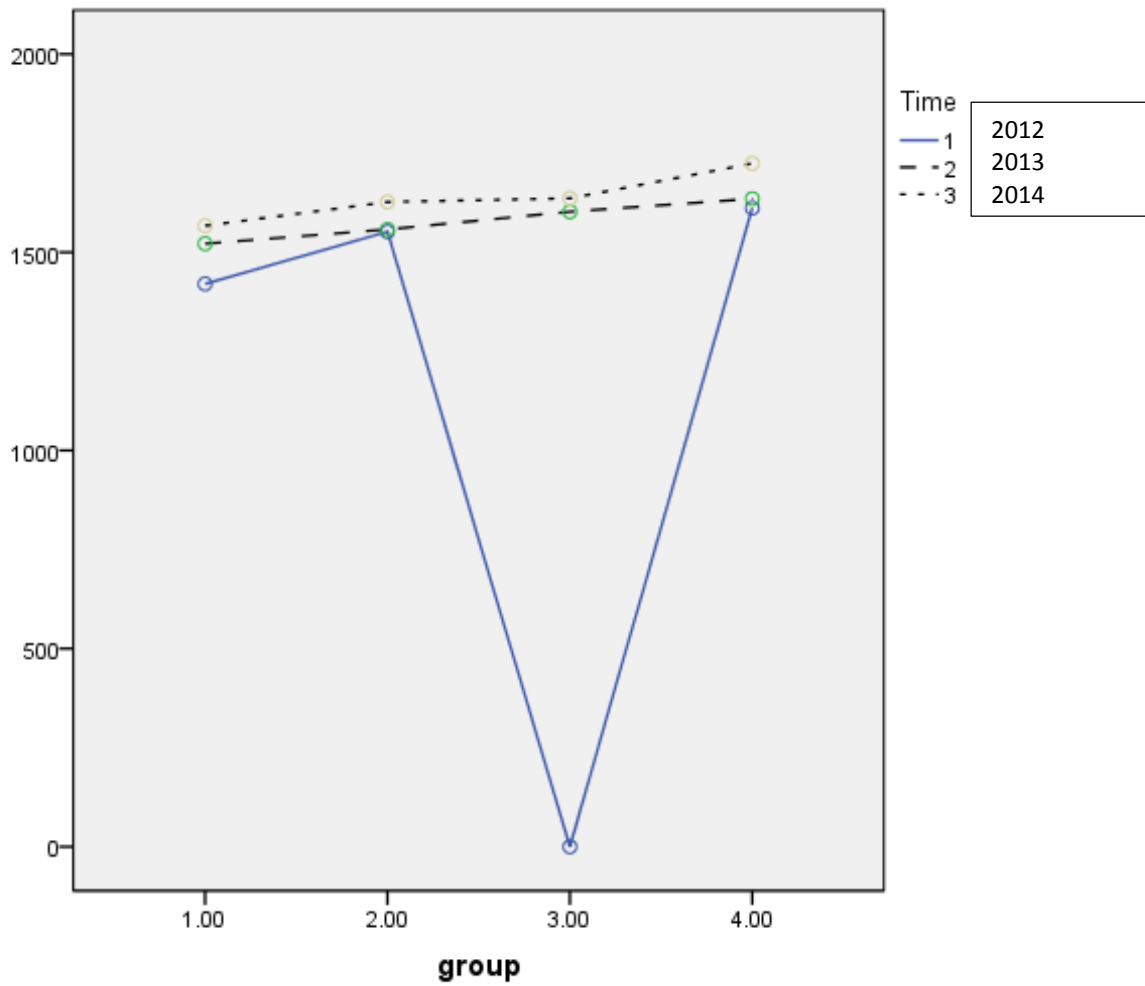
There was a 2.1% increase in scaled scores from 2013 to 2014 on STAAR Math test.

Table 13

*Group Four Math Scaled Scores.*

	<b>Low scaled score</b>	<b>High scaled score</b>	<b>Mean scaled score</b>	<b>N</b>
<b>STAAR Math Test 2012 (Pre-training)</b>	1406	2008	1611	21
<b>STAAR Math Test 2013 (Training)</b>	1460	1863	1635	21
<b>STAAR Math Test 2014 (Post-training)</b>	1544	2095	1724	21

There was a 1.5% increase in scaled scores from 2012 to 2013 on the STAAR Math test. There was a 5.4% increase in scaled scores from 2013 to 2014 on the STAAR Math test. Overall, from 2012 to 2014, there was a 7.0% increase in scaled scores on the STAAR Math test.



*Figure 2: Math Across Years Between Groups.*

Note: No data available for group 3 during 2012. Scaled scores not reported for this administration because passing standards were not set until January 2013.

