Perceptions of Inclusion Support Models in Elementary

Mathematics: Co-Teaching Experiences and Barriers

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"In all of your learning, get an understanding."- Ross

Abstract

Background: General and special education teachers develop mathematical thinking with students in diverse general education classrooms. Students present with a variety of academic needs and often include students with disabilities who are taught in inclusive classrooms. Conversely, special educators are tasked with supporting students with disabilities to learn mathematics. Both content-specific general education teachers and special education teachers are tasked with utilizing their expertise in both content and accommodated support to guide increasingly diverse groups of students. Given the diverse nature of America's classrooms, general education mathematics teachers and special education teachers who support students with various levels of need often work hand-in-hand to support mathematics instruction. Special and general education teachers must possess the skill sets necessary to facilitate inclusion models that can improve the performance of students with disabilities. Delivering appropriate math instruction to students with disabilities is influenced by both the perceptions of teachers of co-teaching models within math classrooms and their own experiences with co-teaching. **Purpose**: This study gathered archival data from a district survey that addressed teachers' experience in co-teaching and perceptions of barriers in co-teaching. Specifically, the study provided responses to the following two research questions (RQs). RQ1: What are the levels of experience of general education teachers, special education teachers, and math content specialists in utilizing co-teaching models? RQ2: What are the perceptions of general education teachers, special education teachers, and math content specialists of barriers to co-teaching including: planning, professional development, teacher roles and responsibilities, campus expectations, content knowledge, and beliefs about co-teaching? **Method**: This archival record study involved a sample of teachers who represented

educators from twenty-four elementary schools and six intermediate schools (N=253). A three-part electronic district survey on co-teaching gathered demographic information and teacher experiences and perceptions in co-teaching. Teachers completed the online district survey using google forms anonymously. The archival data were analyzed using SPSS to provide descriptive stats for each group of teachers and to identify any group differences using MANOVA. Outcomes were displayed using various charts and graphs. **Results/Findings**: Additionally, in addressing teachers' awareness of co-teaching, approximately 74.7% of the total teachers had read about co-teaching. However, only 14.2% of all teachers had attended co-teaching training. Key findings overall showed that teachers reported the highest usage of the station teaching model (63.2%) and lowest usage of the parallel teaching model (21%). Finally, teachers (80.6%) strongly agreed or agreed students with disabilities would benefit from co-teaching instruction and teachers (74.3%) strongly agree or agreed that co-teaching would improve their instructional practice. The results of the General Linear Model MANOVA identified an overall difference in responses by teacher groups. Follow up analyses identified significant differences in teacher responses at the item level. Math specialists and special education teachers expressed more confidence in teaching and engaging students with disabilities more than general education teachers. Also, math specialists expressed stronger confidence in their capacity to teach mathematics concepts to students with disabilities than general and special education teachers. **Conclusions**: The results indicated that teachers have a positive perception of the benefits of co-teaching in the mathematics classroom. However, a gap existed between teachers' knowledge and completed training in co-teaching models. This gap suggested a need for professional development on the

implementation of co-teaching. Future research should focus on the effectiveness of co-teaching on student achievement in mathematics and the success rate of co-teaching relationships.

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Chapter I

Introduction

Mathematics is essential for student success in the workforce. Because of the evolving job market requiring specific math skills, high school graduates must enter postsecondary education programs and the global workspace with a solid foundation in mathematics. The STEM (science, technology, engineering, and mathematics) workforce in the global economy has grown exponentially over the decades. However, the number of workers qualified to fill such STEM-related positions continues to lag (Hossain & Robinson, 2012). Consequently, the trend of requiring students to demonstrate proficiency in demanding math classes in school has increased over the years (Cavanagh, 2007). Additionally, success in employing these skills may improve their earning potential. According to Cavanagh (2007), taking advanced math classes in high school increases the likelihood of students succeeding in college and securing better paying jobs.

Consequently, the instruction necessary for student success in secondary mathematics must consist of an advanced vision and proficient conceptual teaching of the curriculum. Moreover, teachers must be flexible in adapting the instruction based on observed student thinking and processing.

Special education and math teachers are charged with building math skills in each student in the general education classrooms in today's schools. Diverse classrooms comprise students from different ethnic backgrounds and academic abilities. Special education and content-specific teachers are tasked with utilizing their expertise in both content and accommodated support to guide that diverse group of students.

Given the diverse nature of America's classrooms, general education mathematics teachers and special education teachers who support students with various levels of need often work together to support mathematics instruction. Are teachers in special education ready for the math challenge? Special education teachers must support and facilitate effective instruction in mathematics using components such as scaffolding, modeling, and direct instruction (Maccini & Gagnon, 2000). The general education teacher is tasked with providing quality first-line instruction, which includes conceptual and procedural learning. As a consequence, school districts are placing an increased emphasis on STEM education, including the hiring and retention of qualified teachers, and content training to maintain teachers' knowledge base. Increasing the content knowledge base is crucial in supporting students with disabilities to build their math capacity and combat the shortage of quality graduates from teacher education programs (Hossain & Robinson, 2012). General education teachers are commonly seen at the vanguard of teaching mathematics to students with disabilities. Additionally, because of their role in delivering academic support in the math classroom, special education teachers require math content training to pair with their expertise in specialized instruction. Consequently, both general and special education teachers must collaboratively plan to deliver scaffold lessons and accommodated assessments for all students.

Problem of Practice

When general education and special education teachers work together, co-teaching has been proposed and implemented in many of America’s classrooms in an attempt to deliver appropriate instruction and improve student outcomes. However, special and general education teachers admit that they do not possess the skill sets

necessary to facilitate co-teaching models that can improve the instructional outcomes for students with disabilities (Chitiyo, 2017). The problem of practice, how to deliver appropriate math instruction to students with disabilities, is influenced by both the perceptions of teachers of co-teaching models within math classrooms and their own experiences with co-teaching. Ideally, co-teaching is the collaborative instruction provided by both the general and special education teacher together in an instructional setting as opposed to an instructional setting populated by students who have been pulled out of class (Pancsofar & Petroff, 2013). There are six commonly accepted types of co-teaching models that involve diverse levels of collaboration and planning. Friend, Cook, Hurley-Chamberlain, and Shamberger (2010) described six approaches that a two-person team should use when co-teaching: (1) one teach, one observe teaching; (2) station teaching; (3) parallel teaching; (4) alternative teaching; (5) team teaching; and (6) one teach, one assist teaching. Teachers often utilize the one teach, one assist model, which requires the lowest amount of collaboration and planning. The most common teaching style used while co-teaching was the one teach, one assist method based on a survey from Stumpf (2015). Forty-eight percent of the teachers reported they implemented this model at least four times a week. Conversely, parallel teaching was the least often used and is generally accepted as the most collaborative co-teaching model. Thirty-nine percent of teachers reported they have never used this method according to Stumpf (2015). While they may not know or have used some of the co-teaching models, both general and special education teachers believe that utilizing models of co-teaching improved their perceptions of co-teaching models and increased their content knowledge and ability to accommodate curriculum (Austin, 2001). Moreover, because of the lower student-to-

teacher ratios in co-teaching classrooms, teachers believed that student engagement could increase (Austin, 2001).

National Context

On the national level, the specific inclusion of co-teaching models utilized within the classroom can be facilitated by two certified teachers. It does not have to be the general and special education teachers specifically. However, co-teaching models facilitated by the general and special education teacher have become an increasingly common option for educating students with disabilities to comply with the federal mandates of Individuals with Disabilities Education Improvement Act of 2004 (IDEA) (Friend & Cook, 2014). Friend et al. (2010) suggest that, because of recent federal legislation and related policy changes, co-teaching has evolved rapidly as a strategy for ensuring that students have access to the same curriculum as other students while still receiving the specialized instruction to which they are entitled. The Individuals with Disabilities Education Improvement Act of 2004 (IDEA), section 1412 (a)(5)(A) states that children who receive special education services should be taught in the least restrictive environment with peers who do not receive special education services. The disability severity provides the single reason to remove a student with a disability from the mainstream classroom (Wright & Wright, 2007). Common scenarios of the implementation of the least restrictive environment mandate, as it relates to this research topic, include students who spend part or all of their days in general education classrooms with support. In partial inclusion, students spend part of the day within the general education classroom with support from the special education teacher or a paraprofessional. As students have spent more time in the general classroom with

support, the need for inclusion training for special teachers and paraprofessionals has become more evident. According to Kloo and Zigmond (2008), co-teaching models have increased in popularity over the years after the 2002 passage of the No Child Left Behind Act. IDEA Chapter 33, Individuals with Disabilities, relates to the influence of professional development in co-teaching and math on teachers' self-confidence and desire to implement co-teaching models by requiring the federal government to support activities to improve the education of students with disabilities students by setting state expectations and requiring quality professional development.

In supporting teacher development and student success, Every Student Succeeds Act 2015 (ESSA) relates to the research topic in that all students taught at a high academic level and funding for innovations for best practice development is crucial. Classes that incorporate co-teaching as a model of instructional delivery have been shown to deliver more engaging opportunities for teachers to assess at a high-level (Tremblay, 2013). Teaching mathematics, itself, requires capacity to provide quality instruction according to state standards.

As states seek to progress in mathematics, more professional development should be considered for general and special education teachers of mathematics. Specific instructional training would build teacher capacity to provide effective instruction using specific methods and approaches such as co-teaching. Research by Maccini and Gagnon (2000) suggests that providing effective instruction benefits students with disabilities.

Teacher Development

It is a requirement that educators are provided with quality instructional trainings to benefit students with disabilities according to IDEA (2004) section 1450 (6) (Wright &

Wright, 2007). These professional development opportunities should be used to prepare teachers and reflect best practices. Also, professional development should be continuous and scientifically based to prepare and retain highly qualified teachers. Doing so will provide teachers with the skills necessary to implement co-teaching and see benefits (Chitiyo, 2017). Moreover, many special education teachers will need significant professional development on math content taught to build their capacity. IDEA (2004) section 1450 (8) states that continuous support is necessary to maintain quality programs that influence successful teaching practices (Wright & Wright, 2007).

State Context

In providing co-teaching support, both teachers must be certified professionals. In compliance with the Texas Education Agency (TEA) requirements, the special education teacher must be a fully certified special education teacher, and the general education teacher must be certified in the content area. The Texas Education Code (TEC) identifies the performance standards to be used to inform the training, appraisal, and professional development of teachers. Both co-teachers must be proficient in instructional planning and delivery, knowledge of student learning, content knowledge and expertise, learning environment, and other high-level skills expected in the most proficient teachers.

Student Services Performance Outcomes

Since the statewide accountability has shifted the focus to growth for all students, districts must monitor each child's performance for growth. Student growth counts in calculating campus ratings. Data Interaction for Texas Student Achievement developed a report displaying math results for a large district in Texas during the 2017 and 2018

school year for grades 3 through 6 (Figure 1). In the chart, student outcomes are classified into four categories according to performance on the math State of Texas Assessments of Academic Readiness (STAAR) exams: Did Not Meet Grade Level, Approaches Grade Level, Meets Grade Level, and Masters Grade Level. Schools with higher levels of students who met or mastered the STAAR assessment are rated at a higher level than those with a higher percentage of students who failed to meet or approached the desired mastery level.

In the selected district, at each grade level from third through sixth, 68% of third grade, 66% of fourth grade, 70% of fifth grade, and 70% of sixth grade students passed at Approaches Grade Level or above. Districts are analyzing how they are providing education for all students and adapting the curriculum to meet the needs of special populations. The goal is to move all students toward mastery from the approaches, met, and did not meet standards. As all students take the state assessment each year after the third grade, the expectation is that their STAAR scores improve by any percentage to show growth.

In observing STAAR math data in Texas, a trend is noted from analyzing comparisons of overall students to special education students. According to the 2017 Texas Academic Performance Report (TAPR), special education students' performance levels in the target district of this study are consistently below those of all students at the state level in Grades 3 through 6 on the STAAR math exam. The percentages of special education students in the target district at the Approaches Grade Level or above were 27% below all students at the state level in third grade, 36% below all students at the state level in fourth grade, 32% below all students at the state level in fifth grade, and 27%

below all students at the state level in sixth grade. The differences between performances suggest current instructional practices are not yielding academic success in mathematics for students who receive special education support.

Performance outcomes of the STAAR exam are labeled in four categories (Figure 1): Did Not Meet Grade Level—students did not show sufficient understanding of knowledge and skills for that grade level; Approaches Grade Level— students passed the exam by scoring at least the minimum score for the grade level and will require targeted intervention at the next grade level; Meets Grade Level—students passed the exam by scoring more than the minimum score for the grade level and may require short-term intervention for success at the next grade level; Masters Grade Level—students have passed the exam at an advanced level according to the grade-level scoring standard.

Label	Symbol	Student Result
Did Not Meet Grade Level		**DID NOT PASS** No basic understanding of course expectations is shown; a student may need significant support next year.
Approaches Grade Level		**PASSED** Some knowledge of course content but may be missing critical elements, student needs additional support.
Meets Grade Level		**PASSED** Strong knowledge of course content, student is prepared to progress to the next grade.
Masters Grade Level		**PASSED** Mastery of the course knowledge and skills is shown; student is on track for college and/or career.

Figure 1. STAAR Performance Labels: Did Not Meet Grade Level, Approaches Grade Level, Meets Grade Level, and Masters Grade Level.
Note: From Assessment and Accountability, Boerne ISD. Boerneisd.net/Page/5558.

The performance level percentages on the 2017 STAAR Mathematics Assessments in Grades 3 to Grades 6 across the state of Texas are reported from Data

Interactions for Texas Student Assessments (Figure 2). The first bar in each grade level represents the percentage of students who did not Meet Grade Level standards. The second bar in each grade level represents the percentage of students who performed at the Approaches Grade Level. The Approaches Grade Level percentage includes student percentages from the next two bars. Thus, Did not Meet Grade Level and Approaches Grade Level bars add to 100%. For example, 32% of students in Grade 3 did not meet standards, while 68% of students in Grade 3 performed at Approaches Grade Level. Thirty-four percent of students performed at Approaches Grade Level and Meets Grade Level. Eighteen percent of students performed at Approaches Grade Level, Meets Grade Level, and Masters Grade Level. The third bar in each grade level represents the percentage of students who performed at the Meets Grade Level. The Meets Grade Level bars includes percentages of students in the last bar. The last bar in each grade level represents the percentage of students who performed at the Masters Grade Level.

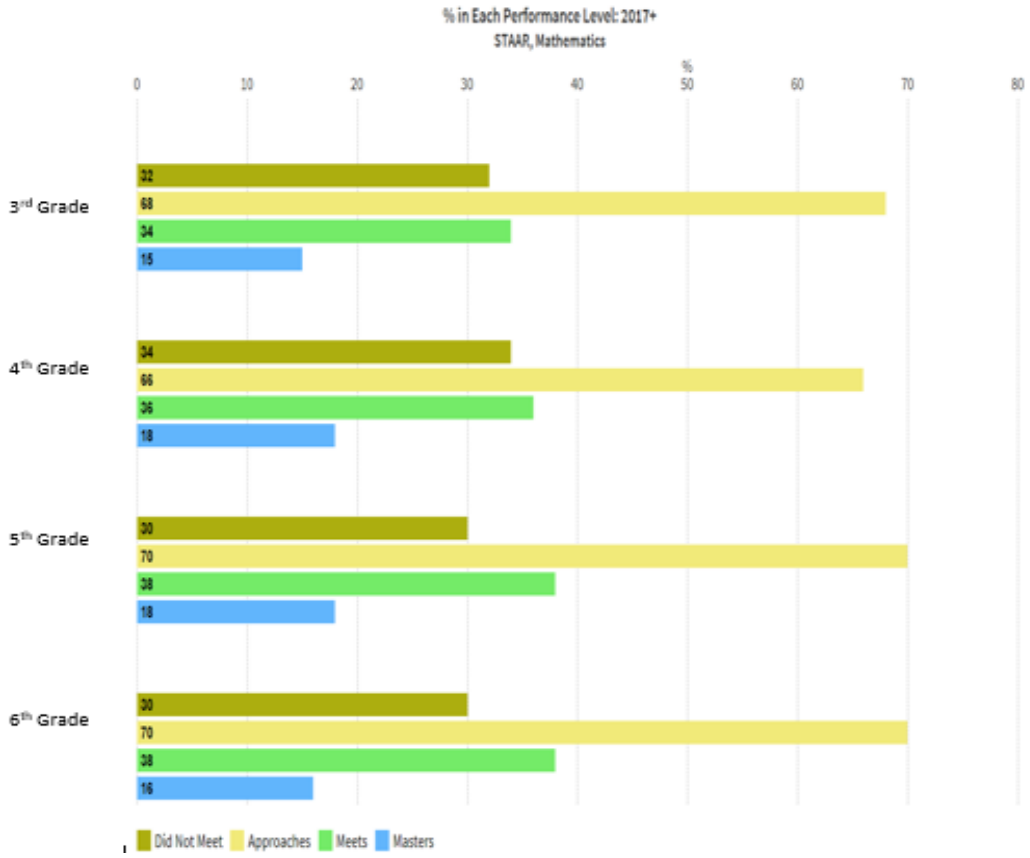

Figure 2. Graph of percentage performance at did not meet grade level, approaches grade level, meets grade level, and master grade level. The approaches grade level bars include those scoring in that level and the next two levels. 2017-2018 STAAR, Mathematics. *Note:* From *Data Interaction for Texas Student Assessments*.

The overall percentage of students with disabilities passing across the state, region 4, and target district level hovered slightly above 50% (Figure 3). The percentage of general education students passing ranged from 68% to 78%. This disparity implies a gap in the quality of instruction between general education students and students with disabilities. According to the 2016-2017 TAPR, the percentages of students with disabilities at the state, regional, and target district levels performing at the Approaches Grade Level was significantly lower than the percentages for general education students at each level for Third grade. Despite the target district overall student passing performance being 68%, only 51% of the students with disabilities demonstrated math

proficiency, passing at Approaches Grade Level or above. Other comparisons display similar trends in special education performance compared with the performance of all students.

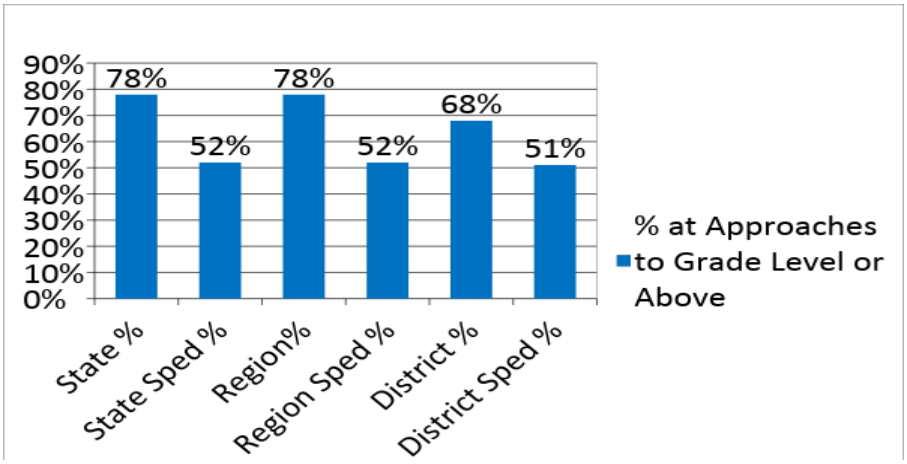

Figure 3. Grade 3 across the state, region 4, and target district State of Texas Assessments of Academic Readiness (STAAR) math performance by percentage performing at Approaches Grade Level or above. *Note*. Data from 2016–17 Texas Academic Performance Report

The percentage of students with disabilities passing the fifth-grade STAAR exam in mathematics across the state, region 4, and target district level ranged from 55% to 63% (Figure 4). The percentage of general education students passing ranged from 76% to 87%. Only 55% of students with disabilities in the target district passed at the Approaches Grade Level or above standard in comparison to 76% of all students in the target district, who performed more poorly than similar students at the state and region levels. Moreover, the performance in the target district of the general and special education populations suggests a need for general and special educators to assess effectiveness of implementation of current math curriculum and district inclusion practice. The gap in percentages between general education students and students with

disabilities at the state, region, and district level displays a need for educators to review and refine inclusion practices in the classrooms.

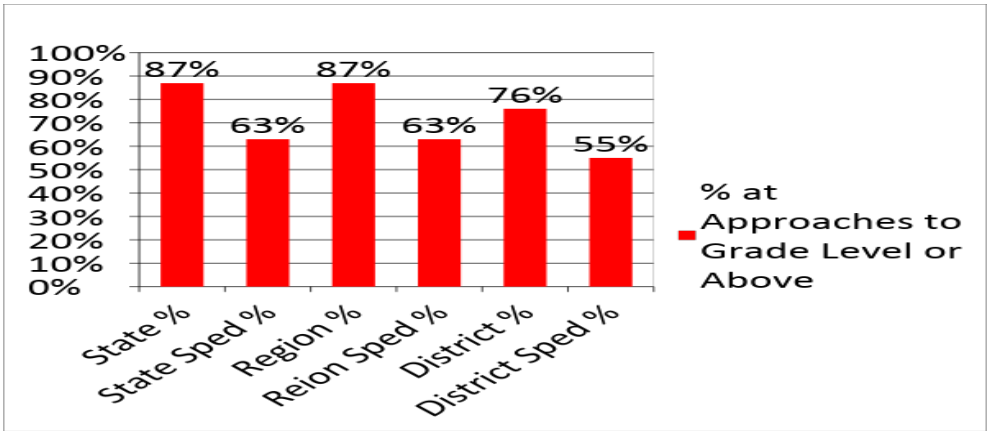

Figure 4. Grade 5 across state, region 4, and target district State of Texas Assessments of Academic Readiness math performance by the percentage performing at Approaches Grade Level or above. *Note*. Data from 2016–17 Texas Academic Performance Report

District Context

In most districts, co-teaching training is not a common professional development session. However, there are school administrators and district leaders who are beginning to recognize the need for co-teaching professional development at the campus level within a small urban district in the southwest area of Houston, Texas. Collaboration, such as co-teaching, is embraced by many educators as it is perceived to improve student performance in academics (Murawski & Lochner, 2010). As districts refine their inclusion practices, it would benefit their efforts to send teachers to specialized co-teaching training or provide campus or district level guidance that focus on specific inclusion approaches that incorporate co-teaching.

Student Services and Performance Outcome

According to the STAAR Summary Report for Grades 3 and 5 for a target, urban district in Texas, the percentage of students with disabilities in the Approaches Grade

Level, Meets Grade Level, or Masters Grade Level categories for the target district is significantly lower in comparison to overall student percentages (Figures 5 and 6). The data from the target district is presented to highlight the disparity of performance between students with and without disabilities in mathematics. In Grade 3, 36% of students with disabilities performed at or above the Approaches Grade Level category, which was significantly below the 68% of general education students who passed in the same category (Figure 5). Also performing at the two highest levels, but at percentages lower than those of general education students, were special education students, 11% of whom passed at the Meets Grade Level category (general education students, 34%) and 4% who passed at the Masters Grade Level category (general education students, 15%). Keep in mind, the 11% and 4% of students represent a portion of students with disabilities reported out of the 36% of students with disabilities who passed at Approaches Grade Level or above. So, 64% of students with disabilities failed the exam as they did not meet grade-level standards.