Table 14

*Correlational Analysis of STAAR Reading and Math Scaled Scores Across Test Years.*

		Correlations					
		Scale Score2012m Scale Score2012m	Scale Score2013m Scale Score2013m	Scale Score2014m Scale Score2014m	Scale Score2012r Scale Score2012r	Scale Score2013r Scale Score2013r	Scale Score2014r Scale Score2014r
ScaleScore2012m Scale Score2012m	Pearson Correlation	1	.012	.097	.991**	-.026	-.101
	Sig. (1-tailed)		.458	.190	.000	.409	.187
	N	89	83	84	68	83	79
ScaleScore2013m Scale Score2013m	Pearson Correlation	.012	1	.802**	.019	.654**	.491**
	Sig. (1-tailed)	.458		.000	.441	.000	.000
	N	83	95	86	66	90	84
ScaleScore2014m Scale Score2014m	Pearson Correlation	.097	.802**	1	.193	.623**	.565**
	Sig. (1-tailed)	.190	.000		.059	.000	.000
	N	84	86	101	67	86	93
ScaleScore2012r Scale Score2012r	Pearson Correlation	.991**	.019	.193	1	.071	-.004
	Sig. (1-tailed)	.000	.441	.059		.280	.487
	N	68	66	67	72	69	68
ScaleScore2013r Scale Score2013r	Pearson Correlation	-.026	.654**	.623**	.071	1	.748**
	Sig. (1-tailed)	.409	.000	.000	.280		.000
	N	83	90	86	69	95	88
ScaleScore2014r Scale Score2014r	Pearson Correlation	-.101	.491**	.565**	-.004	.748**	1
	Sig. (1-tailed)	.187	.000	.000	.487	.000	
	N	79	84	93	68	88	98

\*\* . Correlation is significant at the 0.01 level (1-tailed).

Table 14 demonstrates the strong correlations between STAAR scaled scores in Reading and Math for several test administrations. Pearson correlation between 2012 Reading and 2012 Math scaled scores is  $r=.991$ : that correlation is significant at  $p<.0005$ . Pearson correlation between 2013 Reading and 2013 Math scaled scores is  $r=.654$ ; that correlation is significant at  $p<.0005$ . Pearson correlation between 2014 Reading and 2014 Math scaled scores is  $r=.565$ : that correlation is significant at  $p<.0005$ .

Strong correlations are also noted between and within STAAR scaled scores in Reading and Math for several test administrations. Pearson correlation between 2013 Math and 2014 Math scaled scores is  $r=.802$ ; that correlation is significant at  $p<.0005$ .

Pearson correlation between 2013 Reading and 2014 Reading scaled scores is  $r=.748$  and that correlation is significant at  $p<.0005$ .

### Research Question Three

The third research question asked the following: Is there a significant relationship between perceptions of teachers involved in co-teaching and STAAR scaled scores obtained during the implementation of a co-teaching model, by students receiving special education services in Grades 3 through 8?

Table 15

*Demographic Information from Teacher Participants.*

	<b>N</b>	<b>Percentage</b>
Elementary teacher	17	56.7%
Secondary teacher	13	43.3%
General education teacher	17	56.7%
Special education teacher	13	43.3%
Math teacher	12	46.7%
Language arts teacher	8	26.7%
Math and language arts teacher	8	26.7%
Number of years' experience in education 0-5	3	10%
Number of years' experience in education 6-10	8	26.7%
Number of years' experience in education 11-15	6	20%
Number of years' experience in education 16-20	5	16.7%
Number of years' experience in education 20+	8	26.7%
Number of years in a co-teaching service delivery model 0-2	20	66.7%
Number of years in a co-teaching service delivery model 3-5	5	16.7%
Number of years in a co-teaching service delivery model 6-10	4	13.3%
Number of years in a co-teaching service delivery model 10+	1	3.3%
Number of years working with current co-teaching partner 0-2	23	76.7%
Number of years working with current co-teaching partner 3-5	6	20%
Number of years working with current co-teaching partner 6-10	1	3.3%
Number of hours training on co-teaching strategies 0-6	8	26.7%
Number of hours training on co-teaching strategies 6-12	10	33.3%
Number of hours training on co-teaching strategies 13-18	5	16.7%
Number of hours training on co-teaching strategies 19-24	1	3.3%
Number of hours training on co-teaching strategies 25+	6	20%

N=Number

Table 15 shows the breakdown of demographic data collected from the teachers in the survey. The first seven questions of the survey inquired about type of teacher, years of experience, and years of participation in co-teaching. The majority of teachers (26.7% respectively) had either 6-10 years' experience or over 20 years' teaching experience. Most teachers (66.7%) had less than two years' experience in a co-teaching service delivery model, with similar numbers reported (76.7%) for the number of years with the current co-teaching partner. Most teachers (33.3%) had 6-12 hours of training, followed closely by those teachers that had less than six hours of training.

Table 16

*Teacher Perception Data.*

	<b>Strongly Agree</b>		<b>Agree</b>		<b>Neutral</b>		<b>Disagree</b>		<b>Strongly Disagree</b>	
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>
Training prepared me to work with students in a co-teaching model	8	26.7	13	43.3	5	16.7	3	10	1	3.3
Amount of training has been adequate to meet student needs	4	13.3	14	46.7	4	13.3	5	16.7	3	10
Additional training is needed to meet student needs.	10	30	14	46.7	3	10	3	10	0	0
Planning time is important to co-teaching success	28	93.3	2	6.7	0	0	0	0	0	0
Teacher relationships are important to co-teaching success	28	93.3	2	6.7	0	0	0	0	0	0
Students were prepared for state tests because of participation in a co-teaching model	7	23.3	16	53.3	5	16.7	2	6.7	0	0



Table 16 shows the respondents' perceptions regarding co-teaching. There were six questions on the survey that investigated perceptions on training, planning, partnering, and student preparedness. The majority of teachers agreed (43.3%) that the training provided by the district prepared them to work in a co-teaching model of service delivery. Most teachers (46.7%) agreed that the amount of training was adequate in order for them to meet student needs. In addition, most teachers (46.7%) agreed that they felt like additional training was still needed.

Regarding what is important to the success of a co-teaching model, the majority of teachers (93.3%) strongly agreed that planning time is important. The majority of teachers (93.3%) also strongly agreed that the relationship between co-teachers is important. Finally, the majority of teachers (53.3%) agreed that they felt their students were prepared for the state assessments because of their participation in a co-teaching model of instruction.

### **Positive Comments from Teacher Survey**

Question 18 on the survey asked teachers to report the positive aspects of a co-teaching service delivery model for students. Commonalities among positive teacher perceptions of a co-teaching service delivery model included: the opportunity to reteach curriculum and provide individual instruction to students within the general education setting; inclusion of students benefits students socially and academically; and exposure to the general education curriculum that will be tested on state assessments.

The theme of opportunity to reteach curriculum and provide individual instruction to

students within the general education setting was documented in the following comments:

“Students who need more re-teach of material are able to get that in the gen ed setting.”

“Allows for smaller group reteach; lower teacher to student ratios; varied learning strategies.”

“This allows for more individualized instruction as well as more people to effectively solve problems.”

“Smaller teacher/student ratio. Students could receive more small group and one-on-one.”

“Gives teacher time to work one-on-one and students see the lesson in more than one way.”

“Students with disabilities are exposed to a more enriched classroom.”

“Greater access to general education curriculum and more connected with peer group.”

“The inclusion allows for full access to the curriculum and allows full social participation.”

“Students had the benefit of two instructors to help meet their needs.”

The theme of inclusion of students with disabilities receiving services in special education benefits all students socially and academically was seen in the following comments:

“Helps student learn to adapt to regular classroom model in spite of disability.”

“Students were comfortable in our class and not afraid to ask questions or speak up. Felt included.”

“Special students social skills increased when they were with their peers.”

“Benefits from exposure to different teaching styles and least restrictive environment for sped.”

The theme of students being exposed to the general education curriculum that will be tested on state assessments:

“Student experience two approaches to learning – access to general education curriculum.”

“Exposure to curriculum and standards on the STAAR test.”

“Greater access to general education curriculum and more connected with peer group.”

### **Limitations from Teacher Survey**

Question 20 on the survey asked teachers to discuss the limitations of a co-teaching service delivery model for students. Common themes among teacher perceptions of the limitations included: time to plan and meet to discuss student needs,

role of the teacher, relationships among co-teachers, and student needs. A sample of comments are listed below:

The theme of time for planning and meeting are needed:

“TIME. There is not enough time to truly plan appropriately.”

“Less individualized instruction for really low students, planning, relationship with co-teacher.”

“Planning time to modify the curriculum and meeting time to talk.”

The theme that co-teaching involves a sharing of roles in the classroom:

“At times, personalities and teaching styles may clash. It is most definitely a partnership.”

“Both teachers need to be equally involved in the planning and delivery.”

“Making sure both teachers are on the same page.”

The theme that relationships are important among co-teachers:

“If teachers do not have a great relationship and there is limited time to plan and prepare.”

“The greatest limitation is working with a co-teacher that doesn’t share the same goals.”

The theme that student needs must be addressed:

“Students with high distractibility, severe attention or emotional problems need 1 on 1.”

”Pacing is quick. Students can become frustrated.”

“Students are aware of their limitations what may cause them to shut down.”

“The fast pace of the curriculum did not allow enough time for reinforcement of newly taught skills.”

Table 17 shows the SPSS cross tabulation of teacher groups with the survey question “Additional training was needed to meet the needs of students in the co-teaching service delivery model of instruction.” Of all survey questions related to perceptions, this survey item had statistical significance.

Table 17

*Cross-tabulation Analysis of Teacher Level and Setting by Perception of Additional Training Needed.*

Additional training was needed to meet the needs of students in the co-teaching service delivery model of instruction		Teacher Group				Total
		1.00 Elementary Math	2.00 Elementary Reading	3.00 Secondary Math	4.00 Secondary Reading	
1.00 Strongly Agree	Count	3	0	1	0	4
	% within teacher group	21.4%	.0%	20.0%	.0%	13.3%
2.00 Agree	Count	9	1	1	3	14
	% within teacher group	64.3%	33.3%	20.0%	37.5%	46.7%
3.00 Neutral	Count	0	2	0	2	4
	% within teacher group	.0%	66.7%	.0%	25.0%	13.3%
4.00 Disagree	Count	2	0	1	2	5
	% within teacher group	14.3%	.0%	20.0%	25.0%	16.7%
5.00 Strongly Disagree	Count	0	0	2	1	3
	% within teacher group	.0%	.0%	40.0%	12.5%	10.0%
Total	Count	14	3	5	8	30
	% within teacher group	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square analysis of teacher groups and the perception of additional training needed demonstrated a significant relationship with a Chi-square value of 21.19 and  $p=.048$ . Forty-seven percent of teachers agreed that additional training was needed, with elementary math teachers agreeing at a greater rate than the other teacher groups.

Secondary teachers strongly disagreed that additional training was needed; with secondary math teachers agreeing at a greater rate than the other teacher groups.

A final set of teacher perception questions involved ranking the models of co-teaching instruction most frequently used in the classroom. For the ranking, the six models of co-teaching instruction identified by Friend and Cook (1995) were used. Table 18 outlines the results.