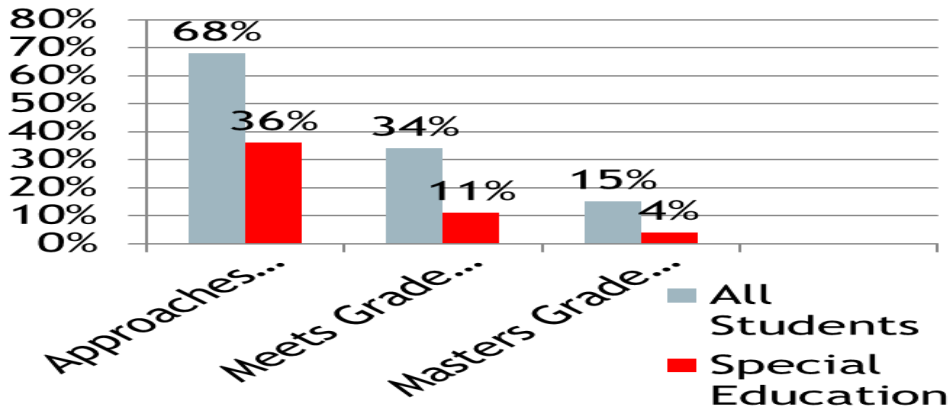

Figure 5. Grade 3 Target District All Students vs. Sped Performance at Approaches Grade Level, Meets Grade Level, and Masters Grade Level. *Note*. Data from 2016–17 Texas Academic Performance Report

In Grade 5, 38% of all students passed at Meets Grade Level standards, and 18% of all students passed at Masters Grade Level standards (Figure 6). In comparison, only 16% of students with disabilities passed at Meets Grade Level standards, and only 5% passed at Mastered Grade Level standards. Forty-four percent of the students with disabilities passed at or above the Approaches Grade Level category in comparison to the 70% of all students who did. Keep in mind, the 16% and 5% of students with disabilities are represented within the 44% of students with disabilities who passed at Approaches Grade Level as well. So, 56% of the students failed as they did not meet standards at grade level. The data, again, speak to the need to investigate instructional practices in the inclusion classrooms at the elementary schools. Based on the state and district math STAAR data for students with disabilities, the next step is to look at professional development needs of both general education and special education teachers in the area of inclusion practices. Educators are reflecting on current practices that have shown to be ineffective in improving the math performance of students with disabilities. The following question would be pertinent to ask of educators: What type of professional development would enhance your best practices in the inclusion classroom to improve performance of special education students?

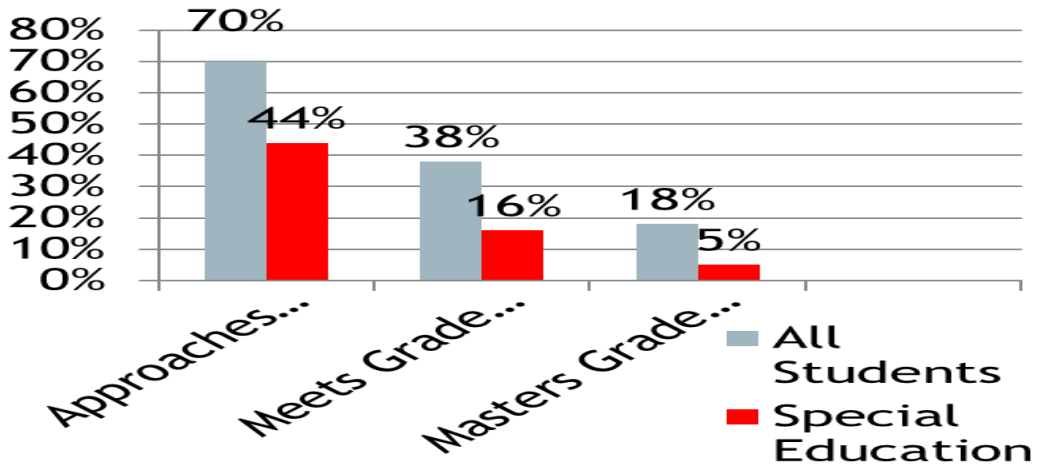

Figure 6. Grade 5 Target District All Students vs. Sped Performance at Approaches Grade Level, Meets Grade Level, and Masters Grade Level. *Note*. Data from 2016–17 Texas Academic Performance Report

Budgeting

Budgeting is crucial for districts in allocating funds for teacher development. Educators need the necessary training to close the achievement gaps. Professional development could focus on preparing teachers how to develop and implement engaging mathematics activities to all students utilizing differentiated instructional strategies. Other necessary training might focus on collaborative inclusive practices such as co-teaching or providing appropriate accommodated support for students with disabilities. Teachers' perceptions desires to co-teach are positively affected by current teacher development training completed by teachers, according to Ricci and Fingon (2018).

Issues in Co-Teaching

The goal of co-teaching is to provide general education access through accommodated services for students with disabilities (Friend et al., 2010). Because specialized instruction is needed, academic success of students with disabilities in math classrooms hinge on the training opportunities provided to build teacher capacity for the

inclusion classroom. In this pursuit, these teachers are filtered from alternative certification programs, teacher education programs, and district transfers.

Research has shown that co-teaching practices improves instructional delivery because of the increase in collaboration (Tremblay, 2013). Tremblay (2013) investigated the effectiveness of a co-teaching classroom versus a resource model with students with learning disabilities in the first and second grade. The author found that there were slight differences in achievement. Students with learning disabilities in the inclusion classes progressed in comparison to students with learning disabilities in the special education classes between the beginning and end of first and second grade. Although the differences in overall achievement were slight, students with learning disabilities who had the lowest scores in the inclusive setting demonstrated the most growth.

The general and special education teachers in the co-teaching classroom were able to use any teaching approach collaborated on during planning for instruction. In the resource classroom, the special education teacher instructed small groups of students, and students received intervention services during the day. Students were assessed in reading, writing, and math using pre and post assessments.

Student outcomes, overall, demonstrate that the performance of many individual students in districts needs improvement. To make improvements for students with disabilities, districts must ensure that inclusion practices are the focus of refinement. To improve instructional outcomes and student performance, teachers require more training on collaborative planning and delivering inclusive practices in mathematics. Specifically, co-teaching practices in regard to teacher perceptions and experiences must be investigated to improve teachers' instructional practices in mathematics.

Current Inclusion Practices

Currently, inclusion practices are facilitated by the general education teacher and a special education teacher or paraprofessional. Although two professionals are in the classroom, there is a lack of understanding of teacher roles and responsibilities in providing accommodated support provided for students in mathematics. The responsibilities of the inclusion teacher, who is certified, are different from that of a paraprofessional, who is not certified but is assigned to support students with disabilities.

The paraprofessional can assistance students under teacher guidance with instructional and behavior management needs. Also, paraprofessionals may gather data and provide anecdotal notes for teachers while assisting students. On the other hand, the special education teacher is tasked with providing direct, accommodated academic support and instruction by adapting the curriculum.

Although refinements are needed in the inclusion classroom, teachers have shown some successes in implementing co-teaching. These successes include the sharing of lesson plans and understanding teacher roles in co-teaching. These collaborative practices allow teachers to gradually build capacity and comfort in co-teaching practices.

For instance, both general and special education teachers meet to review and accommodate activities in lesson plans. This sharing provides special education teachers with the opportunity to review and understand lesson activities before layering accommodations for students. Also, special education teachers are allotted time to provide instructional suggestions prior to implementation.

Along with sharing and collaborating on lesson plans, teachers who identify and understand roles in co-teaching co-exist as partners. Although each teacher brings separate expertise to the classroom, each one continuously appreciates and relies on the other's strengths. Moreover, teachers can develop better professional relationships through effective communication in their respectful roles (Sileo, 2011).

A key feature of a successful co-teaching partnership in mathematics is the special education teachers' content knowledge. General education teachers often lead the bulk of the content instruction in the classroom. Special education teachers provide expertise in specialized instruction. However, they usually limited in the math content knowledge necessary to provide direct instruction in mathematics. The lack of content knowledge presents itself as a barrier to effective co-teaching, according to Mastropieri et al. (2005).

Theoretical Base

Low self-efficacy in teachers because of the lack of knowledge or experiences impacts co-teaching perceptions and implementation. Social cognitive theory can serve as a theoretical framework of reference. According to Woods and Bandura (1989), social cognitive theory suggests that individual behaviors are influenced through learning by observing the environment, mimicking observed behavior, and modeling. These influences directly impact self-efficacy beliefs or perceptions of abilities to accomplish tasks. Bandura (1989) defines self-efficacy beliefs as a set of factors that influence human motivation, affect, and action.

Self-efficacy beliefs are strengthened or weakened through life experiences. People must use successes and failures through the practice of authentic and learned behavior to build resilience in efficacy (Woods & Bandura, 1989). Individuals

cannot solely rely on successes as they may not be able to respond or learn from setbacks. As people model behaviors, they will need to have many models to replicate selectively.

Various models provide individuals with different strategies to use in different situations. This is important in regard to the implementation of innovations. In this case, each of the six co-teaching models presented in this study requires unique decision-making points and strategies in facilitating instruction. Teachers can acquire and build needed strategies through modeling in professional development and campus-level observations of co-teaching in action with debriefing opportunities. Furthermore, they can mimic modeled behavior as their performances influence their motivation and actions (Bandura, 1991).

In organizational management, people require realistic encouragement and persuasion by leaders to improve their perceptions of their capabilities. Social cognitive theory asserts that people are more likely to exert more effort if their goal is to become more successful in completing tasks (Woods & Bandura, 1989). Moreover, leaders can place individuals in realistic situations where they can succeed more, and they will be more opportunistic in participating in activities to strengthen their judgment and perception of their capabilities.

Purpose and Description of Study

This study addresses teachers' experience in co-teaching and perceptions of barriers in co-teaching. It is essential to understand the relationship between the levels of use of co-teaching models and potential obstacles to implementing co-teaching practices in math classrooms. Special and general education teachers and math specialists will

complete a three-part survey in which they will identify demographic information, levels of co-teaching model usage, and perceptions of seven barriers to co-teaching. The seven barriers are: professional development, teacher roles and responsibilities, schedules and meetings, campus supports, content knowledge, and beliefs about co-teaching. Because of the lack of training within many districts, schools struggle with implementing co-teaching practices. Pancsofar and Petroff (2013) state that teachers with more in-service training exhibit more confidence and desire to co-teach, and special education teachers are more prepared for content area instruction.

In the study, there are six independent variables: planning, teacher roles and responsibilities, professional development, content knowledge, campus expectations, and beliefs about co-teaching. These variables are studied in relation to the dependent variables: teachers' experience in inclusive teaching models and perceptions of barriers to co-teaching.

Research Questions

The research questions addressed in this study are listed below.

RQ1: What are the levels of experience of general education teachers, special education teachers, and math content specialists in utilizing co-teaching models?

RQ2: What are the perceptions of general education teachers, special education teachers, and math content specialists of barriers to co-teaching including: planning, professional development, teacher roles and responsibilities, and meetings, campus expectations, content knowledge, and beliefs about co-teaching?

Importance and Need of Current Study

Information found in this study will build upon previous research by identifying obstacles and solutions to co-teaching practices and implications in mathematics inclusive classrooms. The study examines the effects of professional development and math capacity on teacher desire and capacity to implement co-teaching models. It goes beyond simple knowledge and awareness of teacher perception or definitions of co-teaching to selecting the most effective co-teaching models when the foundational and on-going training, support, and content building are present.

This study is directly based on the previous research of Ward (2012) in which she studied the link between co-teaching and special education students' achievement. Ward (2012) found that students performed better on assessments when instruction was given using a co-teaching format. Austin (2001), who surveyed teachers regarding beliefs about co-teaching, found that general education teachers believed they did most of the work in co-teaching situations. Also, the special education teachers stated that collaborative practice, which may be a good theory, remains difficult to institute in the classroom. Identifying ways to enhance co-teaching has been the work of other researchers. Pancsofar and Petroff (2013) studied the relationship between professional development and teachers' self-confidence, interest, and attitude, learning that teachers who had more training opportunities involving co-teaching exhibited more interest in co-teaching and confidence in their practice. Making facilitation of co-teaching easier, according to Holliday (2011), who studied effective implementation, was an understanding of roles and responsibilities between collaborating special and general education teachers.

This study will open the door to more research and practice on inclusive teaching in the mathematics classroom. Additional inquiries into the most effective co-teaching models needed to support student learning and teacher effectiveness in the mathematics classroom should be investigated. More research will provide additional data and support for district leaders and teachers in revising and adapting their inclusive practices in mathematics.

Definition of Terms

Accommodations: The support provided to students in special education to give them access to the general education curriculum.

Alternative Teaching: A co-teaching model in which the lead teacher teaches the main lesson to a larger portion of the class while the other teacher teaches the same lesson using different strategies.

Annual Review and Decision (ARD): A specific meeting in which teachers, parents, and support staff meet to discuss the educational features of students.

Co-teaching: An instructional model in which two teachers work together to plan, prepare, and deliver instruction in the same classroom.

Free and Appropriate Public Education (FAPE): Services related to special education are provided according to an Individual Education Plan (IEP) (Write & Wright, 2007).

General Education Teacher: A teacher who provides content education to students in accordance with the state standards.

Individual Education Plan (IEP): A legal document developed for any student in public education who needs special education services.

Individuals with Disabilities Education and Improvement Act of 2004 (IDEA 2004): A national law that mandates an equitable and accountable education for children with disabilities.

Least Restrictive Environment (LRE): Children with disabilities in public or private institutions or facilities are educated with children who are not disabled to the maximum extent appropriate in the regular educational environment (Wright & Wright, 2007).

One Teach, One Assist Teaching: A co-teaching model in which the teacher with more content capacity leads direct instruction, and the other teacher moves from student to student to support learning.

One Teach, One Observe Teaching: A co-teaching model in which the teacher with more content capacity leads direct instruction, and the other teacher observes and take notes based on teacher instruction.

Inclusion: Students with disabilities are provided the specialized instruction needed to succeed alongside their peers (Wright & Wright, 2007).

In-Class Support: A type of education support provided by the special education teacher in the general education classroom.

Math Capacity: The content pedagogy and ability necessary to deliver best practices in math instruction.

Math Specialist: Teacher leader who possesses leadership and content expertise in mathematics.

Parallel Teaching: A co-teaching model in which the class is split in half, and each teacher takes half of the class to teach the same lesson.

Professional Learning Community (PLC): A type of collaborative committee in which educators are grouped to learn about best practices.

Public Law 94-142: The Education for All Handicapped Children Act that was enacted in 1975 (Wright & Wright, 2007).

Pull-out Support Model: A model of support in which students are assisted outside of the classroom.

Push-in Support Model: A model of support in which students are assisted inside the classroom.

Self-efficacy: A set of proximal determinants of human motivation, affect, and action (Bandura, 1989).

Special Education: Instruction that is specialized to meet the needs of a student with a disability (Wright & Wright, 2007).

Specially Designed Instruction: Appropriate changes to the content, methodology, or delivery of instruction so that it is explicitly linked to the eligible student's present level of performance (Friend, 2019).

Station Teaching: A co-teaching model in which each teacher plans and is responsible for a different part of the lesson. Students are divided into groups depending on the number of stations.

Teacher Attitude: Beliefs about educational topics based on perceptions and experiences.

Teacher Motivation: Teacher reasons for maintaining or improving instructional abilities.

Teacher Professional Development: Specialized training for educators to improve their effectiveness as instructors and leaders.

Team Teaching: A co-teaching model in which two teachers deliver instruction together to a classroom of students.

Summary

As teachers of mathematics, in both general and special education, work toward providing effective educational strategies for students with disabilities, it benefits them to do so using a specified model of instruction such as co-teaching. At the national, state, and district levels, data show that students with disabilities have not performed as well as their general education peers on state assessments. Educators are tasked with reflecting on current inclusive practices used to support students with disabilities in the math classroom and consider incorporating specific co-teaching models as a part of their instructional practices to improve student outcomes. A part of the reflective thoughts for educators is inspecting their beliefs about co-teaching and their ability to implement various models in the math classroom. School districts that are open to co-teaching implementation are then charged with preparing the general and special education teachers for success by providing professional development on the fundamentals of co-teaching and overcoming barriers to co-teaching. After training, teachers are more likely to have the capacity and self-efficacy to collaborate with their co-teaching colleagues on the best practices in co-teaching, and to implement models with fidelity.

Chapter II

Literature Review

Current literature indicates a disconnection of teacher knowledge, perception, and implementation of co-teaching. Moreover, according to the review of literature, barriers to co-teaching have been shown to inhibit effective implementation of co-teaching. This chapter includes a review of the literature on components of co-teaching, teacher perceptions toward co-teaching, and barriers to co-teaching. Information provided was found through search engines such as ERIC, ProQuest Dissertations, and Google Scholar to identify articles and websites that are relevant for this study. The chapter will cover the following topics: history of co-teaching; defining co-teaching; strategies in implementing co-teaching; types of co-teaching models, perceptions of co-teaching; student benefits of co-teaching; and barriers to co-teaching. Barriers reviewed include professional development, planning, teacher roles and responsibilities, campus support, and content knowledge.

History of Co-teaching

The history of co-teaching originated in the 1950s (Friend et al., 2010). Educators during this time focused on strengthening traditional instruction. One way to do so was by forming an effective way to deliver instruction by team teaching. Although the expert teacher in the specific content was chosen to lead instruction of a large group of children, students were assigned to smaller groups for discussions and assessment conducted

The concept by the other teacher(s). Over time, this co-teaching format developed into a collaborative effort between partner teachers who shared two

classes. Teachers combined the classes and provided instruction to all students across the two classes.

According to Friend et al. (2010), as co-teaching evolved in general education, appropriate instruction for students supported by special education became redefined. Because of the low achievement levels of many students who were provided special education support, steps were taken on the federal and state level through various laws and policies to ensure student success and teacher effectiveness. The implementation of federal and state mandates accelerated the necessary collaboration between special education and general education teachers to provide quality education in the least restrictive environment. These mandates pushed for more services within the general education classroom as educational standards rose.

Therefore, more research began to emerge, including the work of Scruggs, Mastropieri, and McDuffie (2007), Friend and Cook (2014), and Mastropieri et al. (2005), on alternative modes of instruction like co-teaching and how to train teachers to use co-teaching and other best practices to improve student outcomes. Literature on barriers to co-teaching has increased over time. However, research evidence of the effectiveness of co-teaching on content achievement is sparse.

Defining Co-teaching

Co-teaching can be defined as collaborative planning and the teaching of students by two certified teachers (Brown, Keeley, & Knapp, 2017). Others define co-teaching as a marriage between two professionals in which instruction is provided for children with disabilities and at-risk students (Sileo, 2011). Friend (2008) defined co-teaching as a partnership between a general education teacher and a specialist in providing instruction

to a diverse group of students. The specialist can be a special education teacher, another general education teacher, math specialist, science specialist, or reading specialist. Each definition essentially describes a partnership between two certified teachers. Each teacher shares the responsibility of teaching. However, the level of responsibility will change depending on the expert knowledge of each teacher and the defined roles that teachers accept in mutually creating the learning environment.

Strategies in Implementing Co-teaching

To effectively implement co-teaching, research suggests that teachers need content expertise and collaborative planning techniques which influence identifying roles and responsibilities during instruction (Brendle, Lock, & Piazza, 2017). Often teachers meet to plan with no specific purpose. For example, Brendle, Lock and Piazza's (2017) research states that although teachers report collaborative planning, they admit to not specifically planning for instructional practices or for assessing learning.

Understanding of roles and responsibilities early is key. In an inclusive setting, the general education teachers usually take the instructional lead, while the special education teacher provides accommodations and supports students through the lesson (Mastropieri et al., 2005). This is common, research suggests, because teachers perceive the special education teacher to be solely responsible for modifying assignments in providing specialized instruction (Mastropieri et al., 2005). Thus, the lead teacher develops the lessons and determines with the special education teacher's expert input how to accommodate lessons.

Further research suggests that co-teachers can enjoy collaborative teaching and help students to perform better if the teachers mutually agree to establish goals for

success, actively learn from each other, and communicate effectively to build trust (Thousand, Villa, & Nevin, 2006). Also, teachers must be open to new collaborative practices and be willing to plan and assess instruction with other teachers. Finally, co-teachers must evaluate their planning process for effectiveness (Thousand et al., 2006) to assure that instructional goals are met.

Types of Co-teaching Models

One Teach, One Observe

The One Teach, One Observe model consists of two certified teachers providing instructional support in the same classroom. One teacher assumes responsibility for direct teaching, and the other teacher observes teacher instruction, student behaviors, and student work. The purpose of utilizing this model is to gather data on teacher behavior and student action (Friend et al., 2010). While planning for the model is considered low, teachers do not need in-depth collaboration to plan and prep for the instructional model. Special education teachers are more comfortable implementing the one-teach, one observe model because it is less threatening, and they don't have to assume instructional responsibility (Friend et al., 2010). A benefit of this model is that teachers can watch and learn teaching strategies from the other teacher, just as the same model is used in student teaching to build capacity in novice teachers (Chang, 2014). One drawback to this model is that the teacher observing is not directly involved during instruction, and the frequent use of this model does not influence student growth over time. Cook and Friend (1995, 2007) summarized the benefits and barriers to the One Teach, One Observe model (below).

Benefits:

- Provides purposeful observation time for data collection
- Allows students to view teachers as equal in authority
- Demands minimal collaboration and trust

Barriers:

- Forces one teacher into the role of assistant

The One Teach, One Observe approach should be implemented between 10% and 15% of instructional time, according to Cook and Friend (1995, 2007). This approach is very purposeful as teachers should decide together what data will be collected and used to plan for instruction (Cook & Friend, 1995, 2007). This can help teachers take small steps in taking a lead role in another co-teaching instruction model, such as one teach, one assist.

One Teach, One Assist

The One-Teach, One Assist model consists of two certified teachers providing instructional support in the same classroom at different levels. One teacher, usually the general education teacher instructs the class, while the other teacher offers additional support for students when needed (Friend et al., 2010). When the support is provided by special education teachers, they are assisting with content activities through accommodations. Hence, the purpose of the model is to provide supplemental support to students with disabilities as needed to grant access to the general curriculum. The planning and preparation for this model require minimal joint planning, though the special education teacher will need access to the general education teacher's lesson plans and activities. The benefit of this model is that teachers can lead lessons based on the content expertise of both teachers. The drawback of this model is that teachers may

develop a dependency on this model. Cook and Friend (1995, 2007) summarized the benefits and barriers to the One Teach, One Assist model (below).

Benefits:

- Model allows teachers to accept specific roles.
- Rotating teachers as lead instructors makes models highly effective.
- Teachers can learn from each other.

Barriers:

- One teacher may be viewed as an assistant instead of the instructor.
- Students may develop a dependence on a special education teacher.
- Distraction may become a problem for some students.

Cook and Friend (1995, 2007) recommend that the one teach, one assist approach be used 20% of instructional time. As aforementioned, the One Teach, One Assist approach does not require a high level of collaboration between teachers. However, it does provide observational and learning experiences for teachers who know less about the content. This experience benefits both teachers, according to Cook and Friend (1995, 2007), and prepares each for the next level in co-teaching, parallel teaching.

Parallel Teaching

The parallel teaching model consists of two teachers splitting the classroom into two groups (Friend et al., 2010). Within each of the two groups, teachers are facilitating the same instruction. One benefit of using the Parallel Teaching approach is that teachers can differentiate instruction in smaller groups, which will provide more opportunities for students to participate. One obstacle of parallel teaching is the possibility of noise distractions, depending upon the allotted space in the room for both groups. Cook and

Friend (1995, 2007) summarized the benefits and barriers to the parallel teaching model (below).

Benefits:

- The student-teacher ratio is lowered.
- Student engagement rises.
- Student grouping is purposeful.

Barriers:

- Noise level may be an issue.
- A high level of planning and trust is required.
- Room logistics may affect distraction issues.

It is recommended that the teachers implement Parallel Teaching 30%–40% of instructional time (Cook & Friend, 1995, 2007). The Parallel Teaching approach can also allow teachers to build content knowledge and experience through collaborative planning and lesson implementation. The next method, alternative teaching, provides more opportunities to learn while giving specific support.

Alternative Teaching

The Alternative Teaching model consists of one teacher providing current instruction, and the other certified teacher delivering the same instruction using a different approach. In this case, the special education teacher must be proficient enough "to scaffold," that is, provide support to students through the learning process that is gradually taken away, and accommodate content taught. The purpose of the Alternative Teaching approach is to provide varied support and reinforcement for students in a small group (Friend et al. 2010). To implement Alternative Teaching, two teachers must

achieve a high level of planning and collaboration. Also, both teachers must possess a high level of expertise in the content area and share a mutual level of trust for support. An obstacle to this approach includes class arrangement. The teacher facilitating small group instruction must have a designated area to provide support. If not, the instruction may be limited. Also, as good practice, teachers should explain to students that groups are flexible and based on needs. This will help minimize the stigma of being labeled a special education student. Cook and Friend (1995, 2007) summarized the benefits and barriers to the Alternative Teaching model below.

Benefits:

- Groups are broken into smaller groups
- Re-teaching and enrichment can be provided.
- Attention to specialized instruction is enhanced.

Barriers:

- Grouping is segregated.