Table 18

*Teacher Perception on Models of Co-Teaching Most Frequently Used.*

<b>Co-Teaching Model</b>	<b>Number of Teachers Who Use Model</b>	<b>Percent of Teachers Who Use Model</b>
One teach/One observe	1	3.3%
Station Teaching	1	3.3%
Parallel Teaching	4	13.3%
Alternate Teaching	6	20%
Team Teaching	1	3.3%
One teach/One assist	17	56.7%

Teachers reported using all co-teaching models. The models used less frequently included one teach/one observe (3.3%), station teaching (3.3%), and team teaching (3.3%). Parallel teaching (13.3%) and alternate teaching (20%) were used about the same in co-teaching classrooms. The most frequently used model of co-teaching was one teach-one assist (56.7%). Another survey item on teacher perceptions regarding co-teaching models of instruction asked “Please rank each of the following co-teaching

instruction models in terms of effectiveness for students.” Table 19 describes those results.

Table 19

*Teacher Perceptions on Models of Co-Teaching Most Effective for Student Learning.*

<b>Co-Teaching Model</b>	<b>Number of Teachers</b>	<b>Percent of Teachers</b>
One teach/One observe	0	0%
Station Teaching	6	20%
Parallel Teaching	7	23.3%
Alternate Teaching	5	16.7%
Team Teaching	6	20%
One teach/One assist	6	20%

In terms of effectiveness for students learning in the co-teaching classroom, teachers were mixed on their perceptions of which co-teaching model of instruction was most effective. No teachers viewed one teach/one observe as an effective model for students. Alternate teaching was ranked effective by 16.7% of teachers in the survey. There was consistency among teacher perceptions that station teaching (20%), team teaching (20%) and one teach/one assist (20%) were effective models of instruction for student learning. Most teachers (23.3%) ranked parallel teaching as the most effective co-teaching model of instruction for students.



## **Summary of Findings**

The purpose of this study was to investigate the achievement of students in a co-teaching classroom by examining their performance on state-mandated assessments in language arts and mathematics. Performance data was divided up into four groups of students. Scaled scores on the STAAR Test of Reading and the STAAR Test of Math from each of the four groups were analyzed from pre-training, training, and post-training years (2012 – 2014). Scaled score increases were demonstrated with all four data groups on both STAAR Reading and STAAR Math tests.

The perceptions of teachers involved in the implementation of co-teaching models of instruction were also investigated. Teachers participated in a survey that gathered demographic data, training data, and teacher perceptions regarding a co-teaching service delivery model. Survey data was analyzed by educational setting and content area taught. Most of the teachers surveyed ranked one teach/one assist as the primary model of co-teaching instruction used in their classrooms. However, there was a distribution of teacher perceptions about the most effective model of co-teaching instruction used in the classroom, with most teachers ranking parallel teaching as the most effective model of co-teaching instruction. The majority of teachers surveyed agreed that training prepared them for a co-teaching model of instruction and that their students were prepared for state mandated assessments but that additional training was still needed. Correlational analysis did not yield a statistical significance for STAAR score increases or for a relationship between STAAR scores and teacher perceptions.

## CHAPTER V

### DISCUSSION

#### **Overview of the Study**

Current law requires the use of strategies that allow for the successful integration of students with disabilities into the general education classroom and accountability for student performance on standardized assessment (Pub. L. No. 108-466) and (Pub. L. No. 107-110). The literature suggests that co-teaching strategies may represent a potentially valuable approach to access the general education curriculum and increase student achievement (Murawski & Swanson, 2001; Rea, et al. 2002; Idol, 2006 and Scrugs, et al; 2007). School districts are required to have students with mild and moderate disabilities take state tests in a manner comparable to that of their non-disabled peers. Schools interpret this to mean that they are now required to teach students with disabilities the same content as their non-disabled peers and provide access to the general education curriculum. Using proficiency tests to measure the success of co-teaching is a frightening proposition to consider (Murawski & Dieker, 2004).

The purpose of this study was to investigate the outcomes of students in co-teaching classrooms by examining their performance on state-mandated assessments in language arts and mathematics. The perceptions of teachers involved in the implementation of co-teaching models of instruction were also investigated. The district in the study initiated a co-teaching initiative in 2012. Prior to that time, students in

special education were educated in the general education classroom with a paraprofessional or a special education teacher. Students with more intellectual or emotional/behavioral needs were educated in a self-contained or resource setting. Training for special and general educators on the co-teaching models of instruction occurred over the course of two years.

Rea and Connell (2005) provide evidence-based guidelines for administrators wishing to initiate co-teaching instruction on their campuses by emphasizing that success be defined by the achievement of both special and general education students. Collaborative teaching structures that are well-planned, skillfully implemented, and meticulously and objectively evaluated hold the potential for addressing the demands for greater accountability (Rea and Connell, 2005).

Villa, Thousand, Nevin & Liston (2005) conducted a review of research on collaborative teaching which confirmed that there is less power in co-teaching without training and planning for implementation of the different models of co-teach instruction. Twenty-four school districts were surveyed by Nichols, et al. (2010) to determine their utilization of a co-teaching model and the amount of preparation that district instructional and leadership personnel had prior to its initiation. In addition to the influence of high stakes testing and reduced planning time, staff training was another requirement to successful implementation of a co-teach model of student instruction.

### **Research Question One**

The first research question asked: Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in

Reading from assessment prior to and following full implementation of co-teaching strategies for students receiving special education services in Grades 3 through 8?

Statistical analysis did not show a significant difference in scaled scores, per student group, over the course of three administrations of STAAR Reading tests.

However, all four groups of students demonstrated an increase from the 2012 STAAR Reading test to the 2014 STAAR Reading test. Students in Group One demonstrated a 9.7% increase in scaled scores on the STAAR Reading test. Group Two demonstrated a 3.8% increase in scaled scores from 2012 to 2014. There was a 3.6% increase in scores from 2013 to 2014 on the STAAR Reading test for Group Three. Students in Group Four showed a 7.8% increase in scaled scores on the STAAR Reading test from 2012-2014.

Strong correlations were noted between STAAR scaled scores in Reading and Math for all test administrations. There was a significant relationship between the scaled scores in both Reading and Math in 2012, 2013, and 2014. Students who scored well in one content area test tended to score well on the other content area test.

Strong correlations were also noted within STAAR scaled scores in Reading for two test administrations. Pearson correlation between 2013 Reading and 2014 Reading scaled scores is  $r=.748$ ; that correlation is significant at  $p<.0005$ . When relationships are strong between variables in a correlational analysis, predictions can be made about the variables (Coolidge, 2013). Students who scored well in reading one year were likely to score well in reading the following year.

Co-teaching as an instructional approach can provide students with disabilities adequate support for their achievements on state-mandated standardized tests and/or

college readiness exams (Hang & Rabren, 2009). In addition, these authors reported that teachers and students interviewed agreed with statements that students with disabilities increased their self-confidence, learned more, had sufficient support, and exhibited positive behaviors in co-taught classrooms. This study also supports data from Murawski & Swanson (2001) and Wilson & Michaels (2006). Positive student attitudes in co-taught classrooms may impact student achievement outcomes.

Murawski and Swanson (2001), in their meta-analysis of co-teaching, investigated achievement outcomes for students educated in a co-teaching classroom. Dependent measures evaluated in five of the six studies included academic achievement in reading and math and course grades. The analysis demonstrated an increase in reading scores, improved grades, improved scores on competency tests and increased math achievement scores. The authors proposed, based on evidence in six studies, that co-teaching had a positive effect on student achievement.

### **Research Question Two**

The second research question asked: Are there significant differences in scaled scores obtained on the State of Texas Assessment of Academic Readiness (STAAR) in Mathematics from assessment prior to and following full implementation of co-teaching strategies for students receiving special education services in Grades 3 through 8?

Similar to the results in Research Question One, there was not statistical significance in the increase in scaled scores per student group over the three-year time frame on the STAAR Math test. For Group One students, there was a 10.4% increase in scaled scores on the STAAR Math test. Overall, from 2012 to 2014, there was a 4.8%

increase in scaled scores on the STAAR Math test for Group Two students. There was a 2.1% increase in scaled scores for Group Three students from 2013 to 2014. Group Four students demonstrated a 7.0% increase in scaled scores on the STAAR Math test between 2012 and 2014.

Strong correlations were noted between STAAR scaled scores in Reading and Math for several test administrations, as noted with research question one (Table 14). Students who scored well on reading also scored well on math. Strong correlations were also noted within STAAR scaled scores in Math for two test administrations. Pearson correlation between 2013 Math and 2014 Math scaled scores is  $r=.802$  and that correlation is significant at  $p<.0005$ . Students who scored well in math one year were likely to score well in math the following year.

Hang and Rabren (2009) studied student achievement in a co-teaching setting by investigating results from standard scores on the college readiness tests and report card grades. In this study, the academic achievements of co-taught students with disabilities matched students in general education. Therefore, co-teaching as an instructional approach may provide students with disabilities adequate support for their achievements on state mandated standardized tests and/or college readiness exams (Hang & Rabren, 2009).

### **Research Question Three**

The third research question asked: Is there a significant relationship between perceptions of teachers involved in co-teaching and STAAR scaled scores obtained

during the implementation of a co-teaching model, by students receiving special education services in Grades 3 through 8?

STAAR scaled scores, obtained from the student groups during the three years of implementation of a co-teaching service delivery model, demonstrated improvement from each student group on both the STAAR Reading and STAAR Math tests. Although the survey results provided rich data about the perceptions of general, special, elementary and secondary education teachers regarding a co-teaching service delivery model, only one survey item was statistically significant. Question 15 reported teacher perceptions on the question of whether additional training was needed. Responses were included in a Likert scale – strongly agree, agree, neutral, disagree, and strongly disagree. Teachers agreed (46.7%) that additional training was needed. Of interest, elementary math teachers felt additional training was needed, but elementary math scaled scores were high.

There was a 58% return rate on the teacher survey. Teachers responses included general and special education, elementary and secondary education, and both math and reading content areas. The majority of teachers had more than six years of teaching experience and had participated in 6-12 hours of training on the co-teaching service delivery model.

The majority of teachers (43.3%) agreed that the training provided by the district prepared them to work in a co-teaching model of service delivery. Training included lecture format and class time, observations with feedback and follow-up meetings, and provision of resources and materials. Although most teachers (46.7%) agreed that the

amount of training was adequate in order for them to meet student needs in a co-teaching classroom, a large group of teachers (46.7%) agreed that they felt like additional training was still needed.

Regarding what is important to the success of a co-teaching model, the majority of teachers (93.3%) strongly agreed that planning time is important. The majority of teachers (53.3%) agreed that they felt their students were prepared for the state assessments because of their participation in a co-teaching model of instruction. Finally, with regards to co-teacher compatibility, the literature reviewed reported that volunteerism, respect, planning time, and administrative support impacted the co-teaching relationship. A substantial number of factors, both within and outside of the province of the co-teachers, are required to be in place to make co-teaching successful (Mastropieri et al. 2005).