Alternative Teaching should be used 30% of the instructional time according to Cook and Friend (1995, 2007). This percentage of time is conducive to small group needs as it correlates with the typical small group time during a typical 90-minute math block. The Alternative Teaching model along the parallel teaching approach provides opportunities for teachers to learn and apply small group strategies as well. Small group learning is important in math because this is where many differentiated and specialized strategies for effective instruction takes place in the math classroom. In their research Maccini and Gagnon (2000) teachers use manipulatives, such as counters and other materials, to build conceptual understanding of math concepts with students with learning

disabilities. Being strategic, the next model, station teaching, maximizes brief teaching time.

Station Teaching

The Station Teaching model consists of two certified teachers providing content review support for students. The special education teacher supports the general education teacher by acting as one of the stations of instruction. For example, the special education teacher may provide small group skill review of multiplication while the general education teacher works on a conceptual understanding of multiplication in problem-solving. So, the purpose of Station Teaching is to cover or review current or past instructional concepts at different levels of rigor in two stations while providing an opportunity to demonstrate mastery during independent work in a third station (Friend et al., 2010). The benefit of this model is that teachers can divide content into scaffolded parts to help students develop a depth of understanding in concepts taught. Also, the station approach reduces the teacher-student ratio drastically. This helps teachers to focus on targeted groups of students. Obstacles include class arrangements. Teachers must provide an organized open flow in the classroom for optimal use of space and transitions. Cook and Friend (1995, 2007) summarized the benefits and barriers to the station teaching model (see below):

Benefits:

- There is a low teacher-student ratio.
- Students' statuses are equal.

Barriers:

- Noise level can be an issue.

- Transitioning through stations can be time-consuming.

Station Teaching should be used 30%–40% of the instructional time, according to Cook and Friend (1995, 2007). Teachers need a medium to high level of collaboration so that instructional responsibilities and content understanding is known. Teachers can debrief afterward and plan for future instruction. Above station teaching, team teaching is the apex of collaboration in co-teaching.

Team Teaching

In the Team-Teaching approach, both teachers lead large group instruction (Friend et al., 2010). This approach requires the highest level of collaboration because teachers must plan instruction together and decide who leads specific parts of the instruction. To successfully implement team teaching, teachers must develop a high level of trust and possess or acquire content expertise in the subjects taught. A practical challenge to team teaching is the relationship building of teachers. Through relationship building, according to Sileo (2011), co-teachers can learn to have critical conversations about classroom space, noise levels, and student management. If it is not discussed, then unresolved issues such as these can hinder their collaboration in helping students. Cook and Friend (1995, 2007) summarized the benefits and barriers to the team-teaching model:

Benefits:

- Instructional decision making
- Shared teaching responsibilities
- Highest collaborative model

Barriers:

- Challenging to implement
- Conflicts in styles of teaching

Team Teaching should be used 20%–30% of the instructional time, according to Cook and Friend (1995, 2007). It requires two teachers for tag-team instruction, and teachers will need adequate opportunities to plan together in preparing instruction. The lack of collaborative planning has an influence on teachers' confidence and interest in co-teaching.

Perceptions of Co-teaching

Research has shown that teachers who receive training on collaborative practices have increased confidence and interest in co-teaching. Stumpf (2015) found that teachers from preservice programs with more learning opportunities in co-teaching were more confident in the skills of co-teaching. Also, special educators were more likely to be prepared during their initial training to engage in co-teaching than were general educators. Moreover, the core beliefs of each teacher affect their attitudes toward co-teaching. In a case study of co-teaching relationships conducted by Nickelson (2010), a pair of co-teaching partners stated that they developed a successful relationship because they share the philosophy that all children can learn if given the opportunity. Each teacher believed himself or herself responsible for all the students' success. As previously mentioned, teachers who currently co-teach and have had opportunities to learn about co-teaching practices demonstrate a higher level of confidence, attitude, and interest than teachers who are not presently co-teaching (Pancsofar & Petroff, 2013).

Mackey (2012) asserts that even teachers who have some experience co-teaching exhibit various levels of understanding of how co-teaching strategies are

implemented. Austin (2001) examined teachers' beliefs about co-teaching. In the article, an even number of special education and general education teachers across nine school districts were surveyed in relation to their beliefs regarding co-teaching ranging from collaborative practices and training needed to the academic and social impact on students. The author developed his survey, The Perceptions to Co-teaching Survey, as the instrument to gather data. Results showed that all the characteristics of good co-teaching the teachers valued were not accessible for them in practice.

Chitiyo (2017) surveyed general and special education teachers on the perceptions of co-teaching experiences and barriers to co-teaching. Each participant was issued a questionnaire with four sections to gather information about demographics, co-teaching knowledge, co-teaching experiences, and barriers to using co-teaching. A likert scale was used to measure results. Data were collected using the online platform Qualtrics. Results indicated that half of the participants acquired knowledge of co-teaching through university coursework. Although most participants saw the benefit of co-teaching, nearly half felt they did not possess the necessary skills or resources to implement co-teaching.

Student Benefits to Co-teaching

Based on teachers' perceptions, the primary benefit of co-teaching is delivering instruction to children with disabilities with their general education peers in the general classroom (Brendle, Lock, & Piazza, 2017). Students benefit specifically because of the teacher-student ratio. Teachers are more available for assistance, and students are also exposed to multiple teaching points from each teacher (Friend et al., 2010; Mastropieri et al., 2005).

Almon and Fang (2012) conducted a study comparing the effectiveness of co-teaching versus that of solo teaching on Grade 4 achievement between a solo-taught class and co-teaching classroom. The instruction in each class was similar. However, in the co-teaching classroom teachers often paired students for collaborative learning. A skill test created by teachers was used to gather quantitative data on student math achievement. Results indicated students in the co-teaching classroom outperformed students in the traditional classroom. Also, teachers attributed student success to the increased engagement of students due to co-teaching.

Barriers to Co-teaching

Scott and Henry (2012) issued a survey at the beginning of the year at Bellefontaine City Schools in regard to co-teaching needs. Teachers provided feedback. To be successful in implementing co-teaching approaches, teachers need training and resources. So, after debriefing results, book studies and training became a priority throughout the year to grow teachers' capacity to co-teach.

Implementing a co-teaching approach requires knowing when to use certain models. Friend (2008) discussed these components by analyzing current literature research in the *Journal of Curriculum and Instruction*. The study described the necessary components needed to facilitate successful co-teaching instruction. The research highlights challenges to co-teaching such as the lack of co-planning time, lack of co-teaching relationships, and knowing classroom roles and responsibilities. Solutions were provided that can help make co-teaching easier to implement. The potential of great co-teaching is well noted as long as expectations are set by principals who want long- term success and improved achievement.

Professional Development

While co-teaching is a collaboration between two teachers, coursework in co-teaching is rarely provided for the general and special education teachers. Pancsofar and Petroff (2013) conducted a study on the professional development experiences in co-teaching. In this study, teachers were asked to rate how many opportunities they had to learn about the various aspects of co-teaching using the likert scale. Results of the study indicated that teachers' desire and confidence in co-teaching increased with the frequency of in-service trainings. Moreover, teachers held more positive attitudes about co-teaching (Pancsofar & Petroff, 2013).

Planning

A rising emphasis on inclusion recently has prompted special education and general education teachers to expand collaborative planning (Richards, Pavri, Golez, Canges, and Murphy, 2007).

Almon and Feng (2012) compared the effects of co-teaching versus solo teaching on two Grade 4 classrooms in math achievement. The researchers wanted to know which method had the most positive impact. The teachers involved in the study had to participate in a summer math program and collaboratively plan with teachers throughout the year. Teachers had positive perceptions of the practical planning component of co-teaching because it requires equitable efforts.

In many cases, elementary and special education teachers are not provided co-planning times, so they create times before or after school to discuss lesson objectives, roles, and responsibilities of each teacher (Mastropieri et al., 2005). Also, the paired teachers took advantage of a common free period to co-plan for content support. The

lack of planning time was not a big challenge for them because they enjoyed teaching together and had developed a trusting working relationship.

Teacher Roles and Responsibilities

Teachers must understand their responsibilities in the co-teaching classroom to avoid roadblocks such as low confidence, negative attitudes, and lack of interest in co-teaching. In many cases, the general education teachers serve as the curriculum experts who take the lead role in instruction, whereas the special education teachers serve as the manager of lesson activities and provider of specialized instruction (Mastropieri et al., 2005). According to Nickelson (2010), coexisting in a co-teaching classroom requires teachers to adapt their traditional teaching practices and classroom management styles to work together effectively. Teachers believed their teaching abilities grew, and so did student achievement. The study stated that teachers understand the traditional organizational structures influence their growth and decisions they make in developing trust (Nickelson, 2010). This is important in co-teaching partnerships as teachers can focus on student achievement through collaboration as the teaching relationship is then built on trust and confidence in each person's expertise.

On the surface, one would assume that student engagement would be high in a co-teaching classroom. On the contrary, it depends on many factors, two being the teachers' content expertise and the defined roles and responsibilities of both teachers. When both teachers are comfortable and confident in their defined role, a positive impact can be made. In the Nickelson (2010) case study teachers Janice and Ellen expanded the role of Janice, the special education teacher, to provide more teaching opportunities, which would increase student engagement. The two typically utilized the teach one, one assist

model. However, Janice felt inadequate because she wanted to have more instructional input from planning to delivery. One of the pillars of quality instruction is student engagement. When reflecting on the times that Janice had assumed a lead teaching role, both teachers noted a gradual change in the students' engagement and perceptions of Janice (Nickelson, 2010). They viewed her more as a teacher than a helper.

Sileo (2011) narrated the development of the co-teaching relationship initiated by the principal of Ms. Happa, Response to Intervention (RTI) teacher, and Mr. Salvatore, the general education teacher. The author listed steps both teachers took to develop a cohesive relationship in sharing classroom responsibilities for instruction. Even though they did not have ample time to gel as partners before the school year began, they were able to recognize each person's strengths and weaknesses and address potential negative issues before they developed. After developing trust and observing each other's teaching, they also took the time to decide what co-teaching structure they would use based on class needs for instruction. In summary, the article emphasized compromise and collaboration if the true focus is on children's academic and social success. For instance, Sileo (2011) stated that Mr. Salvatore believed that a noisy classroom was a productive classroom of collaborative learning. Whereas, Ms. Happa had the view that students should collaborate in a quiet manner. In a compromise, both teachers worked together to develop lessons conducive to a noisy or quiet environment.

Further research suggests that forcibly pairing teaches hurts the effectiveness of co-teaching (Scruggs et al., 2007). Accepting their roles and responsibilities is an easy task when teachers voluntarily participate in co-teaching because of their interest and desires. In this regard, there is an increase in collaboration and success in teaching teams.

Many factors influence teachers' capacities such as confidence, attitudes, and interests in co-teaching. Porter et al. (2012) detailed how resource teachers spent their time for three days (Figure 7).

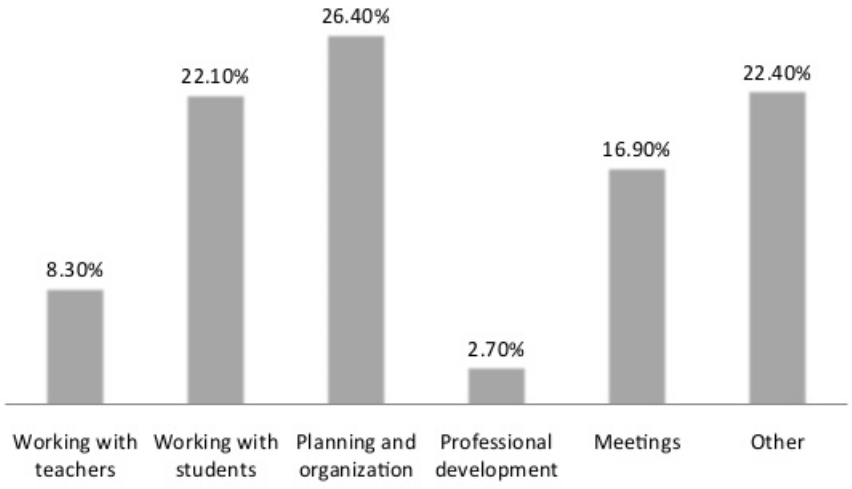

Figure 7. Time Spent by a Resource Teacher in a Three-Day Period. https://www.slideshare.net/FayeBrownlie/collaborationcoteaching-coplanning-arrow-lakes.

It is worth noting that meetings such as IEP meetings, data meetings, and other campus meetings may occur at inopportune times, such as instructional time. According to Porter et al. (2012) this happens more frequently than not, interrupting co-teaching support. Also, 22.40% of the time spent during other assignments for the administration negatively impacts resource teachers' time working with other teachers. It is also vague as to how much collaborative time is provided with the general education teachers.

Campus Support

Nierengarten and Hughes' (2010) research revealed that administrative support is critical for co-teaching success. It starts with creating master schedules that are conducive to co-teaching and providing collaborative planning times for teachers to prepare for co-teaching instruction.

During co-teaching implementation, administrators and campus specialists are charged with providing evaluation and feedback on co-teaching to assess effectiveness. So, they need to be knowledgeable about the kinds of support required to monitor and evaluate co-teaching. With instructional and moral support from administrators, teachers begin to value co-teaching and the benefits they discover (Nierengarten & Hughes, 2010). Moreover, administrators are better equipped to guide and monitor co-teaching practices on their campuses if they have been trained on the various strategies necessary in implementing co-teaching. If not, they will not possess the vision and understanding needed to facilitate effective co-teaching initiatives. Having a vision and understanding will help administrators prevent stumbling blocks to co-teaching, such as lack of planning and collaboration times reported by teachers when reflecting on administrative support (Fuchs, 2009). Moreover, teachers feel that administrators should provide on-going co-teaching training for consistent implementation of models (Brendle, Lock, & Piazza, 2017).

Content Knowledge

Some special education teachers are not comfortable in facilitating instructional support for students with disabilities because their content knowledge is limited. Therefore, district and campus leaders must provide professional development opportunities to build content knowledge to provide fundamental first line instruction and have the capacity to know the next steps in instruction when a student doesn't understand concepts during instruction. Koellner, Jacobs, and Borko (2011) identified three features that are critical for effective professional development and are essential in preparing leaders and teachers to implement high-quality mathematics training. They are fostering

a professional learning community (PLC), developing teachers' mathematical knowledge for teaching, and adapting professional development to support local goals and interests. Co-teaching practices in the mathematics classroom are best implemented when both special education and general education teachers have an opportunity to collaborate during content planning sessions. Practice between general and special education teachers impacts teacher effectiveness (Glazerman et al., 2008). Also, teachers should find time outside of planning to practice or rehearse selected models that will be used to implement lessons. Although both teachers are not always allotted a common planning time, other scheduled times to communicate and plan should be considered.

As teachers communicate and plan for instruction, they will experience a growth in their teaching capacity. Learning and practice during professional development benefits teacher growth. In a math professional development study by Koellner et. al (2011), the participants overall showed a significant gain in their math knowledge for teaching after participating in math tasks during a three-phase workshop to deepen content knowledge and strengthen planning skills.

As districts hope to improve math scores among the subpopulation of students who are supported by special education, they need to consider adapting the mode and frequency of training opportunities for special education teachers. Participation in content training can build teacher capacity so that both teachers will defer to each other during instruction, demonstrating a less than obvious level of content knowledge between teachers (Mastropieri et al., 2005).

Co-teaching Beliefs

Teacher experiences can influence their perceptions of co-teaching in the inclusion classroom. Austin (2001) surveyed certified general and special education teachers ranging from elementary, middle, to high school in nine districts in New Jersey who participated as co-teachers on their perceptions based on their co-teaching experiences and collaborative practices for co-teaching. Results indicated that both general and special education teachers agreed that they had a great working relationship benefiting from the co-teaching situation. Moreover, both teachers believed their instructional practice improved because of their co-teaching experiences. Finally, teachers mostly agreed that daily planning times should be available for co-teachers to collaborate on lesson planning.

In another study, teachers have had a negative experience in providing support for students in the inclusion classroom. Fuchs (2009) interviewed teachers about their experiences working with special education students in providing support for students with disabilities. Results of the interviews revealed that general education teachers believed that the special education teachers did not provide enough collaborative support and the burden of planning accommodations was placed upon them. Furthermore, teachers reported uneasy relationships between special and general education teachers which hindered co-teaching effectiveness. Finally, the lack of administrative support and preparation time contributed to low motivation in continuing the co-teaching process.

Literature Summary

The literature supports the need for teachers to not only know about the different co-teaching models but also understand how to implement each model. Barriers to co-

teaching must be taken into account to make the co-teaching experience desirable and smooth. Teachers must develop more content knowledge in mathematics and specialized instructional strategies. Moreover, the literature review confirms a continuous need to research similar to that conducted for this dissertation and a need to gather more data on teacher experiences and beliefs in regard to co-teaching in the math classroom.

CHAPTER III

Method

The purpose of this quantitative survey study was to examine the experience and perceptions of general teachers, special education teachers, and math specialists regarding co-teaching and barriers to co-teaching. This chapter outlined the research design, including the methodology, study participants, data collection, and data analysis method.

Research Question 1

What are the levels of experience of general education teachers, special education teachers, and math content specialists who use co-teaching models?

Research Question 2

What are the perceptions of general education teachers, special education teachers, and math content specialists on barriers to co-teaching, including professional development, planning, teacher roles and responsibilities, campus support, content knowledge, and co-teaching beliefs?

Research Design

This descriptive research design used a quantitative survey. Using quantitative methods to study problems of practice has helped researchers answer questions in education by surveying others to understand issues in schools (Gall, Gall, and Borg, 2015). Moreover, the findings from descriptive research have been expected to bring the problem of practice to the attention of stakeholders involved and resulted in their taking steps to find solutions. Gall, Gall, & Borg (2015) defined survey research as a way of collecting data about participants' attitudes and beliefs using standardized measures like

questionnaires. All participants received the same questionnaire in the same manner, and the results will be interpreted using descriptive statistics.

Participants

Three hundred educators were invited to participate in an electronic survey district during a six-week time period. One hundred eighty-six general education teachers who provided math instruction, sixty special education teachers, and fifty-four math specialists participated in the study.

Sites

The participants represented educators from the elementary school (kindergarten through fourth grade) and intermediate school (fifth and sixth grades) at an urban district in southwest Texas. Six intermediate campuses and twenty-four elementary campuses served as sites for research. There were at least two special education in-class support teachers at each campus and two math specialists at each elementary school and one math specialist at each intermediate campus.

Data Collection Analysis

Data had been collected as part of the researchers' professional responsibilities at the school district. Approval to use the archival records from a district survey was obtained from the Institutional Review Board (IRB) and permission granted from the school district before data analysis. As part of the district's efforts to determine the status of co-teaching, participants had received an email inviting, introducing, and explaining the purpose of the survey. Participants volunteered to participate, and their identity remained anonymous. There was no identifiable information in the archival records. Participants were directed to a Google form link that provided to access the original

online survey from which the archival records were built. The archival records were used for these data analyses. Descriptive statistics were used to analyze data and MANOVA was used to identify and compare means between groups.

Instrument

The co-teaching survey was developed to examine teachers' experience and perceptions of co-teaching and completed by a small sample of teachers (see Appendix B) in the district. Adaptations to the questions and the length of the survey, based on feedback from these teachers, were used to finalize the district survey before data collection began.

The co-teaching survey was divided into three sections. The first section gathered demographic information on teachers such as age, gender, education level, content specialty, and grade levels taught. There were 10 items in the demographic section of the survey. Information, ranging from age and sex to years teaching, was gathered. The second section of the survey used yes/no questions to gather data on the range of experiences teachers have had in co-teaching. There were eight statements in section two about co-teaching experiences. Experience levels ranged from reading about co-teaching to the actual use of each co-teaching model. The third and final section of the co-teaching survey used a five-point Likert scale (from 1 = strongly agree to 5 = strongly disagree) to rate teachers' general knowledge or perception of each statement as it relates to co-teaching. The perceptions of co-teaching barriers were divided into six sections, each having three questions: planning, professional development, campus expectations, content knowledge, teacher roles and responsibilities, and beliefs about co-teaching.

Summary

The goal of this chapter was to outline the research method used to answer the research questions for this archival record study. A discussion of the procedure, study participants, data collection, and the instrument used outlined the specifics of how the district study was conducted and who participated. Participants completed the study by sharing their experiences and perceptions in regard to co-teaching. The results of the district survey constituted the archival records upon which this study is built. Chapter IV provides the study results and demonstrates the methodology described here.

Chapter IV

Results

The purpose of this chapter is to present the analysis of archival data collected through a district survey research design that used an online co-teaching survey. Participants, who completed the survey through a Google link, assessed their experience and perceptions in co-teaching. The archival data was used to answer the following research questions:

Research Question 1

What are the levels of experience of general education teachers, special education teachers, and math content specialists in utilizing co-teaching models?

Research Question 2

What are the perceptions of general education teachers, special education teachers, and math content specialists on barriers to co-teaching, including professional development, planning, teacher roles and responsibilities, campus support, content knowledge, and co-teaching beliefs?

This chapter includes an analysis of data, features a discussion of how the data analysis answers each research question, and uses tables and graphs to describe sample demographics and summarize participant responses in each of the four sections of the survey. It describes the process used to analyze each question in the survey. Finally, results are reported according to the sections of the co-teaching survey completed by teacher participants.

Participant Demographics

Two hundred ninety-eight educators were invited to participate in an electronic district survey. Two hundred and fifty-three completed the district survey during the 6-week duration of availability (Table 1). Respondents were predominantly women (88.1%), and more than half were 30 to 49 years of age. More than a third had a master's degree (32.8%) or a doctoral degree (1.6%). More than three-fourths hold general education certification (76.3%), and almost a fifth holds special education certification (19.8%). More than half of the respondents attended university degree programs (58.1%), whereas the rest (41.9%) completed alternative certification programs. Most of the respondents (83.0%) represented elementary-level teachers, and the others (17.0%) were from intermediate campuses. More than half of teachers were general education teachers (68.0%), and the rest were special education teachers (17.8%) or math specialists (14.2%). Grades levels taught from kindergarten to fourth grade ranged from 33.2% to 45.8%. The rest of the grade levels represented fifth grade (15.4%) and sixth grade (13.0%). A majority of respondents (73.9%) taught math content, and over a fourth (28.9%) taught all content subjects.

Table 1

Demographic Characteristics of Participating Teachers

Characteristics	N	%
Gender		
Female	223	88.1
Male	30	11.9
Age (years)		
≤ 29	38	15.0
30-39	73	28.9
40-49	88	33.2
50-59	47	18.6
≥ 60	11	4.3
Level of education		
Bachelor's degree	166	65.6
Master's degree	83	32.8
Ed.D./Ph.D.	4	1.6
Certification		
General education	193	76.3
Special education	50	19.8
Both	10	4.0
Certification program		
University degree program	147	58.1
Alternative certification	106	41.9
Campus level		
Elementary	210	83.0
Intermediate	43	17.0
Educator position		
General educator	172	68.0
Special educator	45	17.8
Math specialist	36	14.2
Grade levels		
Kindergarten/First	116	45.8
Second	86	34.0
Third	84	33.2
Fourth	86	34.0
Fifth	39	15.4
Sixth	33	13.0
Content		
Reading	62	24.5
Math	187	73.9
Social studies	81	32.0
Science	93	36.8
All subjects	73	28.9

The next section of results answers the first research question:

Research Question 1

What are the levels of experience of general education teachers, special education teachers, and math content specialists in utilizing co-teaching models? The percentage of each respondent is shown by all teachers, general education teachers, and math specialists.

Survey Part II—Experience

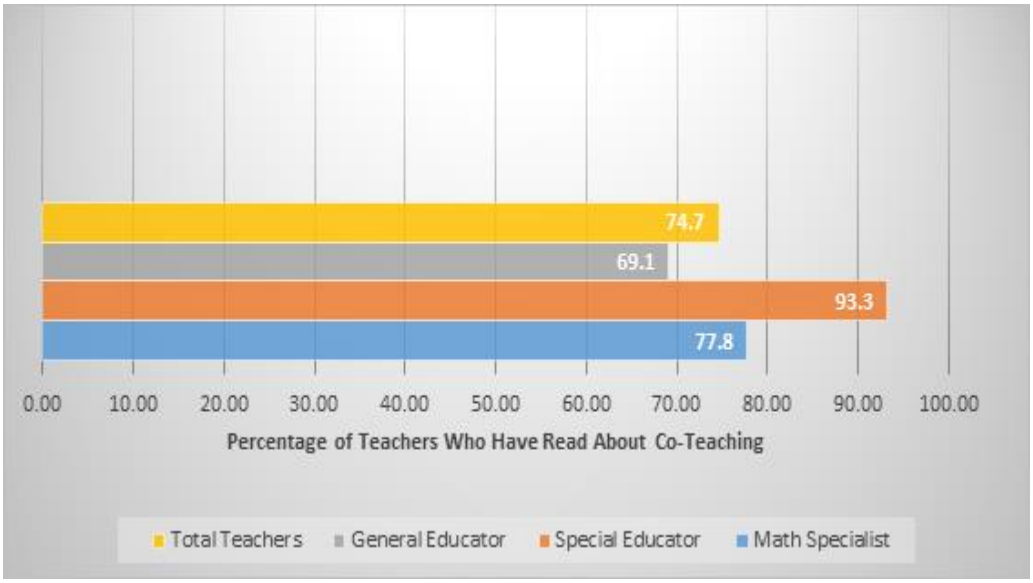

Figure 8. Part II, Question 1: I have read about co-teaching.