Open-ended questions at the end of the survey asked teachers to expand on their perceptions of the positive aspects of a co-teaching service delivery model and the limitations of a co-teaching service delivery model. Commonalities among positive teacher perceptions of a co-teaching service delivery model included: the opportunity to reteach curriculum and provide individual instruction to students within the general education setting; inclusion of students benefits students socially and academically; and access to the general education curriculum that will be tested on state assessments. More positive perceptions were also associated with administrative support, additional planning time, similar beliefs about teaching, and mutual respect for one another (Mastropieri, et al. 2005).



Co-teachers share unique responsibilities through co-planning, co-instructing, and co-assessing to provide evidence-based and value-added instructional practices and to differentiate instruction (Conderman & Hedin, 2012). Students benefit when teachers work together and have the tools they need to work collaboratively in the co-teach classroom.

The majority of teachers (93.3%) strongly agreed that the relationship between co-teachers is important. Mutual respect and a positive relationship between the co-teachers is a key component that impacts the success or failure of the inclusion of students with disabilities. Co-teachers frequently report personal compatibility as the most critical variable for co-teaching success and attribute weak teacher collaboration skills as the reason for its failure (Scruggs, et al. 2007). Voluntary participants tended to report more positive perceptions than did teachers who were assigned to co-teaching. Friend and Cook (1995) also reported that voluntariness on the part of the teachers was critical just as it is in all other forms of collaboration.

Common themes among teacher perceptions of the limitations included time to plan and meet to discuss student needs. A frequent concern of co-teachers is finding opportunities to plan. Administrators need to recognize the importance of shared planning time and provide ways for that planning time to occur for co-teachers (Cook & Friend, 1995). Teacher satisfaction with co-teaching instruction impacts student achievement and performance on high-stakes testing. The amount of planning time set aside for co-teachers to address curriculum, assessment, modifications, and instructional strategies is critical to the success of a co-teaching service delivery model.

Additional limitations listed involved the roles of each of the co-teachers and the relationship between co-teachers. Simmons and Magiera (2007), as part of an independent evaluation of a district's co-teaching program, utilized a teacher survey that questioned planning and decision making. Twenty co-teachers, through observations and the teacher survey, reported the results of the question how teachers become more collaborative in the classroom (Simmons & Magiera, 2007). The following attributes emerged, indicating that teachers were "truly" co-teaching: personal and professional compatibility among the teaching pairs; equity of the teaching roles for both teachers; and more active individualized student instruction. The authors reported, through their independent evaluation process, solutions to some of the barriers to co-teaching; 1. School district leaders should always provide training for co-teachers as a pair; 2. As long as co-teachers continue to be an effective team, keep the pairs together; 3. Co-teachers should be provided with regularly scheduled common planning time during the week. 4. Co-teaching pairs should be established based on their interest in a co-taught partnership (Simmons and Magiera, 2007).

Idol (2006) discovered common concerns expressed by special educators in a co-teaching classroom, including feeling like an instructional assistant, not having much input in curricular planning, not being able to effectively modify or individualize instruction for students in the general education class, and not knowing how to successfully interact with the general education teacher during class time.

The results of this study also reported that teachers need to be trained in how to co-teach effectively and efficiently. The ultimate goal for any service delivery model is to benefit students (Idol, 2006).

A final limitation that was mentioned by teachers was the pacing of instruction and keeping up with instructional timing guidelines. High stakes testing has complicated the practice of co-teaching because teachers increasingly are being pushed to teach more information faster and better to ensure everyone can pass some level of standardized testing (Murawski & Dieker, 2004). Mastropieri et al. (2005) used case studies and observations to evaluate co-teaching practices. In classrooms where high stakes testing was required, instructional guidelines included calendars or timelines for teaching standards. In these classrooms, instruction was fast-paced and adaptations/modifications were frequently negated or completed outside of the general education classroom.

Teachers reported that high-stakes testing had a negative impact on the co-teaching experience, because high-stakes testing directed how content was covered, how co-teachers collaborated, the pace of instruction, and the amount of specialized instruction for student with learning needs. The requirement to cover the content that appeared on state-mandated assessments pressured teachers to move through material quickly. Speed of instruction reduced the amount of modifications, accommodations, and specialized instruction that occurred in the general education classroom. Twenty-five of the thirty-two synthesized studies indicated that special education teachers reported their role transitioned to that of an assistant (Scruggs, et al. 2007).

A final concept of student achievement in co-teaching investigated in teacher

perception survey questions involved the use of co-teaching models in the classroom. When in a co-taught environment, it is theoretically possible that while the general educator is ensuring the lessons are content-driven and standards-based, the special educator is ensuring that explicit and direct instruction are infused into the lesson where appropriate by using approaches such as alternative teaching or station teaching as described by Cook and Friend (1995).

Although teachers reported using all co-teaching models, the most frequently used model of co-teaching was one teach/one assist (56.7%). Alternate teaching (20%) and parallel teaching (13.3%) were the next most frequently used models in co-teaching classrooms. Effectiveness of the models for students learning in the co-teaching classroom was also investigated. Teachers were mixed on their perceptions of which co-teaching model of instruction was most effective. No teachers viewed one teach/one observe as an effective model for students. Alternate teaching was ranked effective by 16.7% of teachers in the survey. There was consistency among teacher perceptions that station teaching (20%), team teaching (20%) and one teach/one assist (20%) were effective models of instruction for student learning. Most teachers (23.3%) ranked parallel teaching as the most effective co-teaching model of instruction for students. There was discrepancy among teachers between current practices in the classroom and what they perceive to be the most effective method of educating students in the co-teaching classroom. This could be indicative of their perceptions that additional training is needed in the area of co-teaching instruction as it relates to student achievement.

### **Limitations of the Study**

This study has limitations. The data for this study were gathered from teachers and students located throughout seven campuses in an independent public school district of a suburb in a large, southern metropolitan area. The district educates 7900 students, with 2.1% identified as economically disadvantaged, 9.8% identified as at-risk, and 7.9% receiving special education services. One limitation of this study was the lack of diversity within the district. The district has a 90% pass rate on STAAR tests consistently over the past four years. Since district standards are high, it may be difficult to determine associations between improved standardized tests scaled scores and training on the co-teacher service delivery model.

An additional limitation of the study is the lack of performance data on STAAR Reading and Math tests for Group Three during the 2012 administration. New curriculum was introduced through the Texas Essential Knowledge and Skills (TEKS), and passing standards were not assigned to scaled scores at the time of test score reporting in 2012. Although an increase in scaled scores was documented from 2013 – 2014, consistent data across all of the students groups would have provided a more comprehensive study.

Scaled scores from students in special education who participated in a co-teaching service delivery models were the only scores analyzed. Scaled scores were not compared to students in general education or to students who received special education services in a resource or small group instructional setting. In addition, scaled scores were reviewed for math and reading tests only. Students in fourth grade and seventh grade take the

STAAR Writing test. Students in fifth and eighth grade take the STAAR Science test. Students in eighth grade also take the STAAR Social Studies test. Other content scaled scores were not analyzed in this study.

### **Implications for Future Research**

There is a need for additional empirical evidence on the impact of co-teaching on student performance. The requirements that all students are instructed by highly qualified, content-certified teachers; that schools demonstrate adequate yearly progress with all student groups, including students with disabilities; and that schools use research-based strategies that differentiate content, instruction, and assessments all support the use of the co-teaching service delivery model that provides special education supports and instruction in the general education classroom (Villa, et al. 2005).

Educational reform will continue to change the way we educate students with disabilities. Efficacy studies on the co-teaching model of service delivery will need to continue. Future studies could investigate additional content areas. This study, as well as others detailed in the literature review, investigated primarily math and language arts achievement outcomes. Although there were several studies reviewed that investigated teacher perspectives, only a few sought student opinions and perspectives regarding their experiences in a co-teaching service delivery model. Student perceptions could impact future models used in a co-teaching classroom and subsequently impact achievement outcomes.

## **Conclusion**

Results from this study concluded that student achievement outcomes improved on state standardized assessments in reading and math in the three years during the implementation of a co-teaching service delivery model. It was inconclusive as to whether those increases were due to a co-teaching model of instruction, students having access to the general education curriculum, or district standards. Teacher perceptions were favorable for the training and implementation of a co-teaching model of service delivery. Although there were some teacher perceptions that focused on the limitations of a co-teaching model of service delivery, most perceptions expressed positive thoughts regarding this service delivery model.

Co-teaching can help schools comply with legal guidelines by partnering teachers with content expertise to plan and deliver instruction with special educators to ensure the success of all students. Such efforts may increase academic outcomes for all students while ensuring that students with disabilities receive necessary accommodations and modifications (Murawski & Dieker, 2004). This study is important because co-teaching is considered a viable service delivery model in special education for meeting the needs of students in the general education classroom. Students, educators, and administrators benefit from evidence-based information relating to the co-teaching model of service delivery as it relates to student achievement on state standardized assessments.

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## Appendix A

### Consent to Participate in Survey

## **Appendix A**

May, 2015

Dear Colleagues:

The No Child Left Behind Act of 2001 requires that all students with disabilities have access to the general education curriculum and be included in a teacher's accountability for achievement outcomes. Carroll ISD has dedicated a substantial amount of time and resources to support our students with special needs in the general education setting. As a special education teacher and speech-language pathologist, I have been working with students in their least restrictive environment for over 25 years. As I continue my studies in the doctoral program, I ask your participation in my research on student achievement in a co-teach service delivery model in special education.

The purpose of this research is to examine the relationships of co-teaching strategies and achievement of special education students in grades 3 through 8. As a part of the study, I am investigating the relationship of teacher perceptions of co-teaching and student achievement. I am asking that you complete this electronic survey in order to provide general facts about your participation in a co-teach model of instruction. Your perceptions of co-teaching will also provide important information.

The potential benefits of this study are to identify the types of co-teaching that are more effective in the students' performance on state-mandated tests of achievement. The potential risks of participating in the study are considered minimal. There is a potential risk of loss of confidentiality in all email, downloading, and internet transactions. It will take about 10-15 minutes to complete the survey and your responses will be automatically compiled in a spreadsheet and cannot be linked to you. All data will be stored in a password protected electronic format. The results of the study will be used for research purposes only. Participation in the study is voluntary.

By clicking on the CONTINUE button, you acknowledge that you have read this information and agree to participate in this research. You are free to withdraw your participation at any time without penalty. If you have any questions, feel free to contact me at [denise.mccrummen@southlakecarroll.edu](mailto:denise.mccrummen@southlakecarroll.edu) or by phone 817-949-5508.