Question 1 addresses teachers' awareness through reading in co-teaching. Approximately 74.7% of the total teachers have read about co-teaching (Figure 8). The percentage of teachers who read about co-teaching was 69.1% of general education teachers and 77.8% of math specialists. The percentage of special education teachers who read about co-teaching was considerably higher at 93.3%.

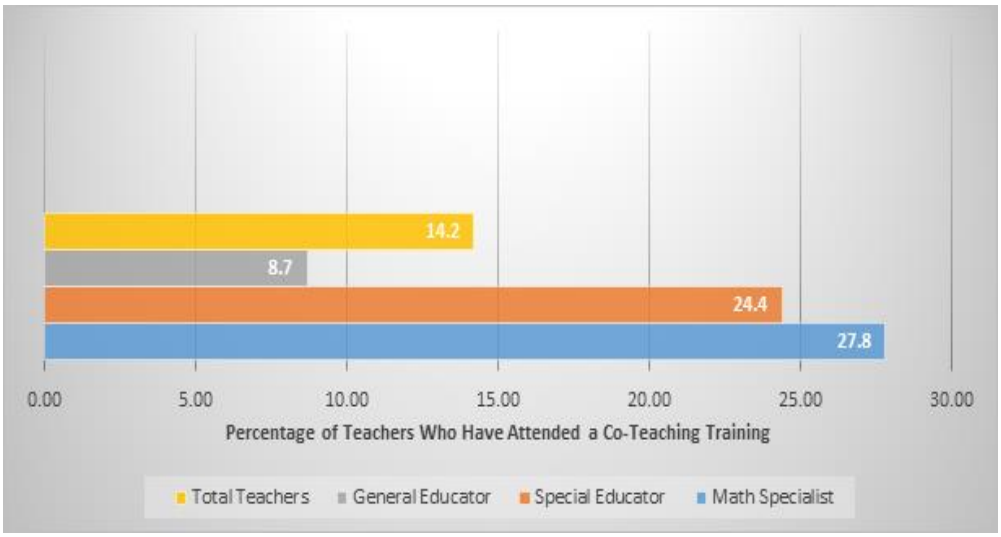

Figure 9. Part II, Question 2: I have attended co-teaching training.

However, only 14.2% of all teachers have attended co-teaching training, according to Figure 9. The low percentage indicates a need for the district to develop and provide professional development on the use of inclusion models to access the general curriculum. The percentage of general education teachers who had attended co-teaching training was at 8.7% lower than that of other groups. The percentage of educators in the other categories who have attended co-teaching training was 24.4% of special education teachers, and 27.8% of math specialists.

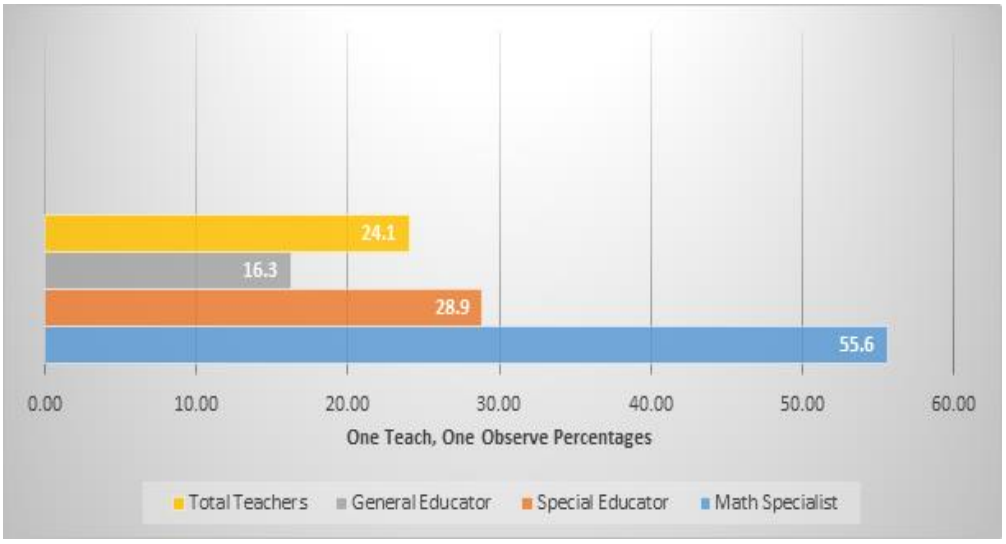

Figure 10. Part II, Question 3: I have used One Teach, One Observe in the math classroom.

Nearly a fourth of all participants (24.1%) have used One Teach, One Observe in the math classroom. Precisely 16.3% of general education teachers and almost a third of special education teachers (28.9%) indicate experience in using One Teach, One Observe in the classroom. The percentage of math specialists (55.6%) who have used One Teach, One Observe is higher in comparison to the other groups of teachers.

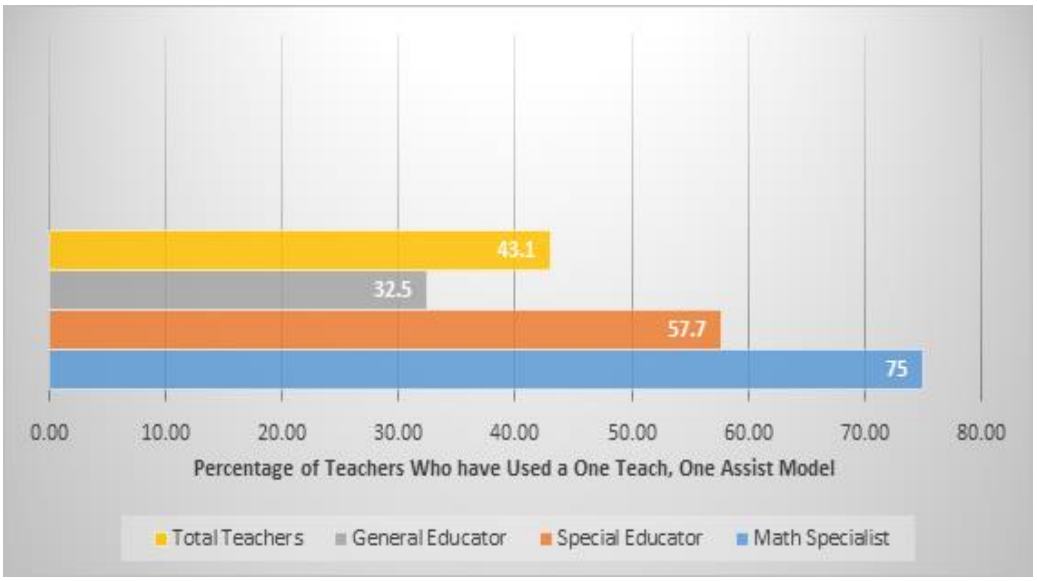

Figure 11. Part II, Question 4: I have used One Teach, One Assist in the math classroom.

Nearly half all teachers (43.1%) indicated experience in using One Teach, One Assist in the math classroom (Figure 11). The percentage of general education teachers who used One Teach, One Assist was 32.5%. The percentage of teachers who have used One Teach, One Assist (57.7%) was higher for special education teachers and math specialists (75%).

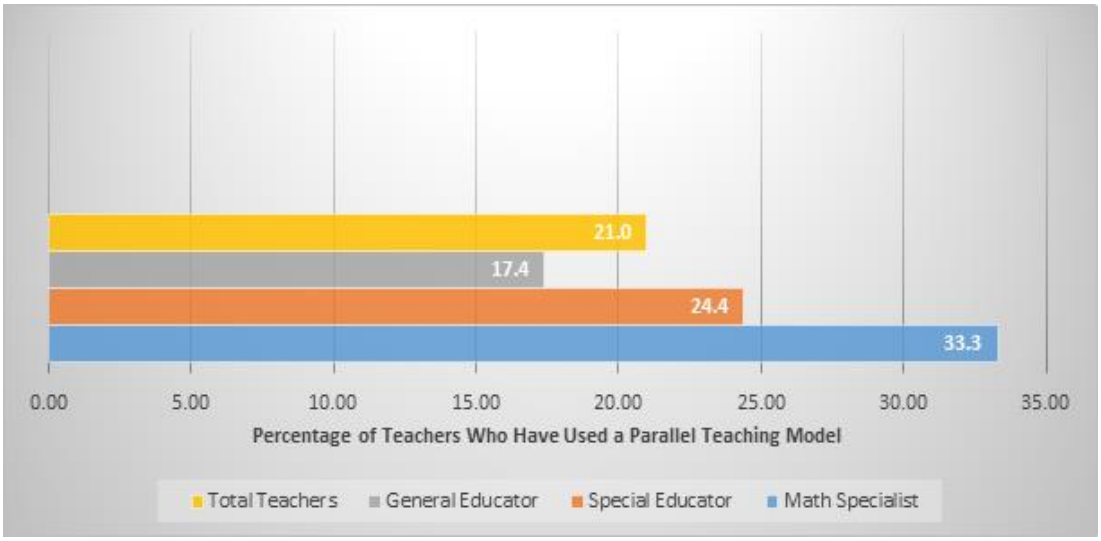

Figure 12. Part II, Question 5: I have used Parallel Teaching in the math classroom.

In regard to Parallel Teaching experience (Figure 12), 21.0% of all teachers indicated the use of Parallel Teaching in the math classroom. Though only 17.4% of general education teachers stated using Parallel Teaching, nearly a fourth of special education teachers (24.4%), and a third of math specialists (33.3%) have used Parallel Teaching in the math classroom.

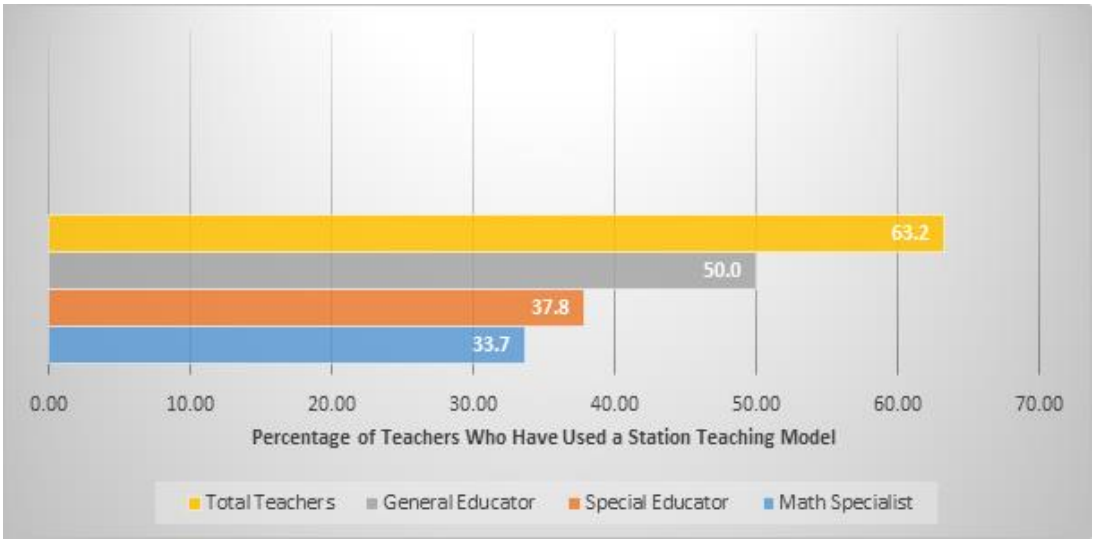

Figure 13. Part II, Question 6: I have used Station Teaching in the math classroom.

The percentage of all teachers (63.2%) who reported use of station teaching in the math classroom is considerably higher than that reporting use of any other model (Figure 13). A third of math specialists (33.7%), a third of special education teachers (33.8%), and exactly half of general educators (50.0%) reported use of Station Teaching in the math classroom.

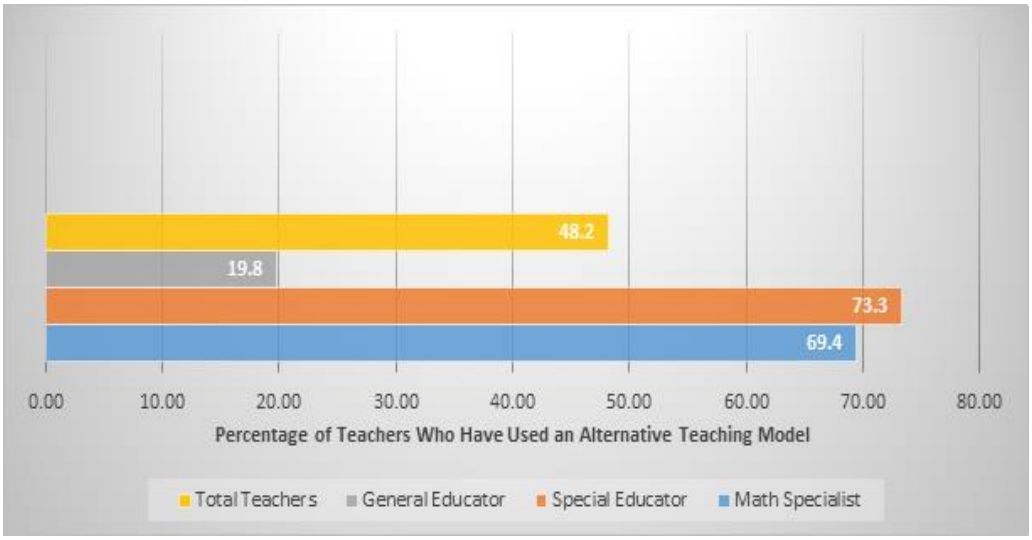

Figure 14. Part II, Question 7: I have used Alternative Teaching in the math classroom.

In Figure 14, nearly half of all teachers (48.2%) indicated having used Alternative Teaching in the math classroom. A small percentage of general education teachers (19.8%) reported using an Alternative Teaching. However, significantly higher numbers were reported by special education teachers at 73.3% and math specialists at 69.4%.

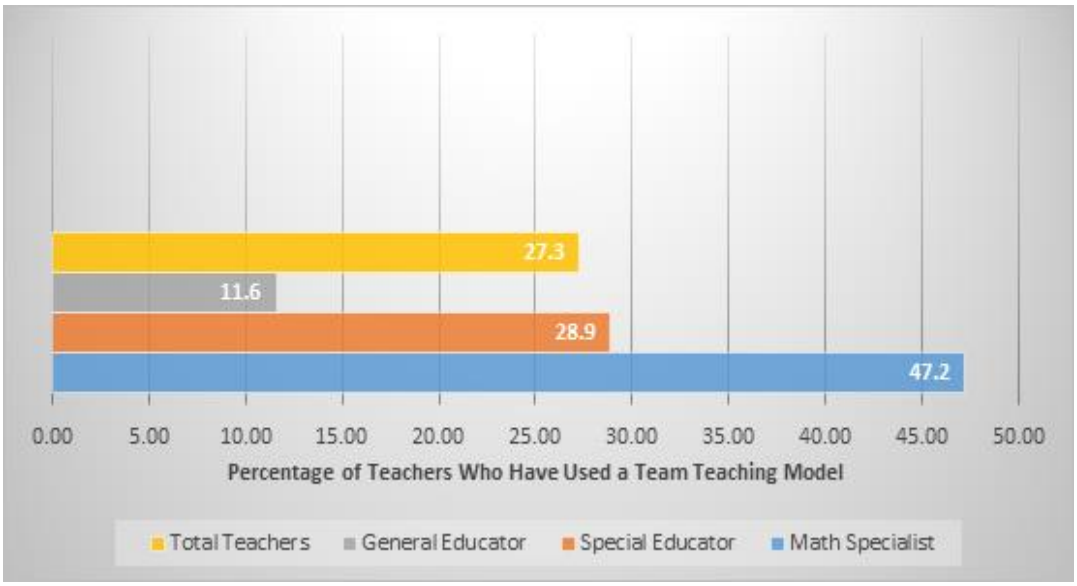

Figure 15. Part II, Question 8: I have used Team Teaching in the math classroom.

In regard to Team Teaching, just over a fourth of all teachers (27.3%) reported usage in the math classroom (Figure 15). Lower percentages in specific groups, 11.6% of general education teachers and 28.9% of special education teachers, indicated the use of Team Teaching. A much higher percentage of math specialists (47.2%) reported the use of team teaching in the math classroom.

Research Question 2

What are the perceptions of general education teachers, special education teachers, and math content specialists on barriers to co-teaching, including professional development, planning, teacher roles and responsibilities, campus support, content knowledge, and co-teaching beliefs?

Survey Part III—Barriers

Planning

Figure 16 consists of all teachers' responses to question 1 of Part III.

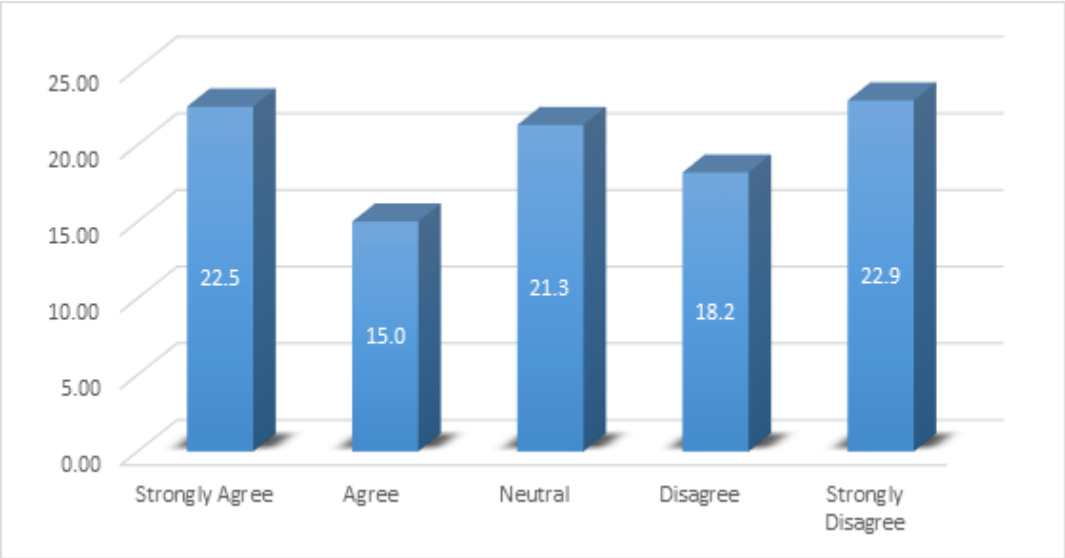

Figure 16. All teachers' response to Part III–question 1: Special education teachers attend grade-level content planning sessions with their general education peers.

Question 1 pertains to teachers' reaction to the attendance of special education teachers at content planning sessions with their general education peers. In all, 37.5% of all teachers strongly agreed or agreed that the special education teachers attended grade-level content planning sessions. Only 21.3% of teachers remained neutral in their response. However, the percentage of all teachers disagreed or strongly disagreed that special education teachers attended grade-level planning was highest at 41.1%.

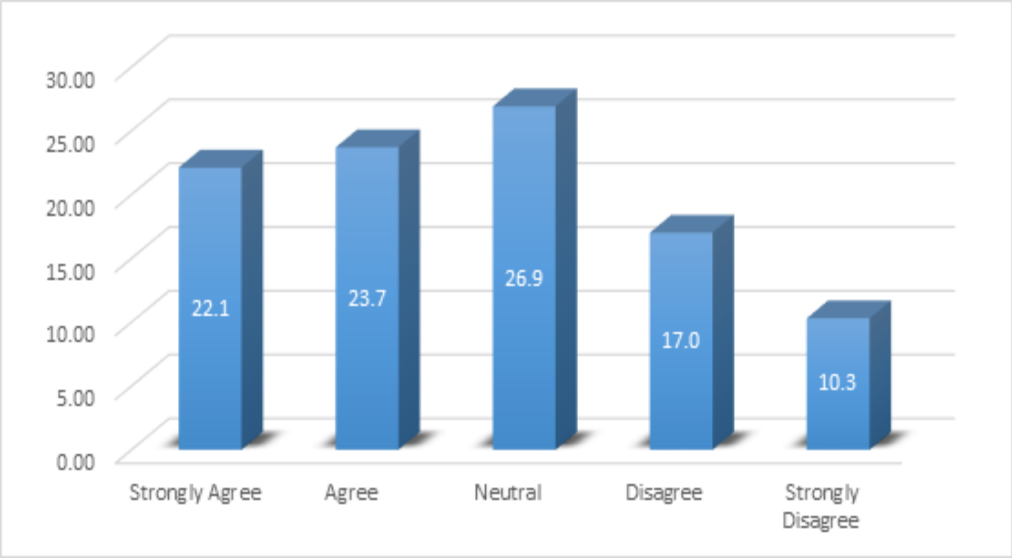

Figure 17. All teachers' response to Part III–question 2: General and special education teachers collaborate outside of planning to discuss how to provide specialized support for students in the inclusive classroom.

Figure 17 displays all teachers' responses to question 2, which involves teachers' knowledge of collaboration efforts of special education and general education teachers outside of regular planning hours. Nearly half of the teachers (45.8%) strongly agreed or agreed that collaboration happened outside of planning, which was considerably higher than those who disagreed or strongly disagreed (27.3%), and 26.9% of all teachers responded with a neutral opinion.

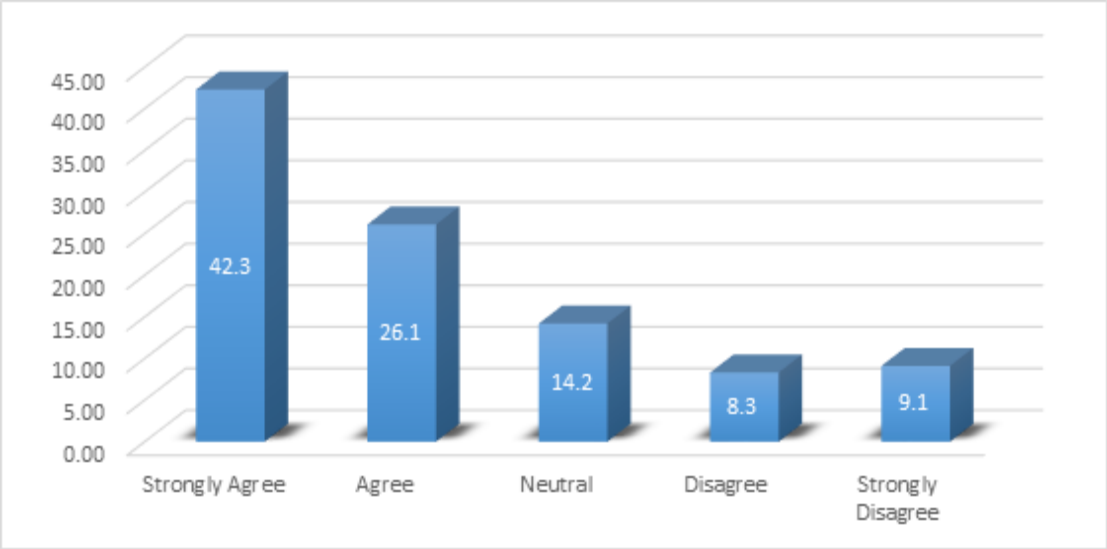

Figure 18. All teachers' response to Part III–question 3: General and special education teachers require a common collaborative planning time to adequately plan for inclusion support.

All teachers' responses to question 3 of Part III of the survey, which states that the campus requires joint collaborative planning between general and special education teachers are shown in Figure18. A considerably high percentage of teachers (68.4%) of teachers strongly agreed or agreed with the statement. A low percentage of teachers were neutral (14.2%), and less than a fifth of teachers (17.4%) disagreed or strongly disagreed that special education and general education teachers required common collaborative planning.

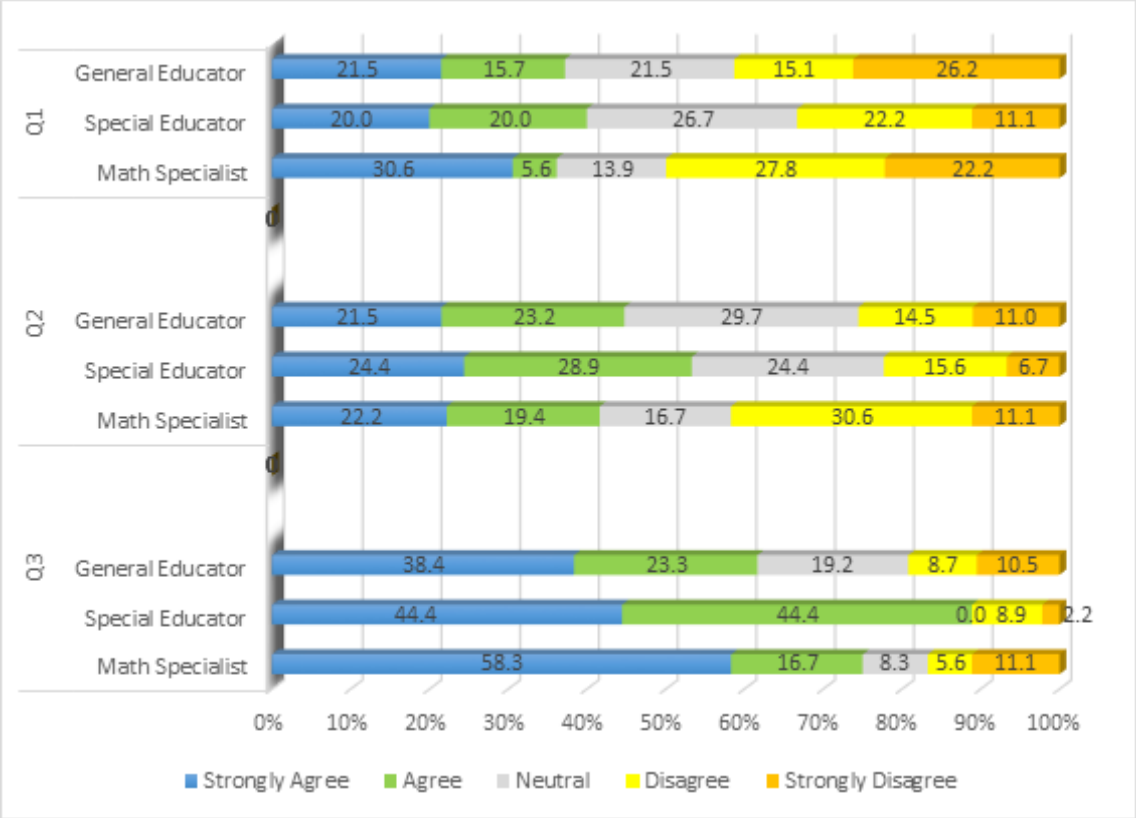

Figure 19. Responses by teachers by specialties on issues of planning, including question 1 (special education teacher attendance at content planning sessions), question 2 (collaborating beyond planning time), and question 3 (required standard planning times). *Q1, question 1; Q2, question 2; Q3, question 3.*

Results show that 37.2% of general education teachers strongly agreed or agreed in comparison to the 40.0% of special education teachers and 36.2% of math specialists (Figure 19, *top)* for question 1. Also, 21.5% of general education teachers, 26.7% of special education teachers, and 13.9% of the math specialists remained neutral. Results also indicate 41.3% of general education teachers, 33.3% of special education teachers, 50% of math specialists disagreed or strongly disagreed with the notion that special education teachers attend content planning sessions. Whereas over half of special education teachers (53.3%) agreed or strongly agreed that collaborating beyond regular hours to make class plans was workable, slightly lower proportions of general education

teachers (44.7%) and math specialists (41.6%) strongly agreed or agreed about meeting outside of planning hours (Figure 19, *middle*). Significant differences appeared between math specialists who strongly disagreed or disagreed (41.7%) and the other two groups (general educators, 25.5%; special educators, 22.3%) who also expressed disagreement. Neutrality on this question ranged from 16.7% to 29.7%, with math specialists least likely to be neutral.

Question 3 involves teacher attitudes on the necessity for special and general education teachers to have a common planning time for collaboration (Figure 19, *bottom*). There was a difference in group agreements in comparison to disagreements. Results show that 61.7% of general education teachers strongly agreed or agreed in comparison to special education teachers (88.8%) and three fourths of math specialists (75.0%). It is noteworthy that none of the special education teachers remained neutral, while about 20% of the general education teachers (19.2%) and 8.3% of the math specialists did. There were differences between math specialists' disagreement with the other two groups. Results also indicated 19.2% of general education teachers, 11.1% of special education teachers, and 16.7% of math specialists disagreed or strongly disagreed that special education and general teachers required joint planning to provide comprehensive support.

Professional Development

Figures 20–22 report the responses to issues related to teacher preparation and continuing education that help teachers support students with disabilities in the classroom. Figure 20 displays all teachers' responses to their perception of the level of training they have received in giving specialized academic supports in the math

classrooms for students with disabilities. Nearly half of all teachers (42.3%) stated they were well trained in giving specialized support, 32% remained neutral, and one fourth (25.7%) did not believe they were "well trained in providing specialized academic support in the math classroom."

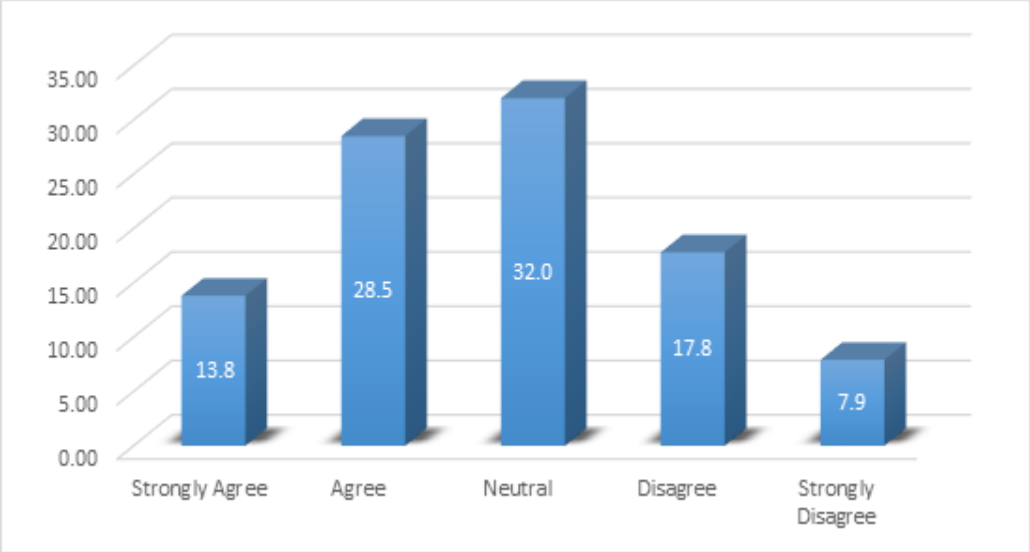

Figure 20. All teachers' responses to Part III–question 4: I am well trained in providing specialized academic support in the math classroom for students with disabilities.

Figure 21 displays all teacher responses for question 5 relating to teachers' comfort level in teaching students with disabilities in the general classroom. A high percentage of teachers (60.9%) responded that they disagreed, indicating they did feel comfortable teaching students with disabilities, and 21.3% of teachers were neutral. A low percentage (17.7%) of teachers felt uncomfortable with teaching students with disabilities.

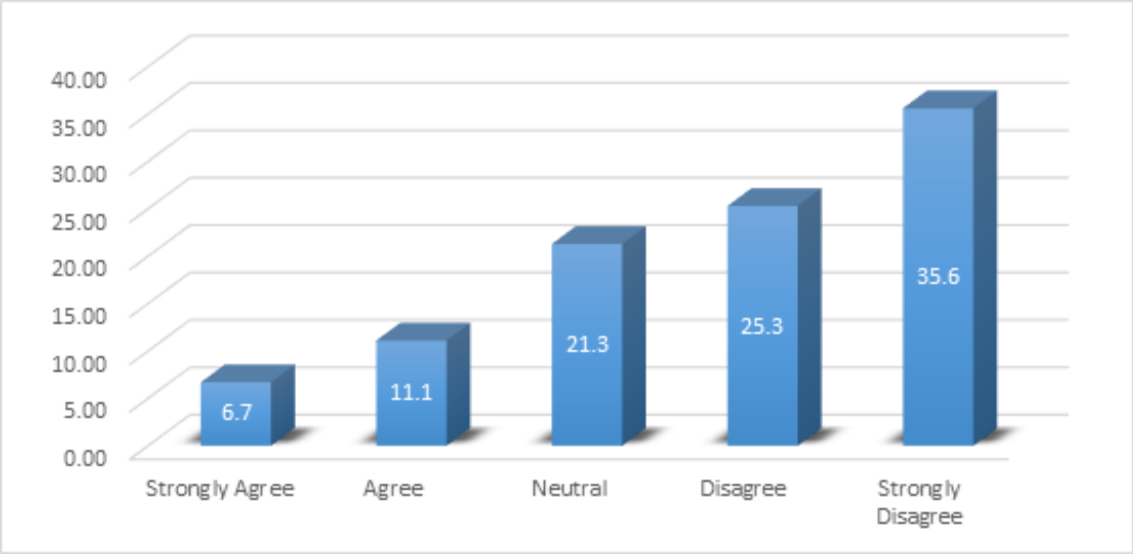

Figure 21. All teachers' response to Part III–question 5: I am not comfortable teaching students with disabilities in the general classroom.

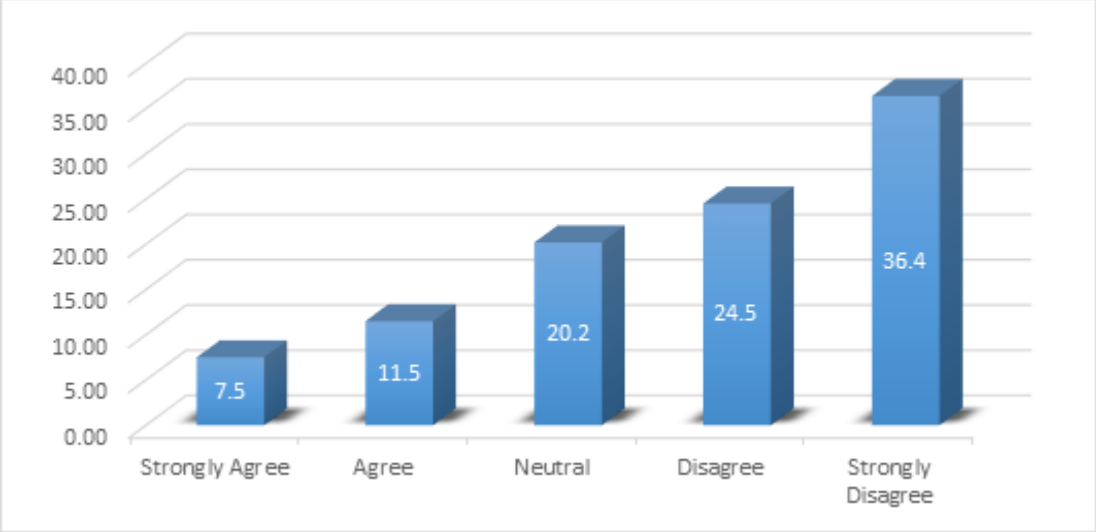

Figure 22. All teachers' response to Part III–question 6: I have completed a satisfactory amount of professional development on the various co-teaching models.

A high percentage of teachers (60.9%) strongly disagreed or disagreed with having completed a satisfactory amount of professional development. Approximately 20.2% of teachers were neutral. A low percentage (19%) of teachers strongly agreed or agreed to have completed a satisfactory amount of professional development on co-teaching.

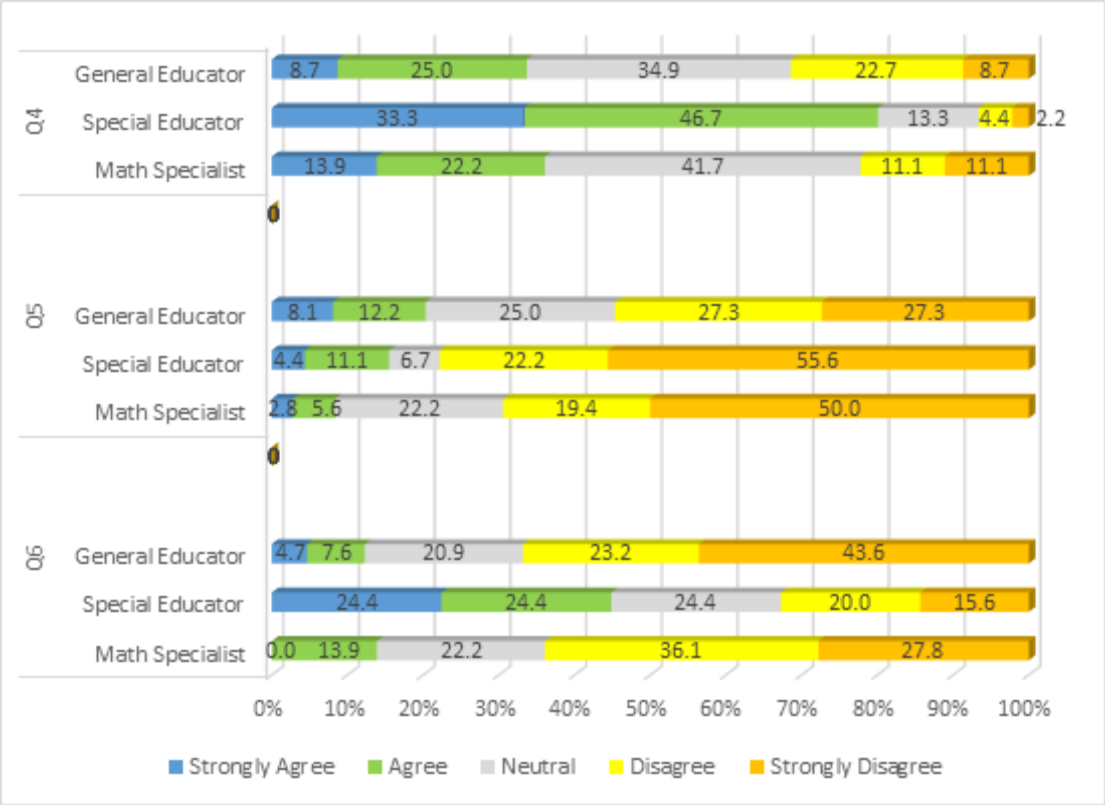

Figure 23. Responses by teachers by specialties on issues of professional development, including question 4 (specialized support training), question 5 (comfort level in teaching students with disabilities in the general classroom), and question 6 (adequate professional development). Q4, question 4; Q5, question 5; Q6, question 6.

Question 4 involves teachers' perception of the level of training they received in giving accommodated academic supports in the math classrooms for students with disabilities (Figure 23, *top*). There was a significant difference between special education teacher agreements in comparison to other group agreements. Whereas 80% of special education teachers, not unexpectedly, agreed or strongly agreed they were "well trained," general education teachers (33.7%) and math specialists (36.1%) voiced confidence in less than half their percentage. Also, neutrality among teachers' groups ranged from 13.3% to 41.7%. Although a low proportion (6.6%) of special education teachers believed they were not well trained for teaching children with disabilities in the general

classroom, proportions were much higher in general education teachers (31.4%) and math specialists (22.2%).

Large percentages of each group of teachers—77.8% of special education teachers, 69.4% of math specialists, and 54.6% of general education teachers—readily disagreed or strongly disagreed with the notion in question 5 that they were "not comfortable teaching students with disabilities in the general classroom" (Figure 23, *middle*). In contrast, agreeing with the proposition were 20.3% of general education teachers, 15.5% of special education teachers, and 8.4% of math specialists. Remaining neutral were 25% of general education teachers, 22.2% of the math specialists, and 6.7% of special education teachers.

Registering a strong sense that their professional development on various co-teaching models was inadequate, 66.8% of general education teachers, 63.9% of math specialists, and even 35.6% of special education teachers disagreed with the conclusion that their professional development had been satisfactory in that area (Figure 23, *bottom*). Only special education teachers were likely in a large percentage (48.8%) to strongly agree or agree that they had received adequate training. Levels in general education teachers (12.3%) and math specialists (13.9%) fell below 15%. Neutral values ranged from 15.6% to 22.2%.

Campus Expectations

Figure 24 displays responses of all teachers in regard to question 7 about on-campus expectations that general and special education teachers collaborate to provide accommodations to students with disabilities. More than half of teachers (56.1%)

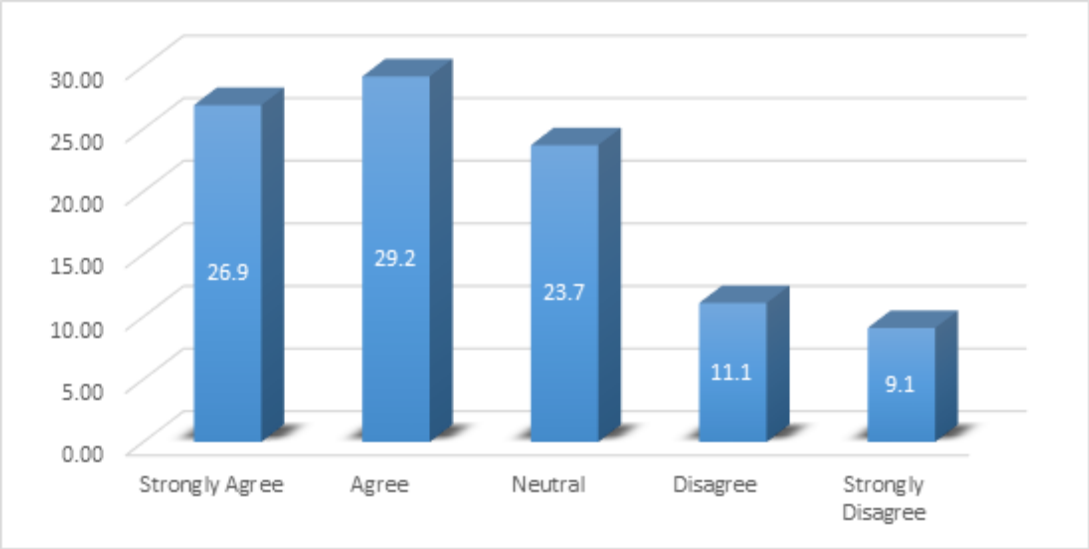

Figure 24. All teachers' response to Part III–question 7: Campus leaders expect the general and special education teachers collaborate in providing accommodated instruction for students with disabilities in the inclusion classroom.

strongly agreed or agreed that it was an expectation, a contrast to the teachers (20.2%) who believed that the collaborative expectation did not exist. Approximately 23.7% of teachers were neutral on the question.

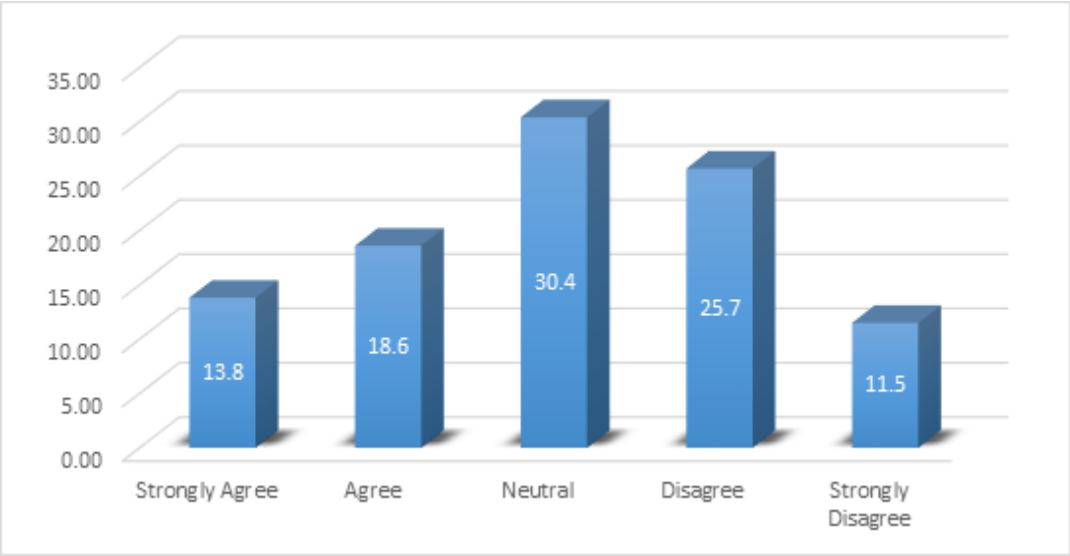

Figure 25. All teachers' response to Part III–question 8: There is a clear vision or expectation as to what the instructional model should look like in the inclusion classroom.

Figure 25 displays responses of all teachers in regard to on-campus expectations about how inclusion instruction looks in the classroom. The results were evenly split as 32.4% of all teachers strongly agreed or agreed there is a clear expectation, 30.4% of

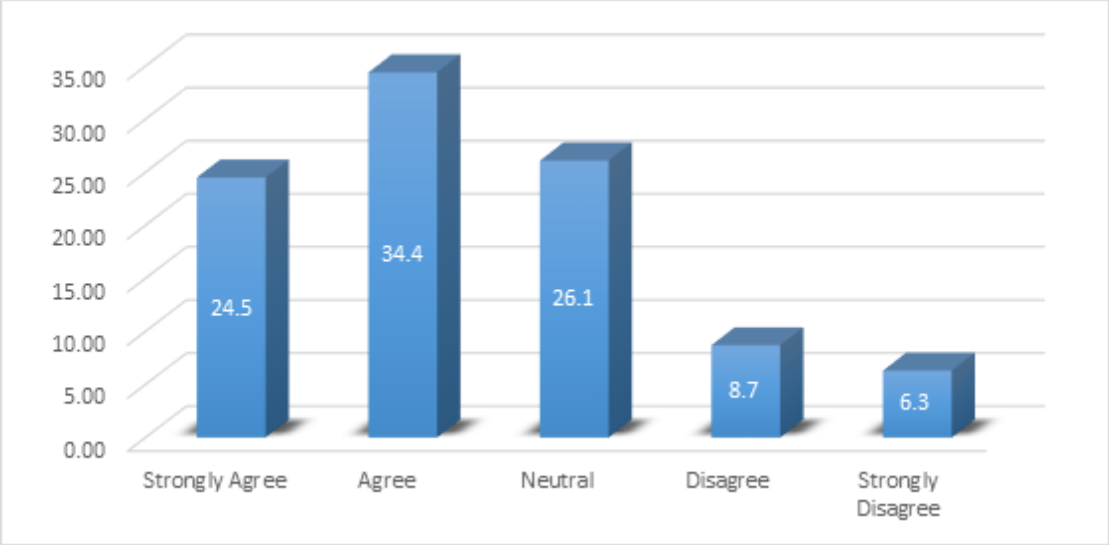

Figure 26. All teachers' response to Part III–question 9: General education teachers prepare appropriate lessons that include learning strategies to benefit students with or without disabilities.

teachers remained neutral, and 37.2% did not believe there was a clear vision of what instruction looks like in the inclusion classroom. A significantly high number of teachers (78.9%) agreed that appropriate lessons are prepared by general education teachers for all learners, but 15% of teachers disagreed or strongly disagreed. Just over one fourth of teachers (26.1%) were neutral (Figure 26).