Thank You!

Denise McCrummen

Appendix B  
Teacher Perception Survey

## Teacher Perception Survey

### Student Achievement in a Co-Teach Service Delivery Model in Special Education

#### Teacher Survey Questions

1. I am a:           Special education teacher      General education teacher

2. I am a(n):       Elementary teacher                      Secondary teacher

3. I work with students in:       Math                      Language Arts

4. I have been an educator for:

0-5 years      6-10 years      11-15 years      16-20 years      more than 20 years

5. I have participated in a co-teach service delivery model for:

0-2 years      3-5 years      6-10 years      more than 10 years

6. My co-teacher and I have worked together for:

0-2 years      3-5 years      6-10 years      more than 10 years

7. I have had training on the co-teach service delivery model for:

0-6 hours      7-12 hours      13-18 hours      19-24 hours      more than 24 hours

8. Please rank each of the following co-teach service delivery models for importance in your success mastering co-teaching strategies (1 = most important; 5 = least important).

	Rank
On-line training	_____
In-district training	_____
Regional service center training	_____
Self-taught training	_____
Other	_____

9. Please rank each of the following training approaches in order of effectiveness for your training in co-teaching (1 = most effective; 7 = least effective).

	Rank
Observation with feedback	_____
Lecture format with notes	_____

- Group discussion \_\_\_\_\_
- PLC format on campuses \_\_\_\_\_
- Watching videos \_\_\_\_\_
- Reading textbooks or published articles \_\_\_\_\_
- Other (please list below) \_\_\_\_\_

10. Please rank the following models of co-teaching instruction for the **frequency** used in your classroom (1 = most frequently used; 6 = least used).

- |                       | Rank  |
|-----------------------|-------|
| One Teach-One Observe | _____ |
| Station Teaching      | _____ |
| Parallel Teaching     | _____ |
| Alternative Teaching  | _____ |
| Teaming               | _____ |
| One Teach-One Assist  | _____ |

11. Please rank each of the following models of co-teaching instruction you **prefer** to use in your classroom (1 = most preferred; 6 = least preferred).

- |                       | Rank  |
|-----------------------|-------|
| One Teach-One Observe | _____ |
| Station Teaching      | _____ |
| Parallel Teaching     | _____ |
| Alternative Teaching  | _____ |
| Teaming               | _____ |
| One Teach-One Assist  | _____ |

12. Please rank each of the following co-teaching instruction models in terms of effectiveness for students (1 = most effective; 6 = least effective).

- |                       | Rank  |
|-----------------------|-------|
| One Teach-One Observe | _____ |
| Station Teaching      | _____ |
| Parallel Teaching     | _____ |
| Alternative Teaching  | _____ |
| Teaming               | _____ |
| One Teach-One Assist  | _____ |

13. Training prepared me to work with students in a co-teach service delivery model.

Strongly Agree      Agree      Neutral      Disagree      Strongly Disagree

14. The amount of training I have had is adequate for me to meet students' needs in a co-teach classroom.



Strongly Agree      Agree      Neutral      Disagree      Strongly Disagree

15. Additional training is needed to meet students' needs in a co-teach classroom.

Strongly Agree      Agree      Neutral      Disagree      Strongly Disagree

16. Planning time is important to the success of the co-teach service delivery model.

Strongly Agree      Agree      Neutral      Disagree      Strongly Disagree

17. Teacher relationships are important to the success of the co-teach service delivery model.

Strongly Agree      Agree      Neutral      Disagree      Strongly Disagree

18. My students were prepared for state standardized assessments because they participated in a co-teach service delivery model of instruction?

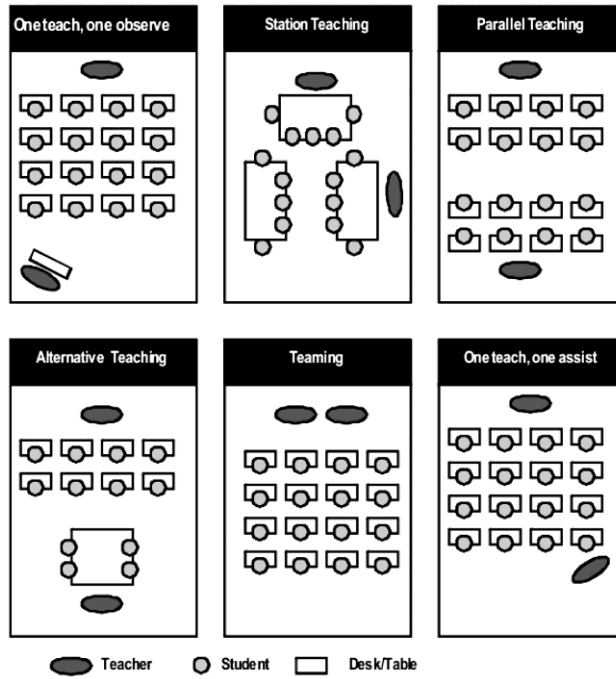
Strongly Agree      Agree      Neutral      Disagree      Strongly Disagree

19. Discuss the positive aspects of a co-teach service delivery model for students.

20. Discuss the limitations of a co-teach service delivery model for students.

## Appendix C

### Models of Co-Teaching



Friend, M. & Bursuck, W.D. (2009), *Including students with special needs: A practical guide for classroom teachers* (5th ed., p. 92). Columbus, OH: Merrill.