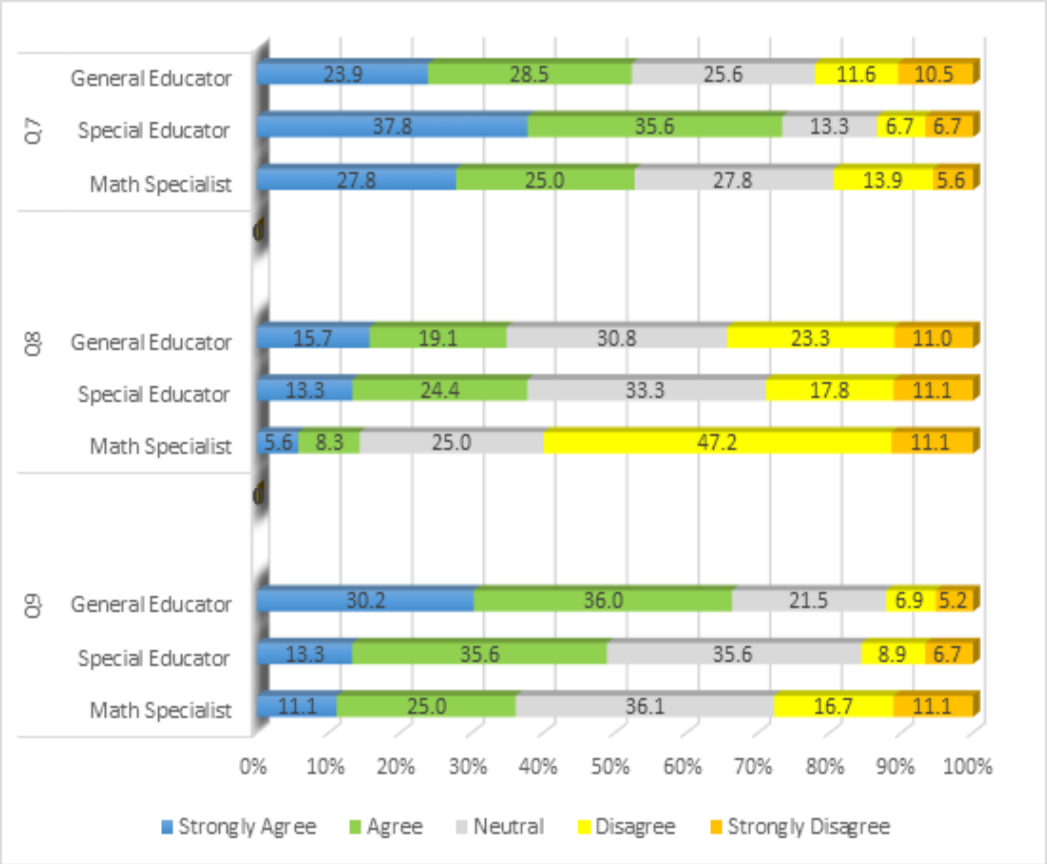

Figure 27. Responses in Part III by teacher groups to question 7 (expectation to collaborate), question 8 (clear vision of support models), and question 9 (general education teachers and appropriate lessons). Q7, question 7; Q8, question 8; Q9, question 9.

A majority of teachers in each group (general education teachers, 52.4%; special education teachers, 73.4%; and math specialists, 52.8%) strongly agreed or agreed with the belief that teachers were expected to collaborate (Figure 27, *top*). A small percentage of special education teachers (13.4%) strongly disagreed or disagreed in comparison with the other two groups (general education teachers, 22.1%; math specialists, 19.5%). Also, fewer special educators (13.3%) held neutral opinions than did general education teachers (25.6%) and math specialists (27.8%).

About a third of general education teachers (34.8%), a similar proportion of special education teachers (37.7%), and a much lower proportion of math specialists

(13.9%) strongly agreed or agreed that there was a clear vision of co-teaching models in the classroom (Figure 27, *middle*). A majority of math specialists (58.3%) did not agree that there was an expectation of what co-teaching models should look like, and 34.3% of general education teachers and 28.9% of special education teachers believed the same. Neutrality ranged from 25% to 33.3%.

A majority (66.2%) of general education teachers, 48.9% of special education teachers, and 36.1% of math specialists believed that general education teachers provided appropriate lesson plans for students with disabilities (Figure 27, *bottom*). Low numbers of general education teachers (12.2%), special education teachers (15.6%), and math specialists (27.8%) did not agree that general education teachers prepared appropriate lessons. Neutrality on appropriate general education lesson plans ranged from 21.5% to 36.1%.

Content Knowledge

How teachers felt about teaching students with disabilities and how they perceived their ability to engage all students and meet expectations for state testing were topics of interest. Figure 28 displays responses of all teachers in regard to question 10 regarding teacher comfort levels in teaching mathematics to students with disabilities. Nearly three fourths of all teachers (72.7%) felt comfortable teaching math concepts to students with disabilities, but 10.3% did not. Seventeen percent were neutral.

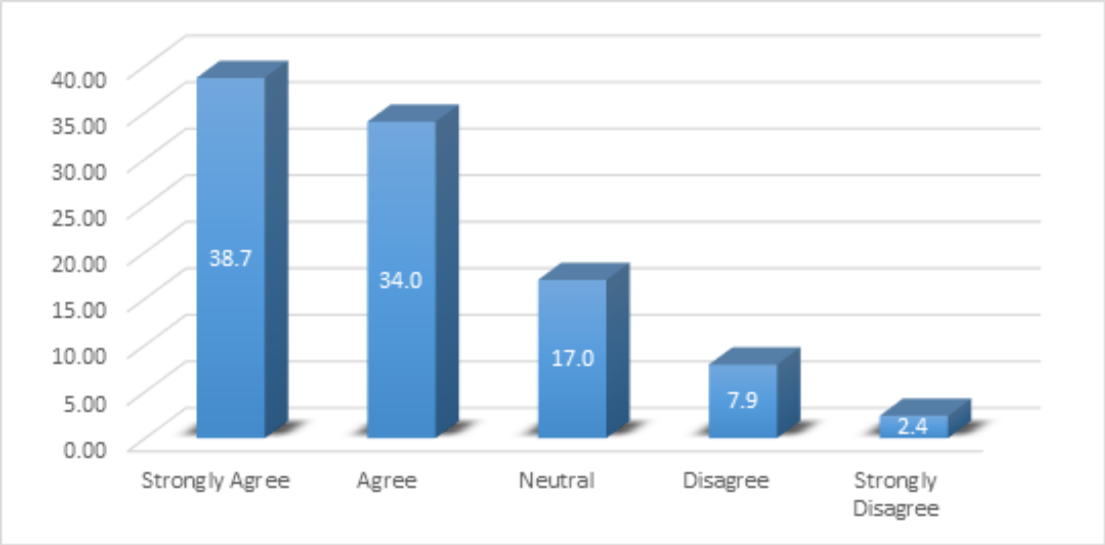

Figure 28. All teachers' response to Part III–question 10: I feel comfortable teaching mathematics concepts to students with disabilities.

Most of the teachers (94.1%) strongly agreed or agreed that they understood the expectations of the Texas Essential Knowledge and Skills (TEKS) for Mathematics evaluation (Figure 29). In comparison, 3.6% were neutral, and the rest (2.4%) disagreed or strongly disagreed.

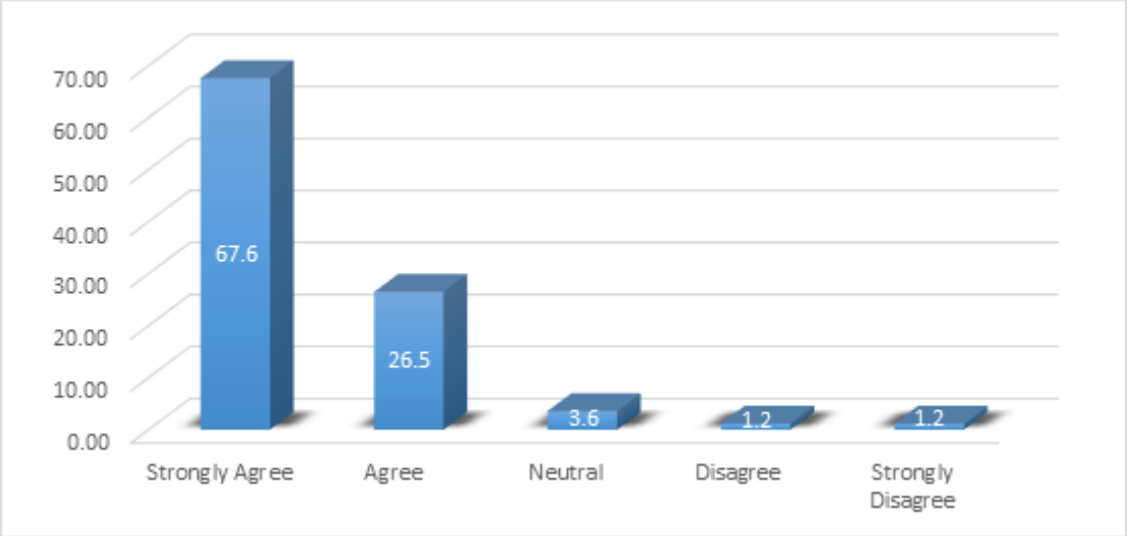

Figure 29. All teachers' response to Part III–question 11: I understand what students must know, understand, and be able to do according to student expectations in the Texas Essential Knowledge and Skills (TEKS) for Mathematics prescribed by the State of Texas.

Regarding the teachers' confidence in their ability to engage students with disabilities with math content, 70.7% agreed or strongly agreed they could adequately engage students; however, in comparison, 6.3% said they could not, and 22.9% were neutral (Figure 30).

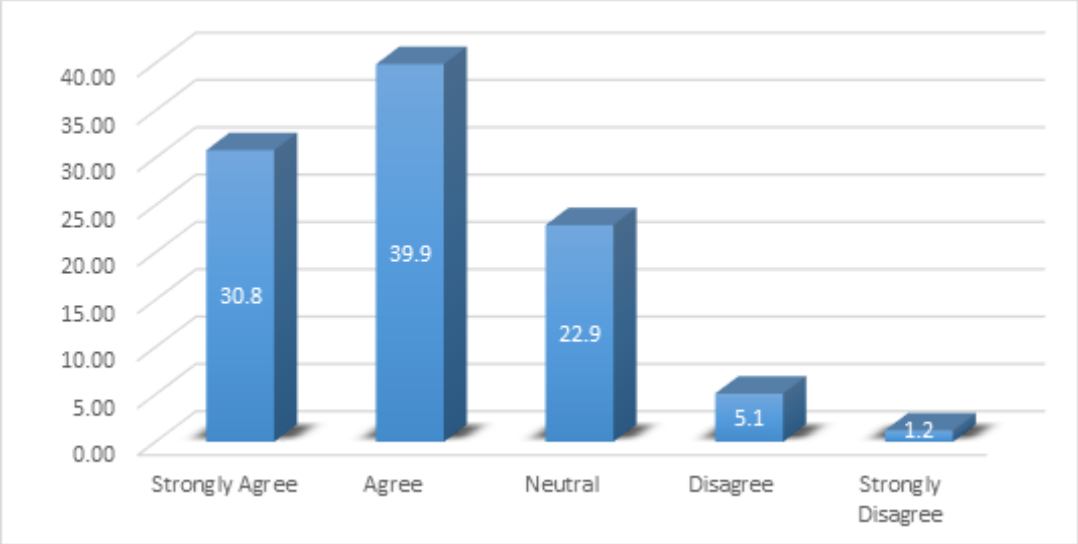

Figure 30. All Teachers' response to Part III–question 12: I can adequately engage students with disabilities with the mathematical content according to student expectations within the curriculum.

Overall, the analysis by specialty indicates that 66.8% of education teachers, 82.2% of special education teachers, and 88.9% of math specialists felt comfortable teaching math concepts to students with disabilities, according to responses for Part III, question 10 (Figure 31, *top*). Only 12.8% of general education teachers and 5.9% of special education teachers disagreed. Not one math specialist felt uncomfortable teaching students with disabilities, though 11.1% expressed neutrality. In all, 20.3% of general education teachers and 8.9% of special education teachers remained neutral.

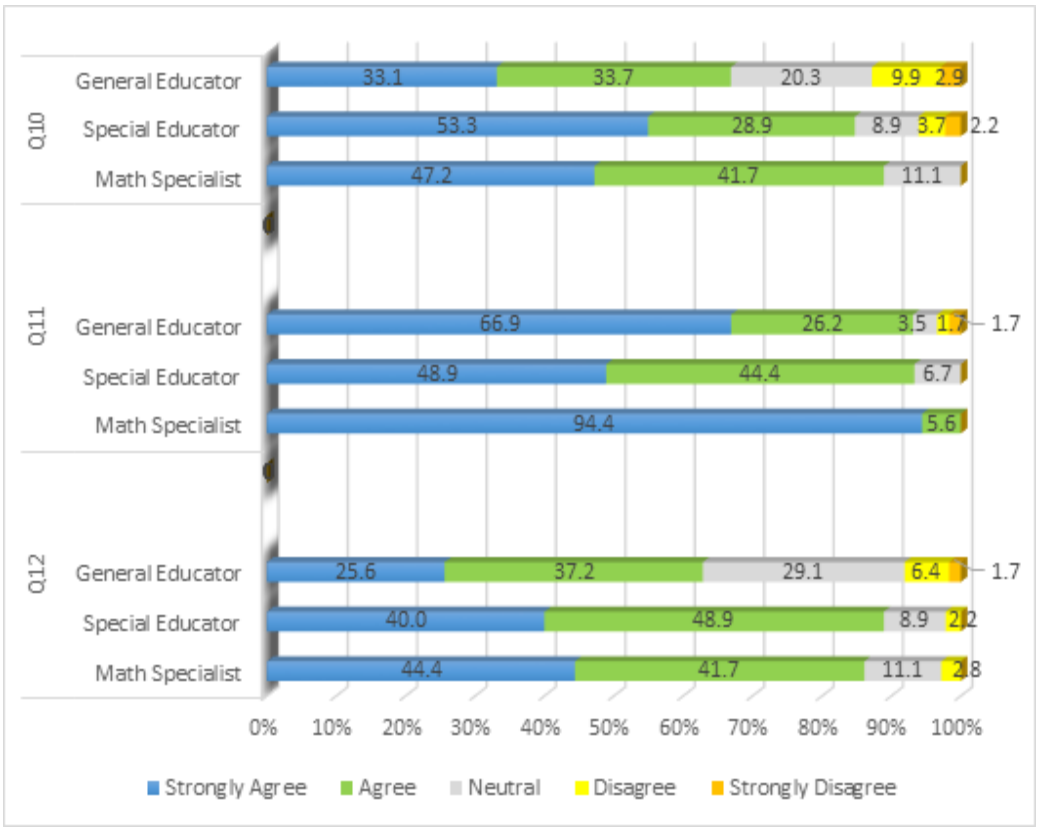

Figure 31. Responses by teacher groups to Part III–question 10 (comfort level teaching mathematics), question 11 (understanding math TEKS), and question 12 (engaging students with disabilities). Q10, question 10; Q11, question 11; Q12, question 12.

Regarding question 11, most of the general education teachers (93.1%) and special education teachers (93.3%), and all of the math specialists (100%) strongly agreed or agreed that they understood the expectations for students taking the TEKS test for mathematics (Figure 31, *middle*). Only 3.4% of general education teachers said they did not understand the expectations. Remaining neutral were 3.5% of general education teachers and 6.7% of special education teachers.

Almost 90% of the special education teachers (88.9%), more than 80% of the math specialists (86.1%), and over half of the general education teachers (62.8%) believed they could engage students with disabilities in mathematical content (Figure 31,

bottom). A significantly lower number of teachers (general education teachers, 8.1%, special education teachers, 2.2%, and math specialists, 2.8%) disagreed or strongly disagreed. A lower percentage of special education teachers (8.9%) remained neutral than did general education teachers (29.1%) or math specialists (11.1%).

Teacher Role and Responsibility

The role and responsibilities of general education and special education teachers are the interest of the next three questions. Figure 32 displays responses of all teachers to question 13. Nearly all of the teachers (84.6%) strongly agreed or agreed. Only 11.9%

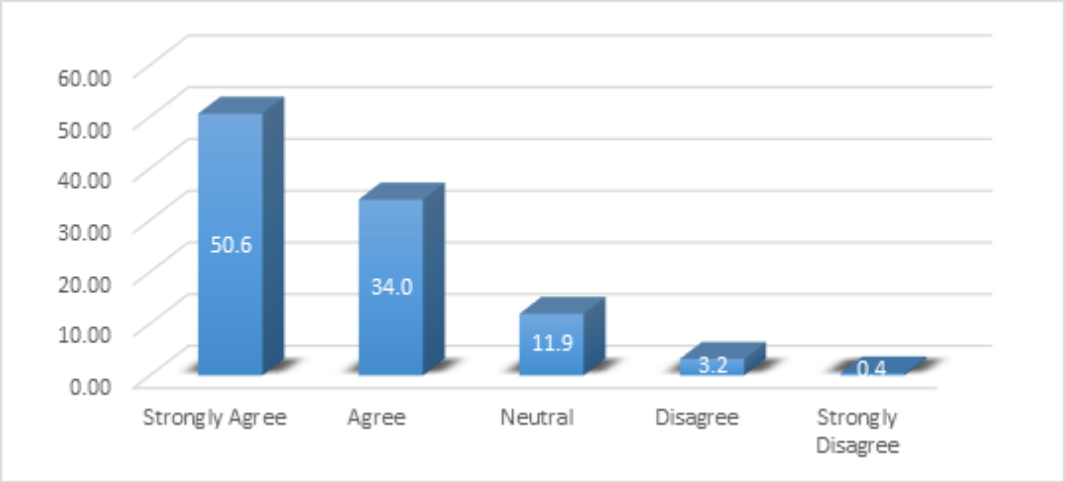

Figure 32. All teachers' response to Part III–question 13: I understand the general education teacher's role and responsibility in the inclusion classroom.

of teachers were neutral. A small sample of teachers (3.7%) did not agree or strongly disagreed, in effect saying they did not understand the role and responsibility of general teachers in the inclusion classroom.

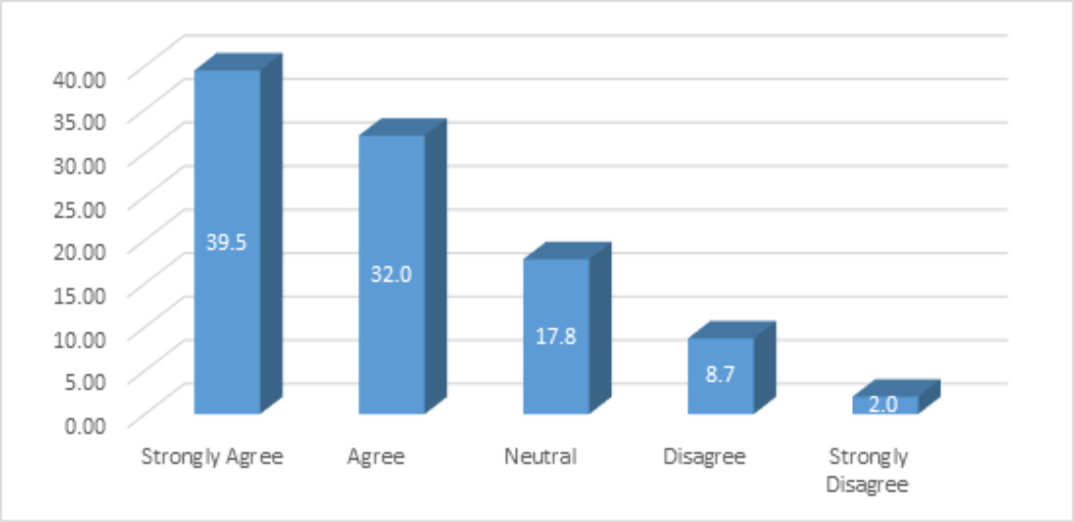

Figure 33. All teachers' response to Part III–question 14: I understand the special education teacher's role and responsibility in the inclusion classroom.

Almost three fourths (71.5%) of all teachers understood the role and responsibility of special education teachers (Figure 33). The percentage was significantly higher than the 17.8% of teachers who were neutral and 10.7% of teachers who did not understand the role and responsibility of special education teachers.

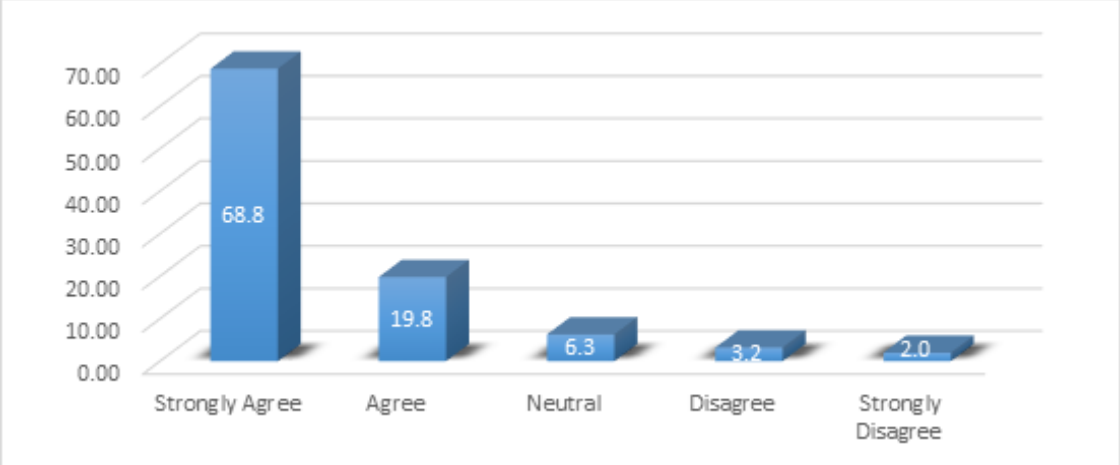

Figure 34. All teachers' response to Part III–question 15: The general and special education teachers are accountable for the implementation of a student's Individualized Education Plan (IEP).

A majority of all teachers (88.6%) agreed or strongly agreed that the general and special education teachers were accountable for IEP implementation. A significantly lower number of teachers (6.3%) were neutral, and only 3.4% of teachers did not agree.

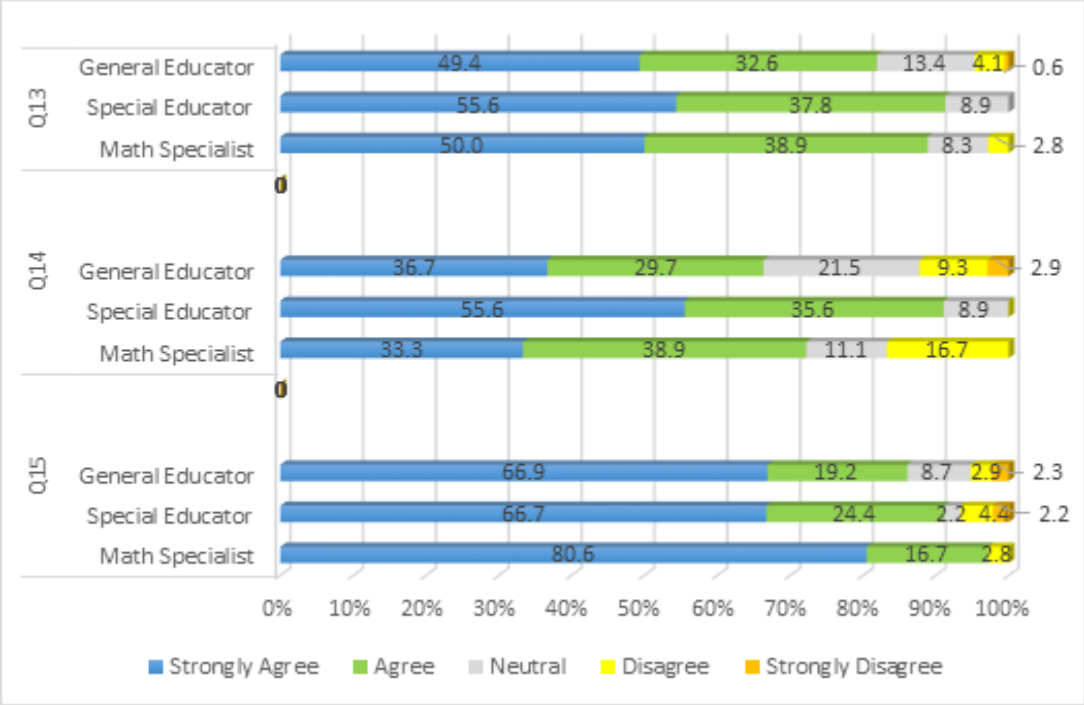

Figure 35. Responses by teacher groups to Part III questions 13 (special education teacher role), 14 (general education teacher role), and 15 (teacher accountability).

Most of the teachers in each group (93.4% of special education teachers, 88.9% of math specialists, and 82.0% of general education teachers) agreed or strongly agreed that they understood the general education teacher's role in the inclusion classroom (Figure 35, *top*). Not one special education teacher disagreed, and only a small proportion of general education teachers (4.7%) and math specialists (2.8%) did. Neutrality ranged from 8.3% to 13.4%.

Similar to question 13 responses, responses from 92.1% of special education teachers, 72.2% of math specialists, and 66.4% of general education teachers indicated in

response to question 14 that they strongly agreed or agreed that they understood the special education teacher's role in the inclusion classroom (Figure 35, *middle*). None of the special education teachers disagreed, but disagreement reached low double digits in general education teachers (12.2%) and math specialists (16.7%). The range of neutral responses was from 8.9% to 21.5%.

Question 15 responses showed a significantly high percentage of math specialists (97.3%), special education teachers (91.1%), and general education teachers (86.1%) believed that general and special education teachers were accountable for implementing IEPs (Figure 35, *bottom*). In contrast, 6.6% of special education teachers, 5.2% of general education teachers, and 2.8% of math specialists did not believe general and special education teachers were accountable for the implementation of IEPs. The range of teachers who took a neutral position ranged from 0% to 8.7%.

Co-teaching Beliefs

Figure 36 shows responses of all teachers regarding question 16 involving teacher perceptions on student access to grade-level curriculum and co-teaching's impact on student achievement.

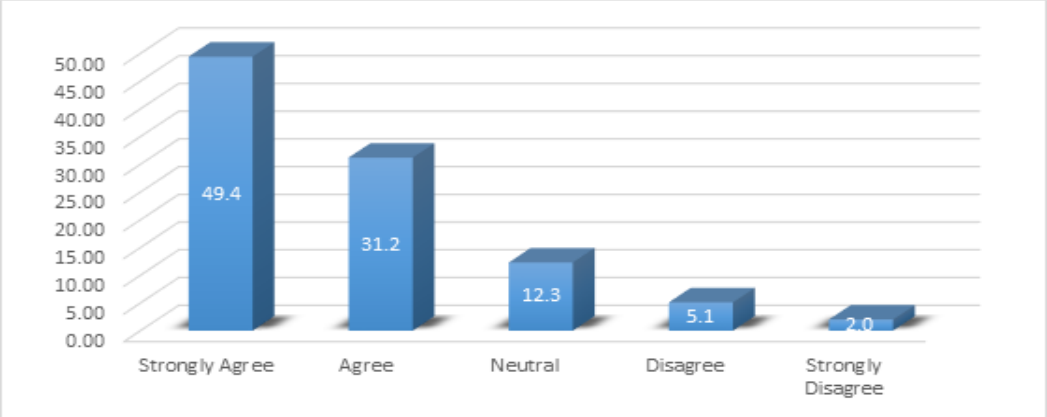

Figure 36. All teachers' response to Part III–question 16: Giving students with disabilities access to grade-level curriculum, delivered through co-teaching, can improve their academic achievement.

Among all teachers, 80.6% believed giving students with disabilities access to the grade-level curriculum through co-teaching could improve their academic achievement. In comparison, only 12.3% of teachers remained neutral, and 7.1% did not believe it would improve academic achievement.

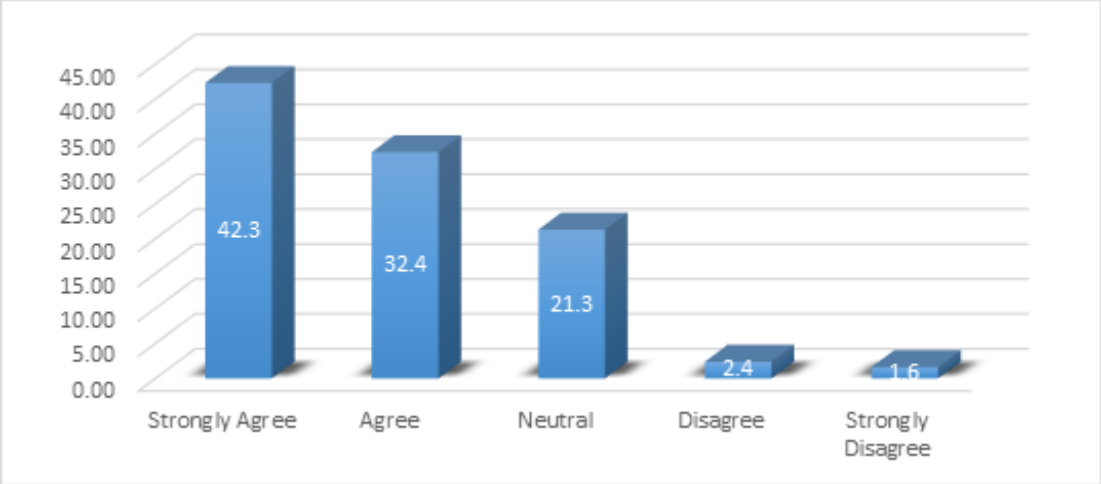

Figure 37. All teachers' response to Part III–question 17: Students with and without disabilities will be more engaged during co-teaching situations.

According to question 17 responses (Figure 37), 74.7% of teachers strongly agreed or agreed that students with and without disabilities would be more engaged during co-teaching scenarios, a percentage significantly higher than that of the 4.0% who strongly disagreed or disagreed. A fifth of all teachers (21.3%) remained neutral.

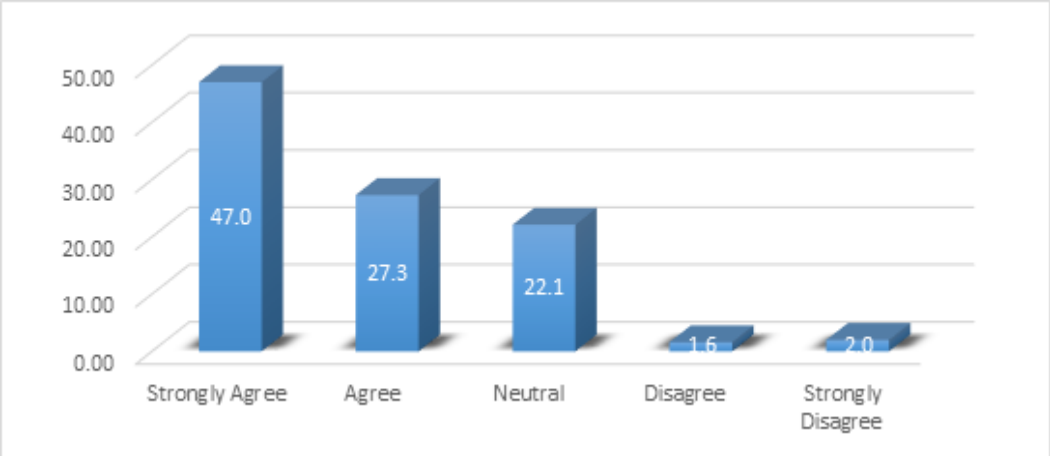

Figure 38. All teachers' response to Part III–question 18: I believe co-teaching experiences can improve my instructional practice as a teacher.

Figure 38 displays responses of all teachers regarding question 18 involving teachers' beliefs about co-teaching improving their instructional practice. A significant percentage of teachers (74.3%) strongly agreed or agreed co-teaching could improve teacher instruction, more than 20 times the proportion of teachers who did not believe co-teaching experiences could positively improve teacher instruction (3.6%). Exactly 22.1% of teachers remained neutral.

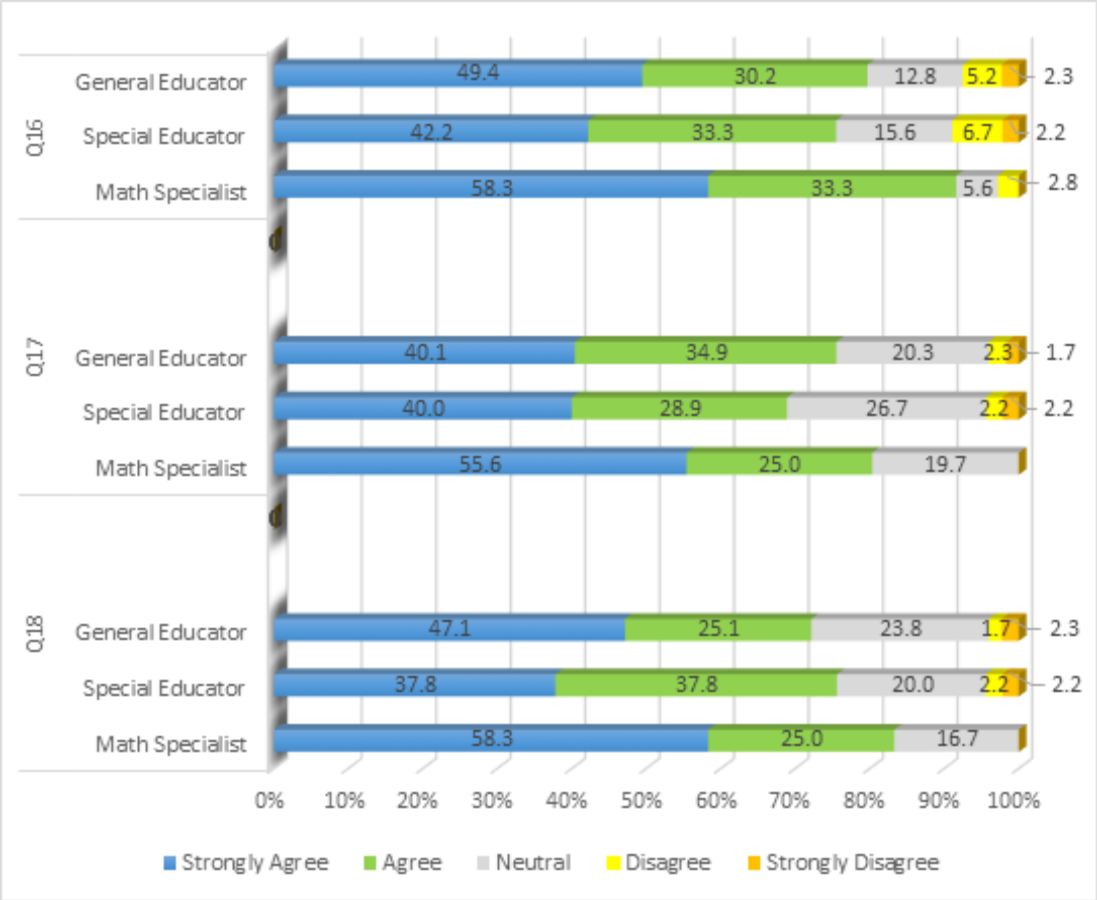

Figure 39. Responses by teacher groups to Part III questions 16 (access to general curriculum), 17 (engagement of students with disabilities), and 18 (impact on teacher practice).

Most of the teachers in each group (91.6% of math specialists, 79.6% of general education teachers, and 65.5% of special education teachers) strongly agreed or agreed that giving students with disabilities access to the general grade-level curriculum through co-teaching can lead to academic improvements (Figure 39, *top*). Low proportions of math specialists (2.8%), general education teachers (7.5%), and special education teachers (8.9%) disagreed or strongly disagreed. Teacher neutrality ranged from 5.6% to 15.6%.

Regarding all students' engagement being higher during co-teaching, most math specialists (80.6%), general education teachers (75.0%), and special education teachers

(68.9%) strongly agreed or agreed that co-teaching impacts it positively (Figure 39, *middle*). None of the math specialists disagreed, and less than 5% each of general education teachers (4.0%) and special education teachers (4.4%) disagreed or strongly disagreed. Neutrality on question 17 was fairly close, ranging from 19.4% to 26.7%.

Math specialists (83.3%), special education teachers (75.6%), and general education teachers (72.1%) agreed or strongly agreed that co-teaching benefits teacher practice. None of the math specialists disagreed, and very few general education teachers (4.0%) and special education teachers (4.4%) did. However, neutrality ranged from 16.7% to 23.8%.

General Linear Models MANOVA Output

The General Linear Models MANOVA computation identified a significant difference in overall survey responses by teacher group ($F=3.670_{36,468}$; $p = 0.000$). Follow up post hoc analyses, using Tukey b, identified specific items where differences in teacher group were most evident. These outputs are provided in charts in Appendix A and are discussed further next.

Special education teachers (mean=1.96) reported more confidence in the ability to provide specialized instruction in math classroom than math specialists (mean=2.83) and general education teachers (mean=2.96) (Appendix A, Table 2). The outputs in Appendix A, Table 3 showed significant differences in means for math specialists (mean=4.83) and special education teachers (mean=4.13) who expressed more comfort in teaching students with disabilities than did general education teachers (mean=3.12). In Appendix A, Table 4 special education teachers (mean=2.78) reported completing more professional development in co-teaching than did math specialists (mean=3.78) and

general education teachers (mean=3.91). Appendix A, Table 5 displayed that special education teachers (mean=2.89) and general education teachers (mean=2.95) felt stronger about the presence of a clear campus vision and expectation of inclusion models than did math specialists (mean=3.56).

In Appendix A, Table 6, there was a significant difference as general education teachers (mean=2.21) strongly agreed that general teachers prepared lessons with appropriate learning strategies for students with disabilities as compared to special education teachers (mean=2.60) and math specialists (mean=2.92). Math specialists (mean=1.64) expressed stronger confidence in their ability to teach mathematics concepts to students with disabilities than did both general education teachers (mean=1.76) and special education teachers (mean=2.16) (Appendix A, Table 7). Math specialist (mean=1.06) were more confident in understanding student expectations through the state math standards than were both special education teachers (mean=1.45) and general education teachers (mean=1.58) (Appendix A, Table 8).

In Appendix A, Table 9, math specialists (mean=1.72) and special education teachers (mean=1.73) reported higher confidence in their ability to engage students with disabilities in the math classroom than did general education teachers (mean=2.22). Finally, math specialists and general education teachers displayed less understanding of special education teachers' role and responsibilities (Appendix A, Table 10).

Summary

This chapter summarizes the findings from the archival records from the district survey. General education teachers (172), special education teachers (45), and math specialists (36) in an urban district in Houston completed the survey online. Teachers completed the three-section survey providing demographic information, experiences in co-teaching, and perceptions of barriers to co-teaching. Results are reported according to the sections of the co-teaching survey completed by teacher participants and organized by groups: total teacher response, general education teacher response, special education teacher response, and math specialist response.

A summary of responses for Part II: Experience indicated many teachers in each subgroup reported having read about co-teaching, specifically over 90% of special education teachers. Despite the number of teachers possessing literature knowledge of co-teaching, a low percentage of teachers in each subgroup have attended co-teaching training. However, a greater percentage of math specialists reported experience implementing a one teach, one observes, one teach, one assist, parallel, and team model. A higher percentage of special education teachers reported implementing the alternative teaching model than any other subgroup, and general education teachers reported the highest use of the station teaching model.

Regarding barriers to co-teaching, Part III of the survey a high percentage of teachers agree common collaborative planning is required. Moreover, a higher percentage of special education teachers responded as being well trained in providing specialized academic support, although a third of all teachers were neutral. A majority of all teaches responded favorably to feeling comfortable teaching students with disabilities

in the general classroom. However, a large number of teachers reported not having completed a satisfactory amount of professional development on co-teaching in comparison to nearly half of special education teachers reporting they have received adequate training.

According to teacher responses to campus expectation barriers, half of all teachers agreed that campus leaders expect special education and general education teachers to collaborate to provide accommodated services, and general education teachers to prepare lessons that include learning strategies. However, teacher responses varied evenly from agreeing to neutral to disagree in response to a clear vision as to what instructional model looks like.

As a whole teachers reported feeling comfortable teaching mathematics to students with disabilities, understood the student expectations for the math standards, and felt they could adequately engage learners in the math content. Also, teachers understood both general and special education teachers' roles and responsibilities. A majority of teachers felt both general and special education teachers are held accountable for implementing students' Individualized Education Plans.

Finally, teachers' co-teaching beliefs are positive. A vast number of teachers agreed that students accessing instruction through co-teaching improve their academic achievement, and they will be more engaged. Teachers agreed that utilizing co-teaching as a method of instructional delivery can improve their instructional practice as a teacher.

Chapter V

Discussion

This study addressed teachers' experience in and perceptions of barriers to co-teaching. This chapter includes a discussion of findings in conjunction with relevant literature on co-teaching experiences and barriers. Perceptions of six co-teaching models are discussed: (a) One teach, One Observe Teaching; (2) One Teach, One Assist Teaching; (3) Parallel Teaching; (4) Station Teaching; (e) Alternative Teaching; and (f) Team Teaching. Barriers discussed include those related to planning, professional development, teacher roles and responsibilities, campus expectations, content knowledge, and co-teaching beliefs. This chapter concludes with a summary of the study's limitations and considerations for future research.

The following research questions have been answered based on the survey findings presented in the last chapter:

RQ1: What are the levels of experience of general education teachers, special education teachers, and math content specialists in utilizing co-teaching models?

RQ2: What are the perceptions of general education teachers, special education teachers, and math content specialists on barriers to co-teaching, including planning, professional development, teacher roles and responsibilities, content knowledge, and beliefs about co-teaching?

Districts task teachers to provide comprehensive support to students with disabilities in mathematics. Their level of experiences through reading, professional development, and practice of various models influences their understanding of inclusion models. Moreover, teacher perceptions of barriers to co-teaching impact implementation

effectiveness. Part II of the co-teaching survey answered the first research question, and Part II answered the second research question.

Experience in Co-teaching

The results of Part II of the co-teaching survey indicated a gap between teachers' knowledge and training in co-teaching models. While most teachers read about co-teaching, very few completed professional development training in it. So, to what degree teachers understand and choose specific models for specific needs? Thus, the data support research in showing the need for more training for teachers to implement inclusive models with fidelity as teachers may not fully be prepared for co-teaching (Chitiyo & Brinda, 2018). Brendle and Lock (2017) researched the effective implementation of co-teaching and found that although some teachers had some knowledge and little experience in co-teaching, they possessed minimal knowledge and strategies in implementing co-teaching models. Limited knowledge or experience can determine which model teachers are more likely to try.

While teachers cite using various models, the station and alternative models are emphasized by participants. It is no surprise that general education teachers frequently use the station model as they often prepare independent stations for student learning as part of lesson designs and testing review of various math standards for test preparation. Although the collaborative nature of their station teaching experience is unknown, station teaching is easier to set up for special education support.

It should be no surprise that the alternative model was a frequent choice among teachers, especially special education teachers and math specialists. In alternative teaching, students with disabilities often require small group remediation or pre-teaching

concepts (Friend & Cook, 1995). Special education teachers bring the expertise of learning strategies to use with students with disabilities in providing access to the general curriculum.

Math specialists are content experts and provide training in many teaching strategies useful for diverse student populations. Furthermore, specialists provide modeling opportunities for teachers in using alternative strategies in re-teaching small groups. In regard to team teaching, math specialists cited the most usage. The literature states that team teaching requires the most planning and is considered the highest form of co-teaching (Friend et al., 2010). Again, the role of a math specialist is to coach teachers by observing, modeling, and providing feedback on lessons. In modeling for teachers, sometimes a specialist can use team teaching as a strategy to build teacher capacity.

It is no surprise that special education teachers reported high use of one teach, one assist as they play a supporting role in providing classroom instruction, and math specialists cited high usage because it is conducive for learning opportunities through modeling. The results do indicate alignment with research that states that the one teach, one assist approach does not require a high level of collaboration between teachers. However, it does provide observational and learning experiences for teachers who know less about the content (Cook and Friend,1995, 2007).

Although the percentage of all teachers who had used the one teach, one observe model was not high among all teachers, it remained a frequently cited model among specialists as it provides observational opportunities for teachers and math specialists. Friend et al. (2010) stated that the purpose of utilizing this model was to gather data on teacher behavior and student action through observation. It should be noted that from the

low percentage of special education teachers who acknowledged using one teach, one observe teaching, one might infer that special education teachers are expected to be more interactive with students in providing support and that the need for sole student or teacher observation may be rare for special education teachers.

Parallel teaching requires a high level of planning, so the low reported usage was expected. To effectively facilitate parallel teaching, teachers must provide extensive, coordinated, detailed lesson delivery of the same instruction in a split classroom (Friend & Cook, 1995). As teachers may have some time to discuss lesson objectives and activities, the opportunity for in-depth collaboration for parallel teaching is unknown.

Barriers to Co-teaching

Planning

The study revealed that most teachers agreed that common planning times are required for general and special education teachers to provide adequate inclusion support. In most cases, this is usually a weekly content planning session for co-teachers only. In studying effective planning for co-teaching, Walter-Thomas, Bryant, and Land (1996) state that administrators should ideally arrange at least one common planning period per week for co-teaching pairs. Participants' responses also indicated that general and special education teachers find time outside of regular planning sessions to collaborate for instructional needs. Research by Friend and Shamberger (2013) on collaboration found that teachers have used times before and after school and brief minutes while passing in the hallway to plan for upcoming lessons.

Participant responses also showed that some special education teachers are required to attend grade-level planning sessions, but some are not. The difference may be

attributed to various levels of support from campus supervisors and a lack of understanding of co-teaching needs. In researching what administrators know about co-teaching, Nierengarten and Hughes (2010) found that administrators saw the need for planning support and encouragement. However, the planning barrier loses attention over time, as other needs of the campus are a focus.

Professional Development

Regarding professional development, most teachers believed they had not received adequate training on co-teaching. Lack of training impacts teacher readiness or willingness to implement such models. These findings are in alignment with Chitiyo (2017), who found challenges in co-teaching. Individual teachers noted that they lacked the proper skills needed to facilitate learning using co-teaching models. Proper skills ultimately will diminish the effects of co-teaching as teachers will minimize use or abandon the practice altogether. A study by Faraclas (2018) on professional development in co-teaching suggests that many districts are beginning to utilize co-teaching models. However, it does not mean that teachers are ready for implementation. Teachers need extended training on inclusive models to improve the fidelity of successful practice.

Outside of co-teaching training, a significant number of teachers reported being well trained in providing specialized support to students with disabilities and feeling comfortable teaching students with disabilities in mathematics. The comfort level could be a result of other district training provided by the content and special education departments on instructional strategies used for all students. Moreover, teaching in an

urban district would allow teachers many experiences in teaching a diverse group of students, including students with disabilities.

Campus Expectations

A majority of teachers agreed that general education teachers are responsible for preparing appropriate lessons for students with disabilities. General education teachers commonly receive training focused on universal strategies that benefit all students. Most of the special education teachers agreed that a collaboration expectation between general and special education teachers exists. However, only half of all teachers agreed. The agreement speaks to possibly mixed messages given to campus teachers from administrators on planning expectations. Collaboration is one of the main premises of co-teaching effectiveness and is used to assess the design and evaluation of student needs (Friend & Cook, 1995). Also, the lack of collaborative expectations could be related to not providing common planning times aforementioned for teachers to plan. Friend and Cook (1995) state that administrators can support teaching partnerships by scheduling collaborative planning times for co-teachers.

That most teachers did not know about or disagreed with a campus vision of how inclusion models should look is concerning because it signified that campus leaders are not prepared to incorporate co-teaching as teaching models. The results are in alignment with the research findings of administrative training needs. Research by Nierengarten and Hughes (2010) about what teachers wanted administrators to know about found that, because of lack of training, district and building administrators did not understand how to facilitate successful co-teaching on campuses.

Content Knowledge

Lack of content knowledge can limit teacher effectiveness in the classroom. Respondents in the study reported being comfortable teaching math to students with disabilities and understanding what students are expected to learn within the state math standards. Surprisingly, special education teachers did not report disagreement with comfort level and understanding math standards. Typically, they may lack the content expertise because their training is mostly wrapped around accommodation strategies used to support content. It needs to be noted that building content knowledge is crucial for all teachers involved. Koellner, Jacobs, and Borko (2011) identified three features that are critical for effective professional development and essential in preparing leaders and teachers to implement high-quality mathematics training. They are fostering a professional learning community, developing teachers' mathematical knowledge for teaching, and adapting professional development to support local goals and interests. It is noteworthy that although general education teachers reported feeling comfortable teaching mathematics to students with disabilities and understanding what students needed to meet state testing expectations, they expressed confidence in engaging students with disabilities in mathematics at the lowest rate (62.8%). Other groups ranged from 86.1% to 88.9%.

Teacher Roles and Responsibility

The data revealed that most teachers cited an understanding of both the general education teacher’s role and special education teacher's role in the inclusive classroom. The understanding suggests that an awareness of roles and responsibilities exists amongst campus teachers. In the general education and special education relationship, the general

education teacher is often the content expert, and the special education teacher brings expertise in providing appropriate accommodations for students with disabilities. This is important because building co-teaching partnerships requires more than just basic knowledge of co-teaching. Findings support the research of Bouck (2007) on constructing co-teaching relationships. Teachers had to communicate, plan, and develop their relationship in deciding on space and responsibilities while dealing with tensions in the classroom. Friend (2008) further suggests that co-teaching relationships depend on teachers being flexible and solving problems in order to work through opposing opinions, build a strong partnership, and improve student outcomes. Co-teaching, thus, is more than just planning. It is constant communication between teachers, resolving simple and complex matters (Friend & Cook, 1995).

In improving student outcomes of students with disabilities, teachers must implement each student's IEP. Walter-Thomas, Bryant, and Land (1996) suggest that teacher teams are responsible for developing adequate goals that reflect what skills are necessary for students to have success in the general classroom. Results showed that a majoring of participants agree that general and special education teachers are held accountable for delivering instruction using students' IEP. This accountability and expectation are in alignment with research emphasizing that teachers first respect each other and care for the development of students with disabilities in the inclusive classroom (Lindeman & Magjiera, 2014).

Co-teaching Beliefs

Results on teachers' beliefs about co-teaching indicated teacher agreement that students with disabilities can improve academically using co-teaching to access grade-

level curriculum. This is important as teacher attitudes toward collaborative efforts influence student outcomes (Friend & Shamberger, 2013). Also, it can be surmised that teachers understand the benefits of co-teaching. This understanding supports the finding of Friend and Cook (1995) that one major benefit of co-teaching is that the students are provided more opportunities because of the exposure to the different instructional models. The survey conducted by Austin (2001) on teachers' beliefs about co-teaching found that most teachers surveyed believed that co-teaching had a positive effect on their students' performance.

Also, a majority of the respondents agreed that co-teaching leads to more student engagement. This belief may be attributed to having more than one teacher in the classroom to provide academic support. Thus, students have more opportunities to ask for and receive feedback because there are two teachers. Austin (2001) found that teachers showed an appreciation for student participation during co-teaching instruction. Increased student engagement can also have a positive effect on teachers as it may motivate improvement in teacher collaboration and practice.

Finally, significantly high participant responses (74.3%) indicated a majority agreement that co-teaching can improve teacher instructional practice. The high agreement may be attributed to benefits of co-teaching, such as experiencing co-planning opportunities, reducing the student-teacher ratio, and learning from partner teachers. Each teacher brings expertise to the partnership to create dynamic teaching practices and strategies (Friend & Cook, 1995). Friend (2008) defined co-teaching as a partnership between a general education teacher and a specialist in providing instruction to a diverse group of students. The specialist can be a special education teacher, another general

education teacher, math specialist, science specialist, or reading specialist. Each teacher, through trust, collaborates and learns new instructional strategies or thinking from his or her counterpart through co-teaching experiences.

Limitations

It is unclear to what level of fidelity teachers implemented models of co-teaching. Moreover, the impact of co-teaching experiences with specially designed instruction on student outcomes and teacher decision making on choosing models were not examined. Additional research is, therefore, needed to expand the study.

Implications for Teacher Practice

The purpose of this study was to examine teachers' experience with co-teaching and their perceptions of potential barriers for implementation. The study indicated that although teachers may have experience in co-teaching through reading or limited classroom practice, there is a high need for professional development on inclusive modeling for teachers and administrators. The on-going training will help all stakeholders identify and overcome barriers to inclusion supports. Administrators should provide scheduled, common planning times for co-teachers. Specific content training in mathematics must be provided for special education teachers, and specialized accommodation training should be continued for math specialists and other teachers whose specialty is not special education. Although teachers believe that co-teaching can benefit students and their practice, an understanding through training, practice, and evaluation should be a priority to ensure proper implementation.

Recommendations for Further Research

The results of the study suggest that further studies are needed to expand on the effectiveness of co-teaching on student achievement in mathematics. Also, the study indicated a need to research the success rate of co-teaching relationships. In teacher preparation, additional research on professional development models districts may use and their impact on co-teaching practices on campuses would further provide evidence of benefits. Teachers cited some experience in co-teaching. However, more research is needed to investigate the depth of teachers' understanding of co-teaching models and the teachers' ability to match specific models to specific needs and contexts.

Conclusion

The purpose of this quantitative archival record study was to examine the experience of general education teachers, special education teachers, and math specialists regarding co-teaching and their perceptions of six co-teaching barriers related to planning, professional development, teacher roles and responsibilities, campus expectations, content knowledge, and co-teaching beliefs. The findings indicated that teachers believed utilizing co-teaching models can benefit student achievement, engagement, and teaching instruction. Consequently, teachers had literature based knowledge about the various co-teaching models but minimal training completed in this area. Teachers also agreed that collaborative planning was occurring and possessed knowledge of math standards taught. However, teachers either did not know about or disagreed with a campus vision of how inclusion models are implemented. These findings demonstrate a need for more professional development in the district on the basics, implementation, evaluation of co-teaching models, and specialized instruction

training in the math classroom. A recommended action plan for professional development is described in the following chapter.

Chapter VI

Action Plan

This chapter presents a recommended action plan for professional development needs based on gathered data on teacher perceptions and experiences on co-teaching and barriers to co-teaching. As a result of the data collected, this chapter presents a recommended action plan describing a professional development initiative to serve general and special education teachers, campus teaching specialists (including math specialists), paraprofessionals, and campus administrators on the basics and implementation of co-teaching. Also, the professional development initiative will include integrated co-teaching plus content learning sessions in mathematics to provide guidance in the planning and preparation for co-teaching in the classroom. This training should occur during the summer professional development season for school districts and offer individual campus supports during the fall and spring semesters. The following suggests a professional development series, materials needed, and methods for evaluating co-teaching.

Professional Development Series

Session 1: Basics of Co-teaching

Based on teacher responses in Part II: Experiences of Co-teaching Survey, teachers have read about co-teaching but possess limited training. Thus, the first professional development session that would be offered is a foundational session on maximizing in-class support using co-teaching. Based on teacher responses in Part II: Experiences of Co-teaching Survey, teachers have read about co-teaching but possess

limited training. The title of the session, the objective, the schedule, the audience, and a detailed description of the lesson are provided.

Title: Elements of Inclusion Models: Maximizing In-Class Support by Co-teaching

Objective: To build knowledge and implementation of co-teaching models

Schedule: Summer, fall, and spring district and campus training

Audience: Instructional specialists, math facilitators, special education teachers, administrators, general education teachers

General and special education teachers are faced with many questions in planning and presenting mathematics instruction in inclusion classrooms:

- What should in-class support look like?
- How can co-teachers maximize instructional time?
- Where do the general education teachers and special education teachers fit in the math instruction?
- How can general education teachers and special education teachers co-exist with math specialists?

Description. Participants will learn the basics of the six support models using model cards and scenarios and learn how to overcome barriers, including lack of collaborative planning opportunities and content knowledge, and how to engage in first-line instruction (see Appendix C and Appendix D). One size does not fit all. Because of the hectic schedules of in-class support teachers, it is challenging to implement co-teaching in the math classroom. However, depending on where teachers are in the lesson cycle, the lesson activities, and content knowledge, teachers can use these decision points

on a planning guide (Appendix E) to identify what elements of various models best fit the purpose of instructional support for the day. Post session follow-up training, observations, and feedback on support adjustments will be offered to campuses through the fall and spring semesters.

Session 2: Collaborative Lesson Study for Inclusive Classrooms

According to teacher responses in Part III: Planning of Co-Teaching Survey, although teachers agree on teacher collaboration, there was a split between agreement that teachers can attend the same collaborative planning sessions. The second professional development session that will be offered will provide a collaborative opportunity for special and general education teachers. This second session is a lesson study for teachers to analyze and practice lesson designs, which in turn will build teacher capacity in lesson delivery in an inclusive setting. The title of the session, the objective, the audience, and a detailed description of the lesson are provided:

Title: Collaborative Lesson Study for Inclusive Classrooms

Objective: To build capacity for utilizing lesson studies in developing effective lesson designs

Schedule: Summer, fall, and spring district and campus training

Audience: General teachers, special education teachers, instructional specialists, administrators

Description. Lesson study is an inquiry-based approach designed to help teachers refine their practice through a systematic analysis of the planning and execution of classroom lessons. Below are focal questions triads of teachers (one each from general

education, special education, and math) may use to assess effective student learning and teaching strategies of their lesson study on specific math concepts:

- How engaged were English-language learners (ELL) and special education students?
- Did teachers maximize the use of manipulatives/supplemental aids?
- Did the teachers' questioning elicit student thinking?
- How much student discourse was allowed?
- Did teachers provide entry points for all learners?
- Did teachers accurately assess student mastery?

Description. Campus administrators may select a triad of teachers to work together to target an identified math strand for development in their students' learning. Using existing evidence (district benchmark and STAAR data), participants collaboratively research, plan, teach, observe, and reflect on a series of lessons for inclusion classrooms. The purpose of this campus training is to guide participants through a lesson study design protocol to evaluate and reflect on all students' development and the practices teachers use to promote that development.

Session 3: Co-teaching Math Content

The third session integrates the co-teaching practice of specific math objectives. According to Part III: Content Knowledge of Co-Teaching Survey, most teachers agreed to understanding student expectations in mathematics and being comfortable and confident in providing specialized support for students with disabilities. This session will provide teachers an opportunity to continuously build their content knowledge while utilizing specialized supports in the co-teaching classroom. The math content will be

selected per major math reporting category from TEKS to match grade-level bands attending the training. Individual campus-level training can be delivered upon principals' requests. The title of the session, the objective, the audience, and a detailed description of the lesson are provided:

Title: Co-teaching Math Content

Objective: To build content with co-teaching capacity

Schedule: Summer, fall, and spring district and campus training

Audience: Instructional specialists, math facilitators, special education teachers, administrators, general education teachers

Description. Participants will receive specific training on selecting the most engaging support model to deliver instruction on a critical readiness standard for a unit of study. During the sessions, participants will model a math concept using a selected support model with a partner participant and receive on-the-spot feedback from their peers for reflection. This series of training sessions will allow participants to anticipate and plan for flexible instruction on a historically troublesome student objective in one of the four reporting categories. Participants will leave with the capacity to do the math and collaborate with others in developing exemplar lesson plans with embedded accommodations and differentiated strategies to strengthen content capacity at the moment using support models emphasized. Four types of co-teaching would be defined, demonstrated, and practiced: team teaching, station teaching, alternative teaching, and parallel teaching. Sample support models with content session titles are provided below:

1. Getting the Most out of Team Teaching in Fractions
2. “Super” Station Teaching Instruction: Perimeter and Area

3. Alternative Teaching at its Best: Comparing and Ordering Numbers
4. Prepping for Parallel Teaching: Addition and Subtraction Involving Four Operations

Session 4: Coaching Through Co-teaching

Academic coaches and administrators strive to build their knowledge base of co-teaching models and understanding of when to use specific models during the stages of coaching and to keep it up-to-date. According to Part III: Co-teaching Beliefs, teachers agree that experiences in co-teaching can improve their instructional practices. This professional development training can help specialists improve teacher instruction by providing ample modeling, observation, and feedback opportunities for their teachers during coaching cycles. The title of the session, the objective, the audience, and a detailed description of the lesson are provided:

Title: Coaching through Co-teaching

Objective: To build coaching capacity through co-teaching

Schedule: Summer, fall, and spring district and campus training

Audience: Instructional specialists, administrators, math facilitators, special education coordinators

Description. Sometimes teachers become stuck in their professional progression, and instructional leaders must be creative in providing continuous support to move teachers to a new level. Rather than abandon the coaching cycle, instructional leaders will identify the most effective co-teaching model to use at each point in the coaching cycle to increase teachers' pedagogy and instructional output. Post-session, Instructional

Leaders will be proficient in selecting the most engaging co-teaching model to use during the coaching process and next steps of support.

Session 5: Evaluating Co-teaching

The final professional development session is designed to help administrators and coaches evaluate co-teaching practices during campus observations. According to Part III: Campus Expectations of Co-teaching Survey, administrators expect teachers to collaborate and prepare appropriate lessons for students with disabilities in the inclusive classroom. However, there is no clear vision of what it should look like. The session will build the capacity of administrators and specialists in identifying and evaluating key components of co-teaching instruction for effectiveness in planning, lesson implementation, specialized strategies use, and student performance. The title of the session, the objective, the audience, and a detailed description of the lesson are provided:

Title: Evaluating Co-teaching

Objective: To build capacity in identifying and evaluating components of Co-teaching models during campus observations

Schedule: Summer, fall, and spring district and campus training

Audience: Instructional specialists, math facilitators, special education teachers, administrators, general education teachers

Description. Many administrators desire increased interaction between special education, general education teachers, and students. Moreover, two expert educators in the classroom can yield compelling learning experiences and half the student-to-teacher ratio. Participants will walk through components of a Support Model Observation Checklist (see Appendix F) and use it to take notes during observations of video lessons

of co-teaching in action. Participants will collaborate through dialogue on best practices observed and leave with a list of key features of inclusion support and expectations for their special education and general education teachers in providing reliable, engaging first-line instruction.

Summary

This chapter summarizes a recommended action plan for professional development based on teacher responses gathered from the Co-Teaching Survey administered to special education teachers, general education teachers, and math specialists in conjunction with findings in the literature reviewed. The purpose of the training includes building capacity in co-teaching, math content knowledge, coaching through co-teaching, and evaluating components of co-teaching through the administrative and specialist lenses. The impact of this action plan hopes to boost teachers' instructional strategies in providing specialized instruction for students with disabilities and student achievement. Finally, it is hoped that districts will administer sections from the Co-Teaching Survey as a post evaluation survey to assess effectiveness of professional development sessions at the middle and end of the school year and use those outcomes to determine next steps in professional development.

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Appendix A

MANOVA Output Tables

Table 2

4. I am well trained in providing specialized academic support in the math classroom for students with disabilities.

4. What is your current educator position?	N	Subset	
		1	2
Special Educator	45	1.96	
Math Specialist	36		2.83
General Educator	172		2.98

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.147.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 3

5. I am not comfortable teaching students with disabilities in the general classroom.

4. What is your current educator position?	N	Subset	
		1	2
General Educator	172	3.53	
Math Specialist	36		4.08
Special Educator	45		4.13

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.483.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 4

6. I have completed a satisfactory amount of professional development on the various co-teaching models.

4. What is your current educator position?	N	Subset	
		1	2
Special Educator	45	2.78	
Math Specialist	36		3.78
General Educator	172		3.94

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.441.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 5

8. There is a clear vision or expectation as to what the instructional model should look like in the inclusion classroom.

4. What is your current educator position?	N	Subset	
		1	2
Special Educator	45	2.89	
General Educator	172	2.95	
Math Specialist	36		3.56

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.423.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 6

9. General education teachers prepare appropriate lessons that include learning strategies to benefit students with or without disabilities.

4. What is your current educator position?	N	Subset 1	Subset 2
General Educator	172	2.21	
Special Educator	45	2.60	2.60
Math Specialist	36		2.92

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.224.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 7

10. I feel comfortable teaching mathematics concepts to students with disabilities.

4. What is your current educator position?	N	Subset 1	Subset 2
Math Specialist	36	1.64	
Special Educator	45	1.76	1.76
General Educator	172		2.16

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.054.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 8

11. I understand what students must know, understand, and be able to do according to student expectations in the Texas Essential Knowledge and Skills (TEKS) for Mathematics prescribed by the State of Texas.

4. What is your current educator position?	N	Subset 1	Subset 2
Math Specialist	36	1.06	
General Educator	172		1.45
Special Educator	45		1.58

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = .510.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 9

12. I can adequately engage students with disabilities with the mathematical content according to student expectations within the curriculum.

4. What is your current educator position?	N	Subset 1	Subset 2
Math Specialist	36	1.72	
Special Educator	45	1.73	
General Educator	172		2.22

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = .804.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Table 10

14. I understand the special education teacher's role and responsibility in the inclusion classroom.

4. What is your current educator position?	N	Subset 1	Subset 2
Special Educator	45	1.53	
Math Specialist	36		2.11
General Educator	172		2.12

Note. Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = 1.061.
a. Uses Harmonic Mean Sample Size = 53.750.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
c. Alpha = .05.

Appendix B

Co-teaching Survey

Part I. Teacher Demographics Information

Instructions: Please respond to the subsequent questions about your demographics by selecting the appropriate line provided for each question.

1. What is your gender?

___ Male
___ Female

2. What is your current age?

__ under 25 __ 25-29 __ 30-39 __ 40-49 __ 50-59 __ 60 or more

3. What campus level are you teaching or supporting?

___ Elementary
___ Intermediate

4. What is your current educator position?

___ Special Educator
___ General Educator
___ Math Specialist

5. What grade(s) do you teach?

___ K ___ 1st
___ 2nd ___ 3rd
___ 4th ___ 5th
___ 6th

6. What content subject(s) do you teach?

___ Reading ___ Math ___ Social Studies ___ Science ___ All subjects

7. What area of certification do you hold?

___ General Education
___ Special Education
___ Both

8. What type of program did you complete for certification?

___ University Degree Program
___ Alternative Certification Program

Part II. Experience		
Instructions: A number of statements are presented below. Read each statement and think about your general perception of the statement. Select "Yes" or "No" to specify your general perception about each statement.		
1. I have read about co-teaching.	Yes	No
2. I have attended co-teaching training.	Yes	No
One Teach, One Observe With this approach, for example, co-teachers can decide in advance what types of specific observational information to gather during instruction and can agree on a system for gathering the data. Afterward, the teachers should analyze the information together.		
3. I have used one teach, one observe in the math classroom.	Yes	No
One Teach, One Assist In this approach to co-teaching, one person would keep primary responsibility for teaching while the other professional circulated through the room providing unobtrusive assistance to students as needed.		
4. I have used one teach, one assist in the math classroom.	Yes	No
Parallel Teaching In parallel teaching, the teachers are both covering the same information, but they divide the class into two groups and teach simultaneously.		
5. I have used parallel teaching in the math classroom.	Yes	No
Station Teaching In this co-teaching approach, teachers divide content and students. Each teacher then teaches the content to one group and subsequently repeats the instruction for the other group. If appropriate, a third station could give students an opportunity to work independently.		
6. I have used station teaching in the math classroom.	Yes	No
Alternative Teaching In alternative teaching, one teacher takes responsibility for the large group while the other works with a smaller group focusing on re-teaching or specialized attention, or reinforcement.		
7. I have used alternative teaching in the math classroom.	Yes	No
Team Teaching In team teaching, both teachers are delivering the same instruction at the same time. Some teachers refer to this as having one brain in two bodies. Others call it tag team teaching.		
8. I have used team teaching in the math classroom.	Yes	No

Part III. Barriers

Instructions: A number of statements are presented below. Read each statement and think about your general perception of the statement. Use the subsequent scale to specify your general perception about each statement.

1- Strongly Agree 2- Agree Somewhat 3- Neither Agree nor Disagree
4- Disagree Somewhat 5- Disagree Strongly

Planning	
1. Special education teachers attend grade level content planning sessions with their general education peers	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
2. General and special education teachers collaborate outside of planning to discuss how to provide specialized support for students in the inclusive classroom?	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
3. General and special education teachers require a common collaborative planning time to adequately plan for inclusive support.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree

Professional Development	
4. I am well trained in providing specialized academic support in the math classroom for students with disabilities.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
5. I am not comfortable teaching students with disabilities in the general classroom.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
6. I have completed a satisfactory amount of professional development on the various co-teaching models.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree

Campus Expectations	
7. Campus leaders expect the general and special education teachers to collaborate in providing accommodated instruction for students with disabilities in the inclusion classroom.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
8. Special Education teachers provide specialized instruction based on individual student needs in the inclusion classroom.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
9. General education teachers prepare appropriate lessons including learning strategies to benefit students with or without disabilities.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree

Content Knowledge	
10. I feel comfortable teaching mathematics concepts to students with disabilities.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
11. I understand what students must know, understand, and be able to do according to student expectations in the Texas Essential Knowledge and Skills (TEKS) for mathematics prescribed by the state of Texas.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
12. I can adequately engage students with disabilities with the mathematical content according to student expectations within the curriculum.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree

Teacher Roles and Responsibilities	
13. The general and special education teachers understand their roles and responsibilities in the inclusion classroom.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
14. In the inclusive classroom, the general education prepares and implements quality lessons for students with disabilities.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
15. Special education teachers layer the general education teacher's lessons with appropriate accommodations.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree

Beliefs about Co-Teaching	
16. Students with disabilities can improve their academic achievement when given access to the same grade level curriculum as their peers delivered through co-teaching.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
17. Students with and without disabilities will be more engaged during co-teaching situations.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree
18. Co-teaching will allow me to improve my instructional practices as a teacher.	1 2 3 4 5 Strongly agree ○ ○ ○ ○ ○ Strongly disagree

Appendix C

Co-teaching Cards

One Teach, One Observe

Purpose:
- To gather observational information on teacher/student(s)

Benefits:
- Data gathering
- Minimal joint planning

Obstacle:
- Students do not view teachers as equals.

One Teach, One Assist

Purpose:
- To deliver instruction while a second teacher provides additional assistance to students when needed

Benefits:
- Rotate lead teaching opportunities based on content expertise
- Minimal joint planning

Obstacle:
- Teacher dependency

Teaming

Purpose:
- To deliver high quality instruction led by two teachers

Benefits:
- Collaboration at the highest level
- High level planning

Obstacle:
- Requires high trust
- Content knowledge and delivery

Alternative Teaching

Purpose:
- To provide alternative support and reinforcement in small group

Benefits:
- Differentiated Instruction
- High level planning

Obstacle:
- Students in smaller groups can feel isolated or singled out.

Parallel Teaching (Great for Coaching)

Purpose:
- To deliver the same quality instruction and strategies between two groups

Benefits:
- Minimize teacher-student ratio
- Specific group for increased participation

Obstacle:
- Possible noise distractions

Station Teaching

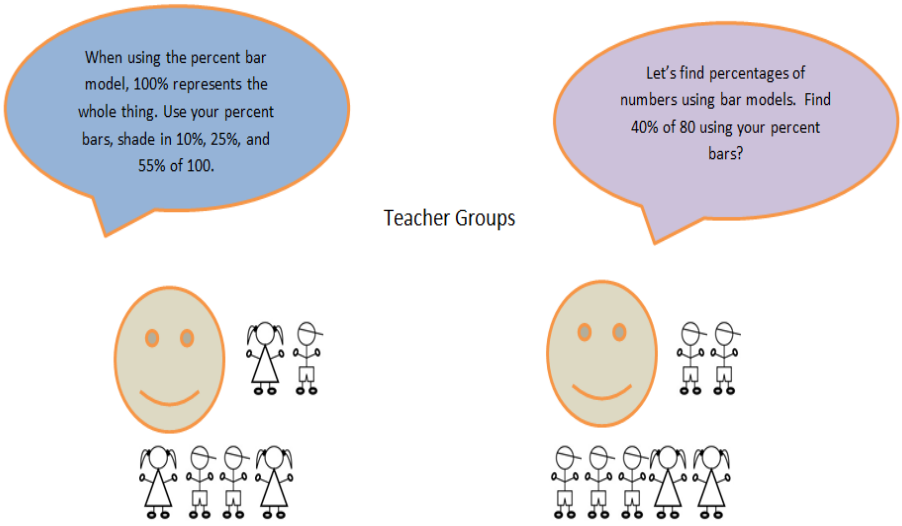
Purpose:
- To cover or review topic(s) at different levels of rigor while providing an opportunity to demonstrate mastery during independent work

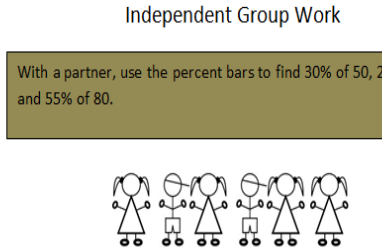
Benefits:
- Divide content scaffold parts
- Low teacher-student ratio

Obstacle:
- Class arrangement
- Noise level during transition

Appendix D

Scenario Cards





Appendix E

Planning Guide

LESSON CYCLE

1 Where are we in the lesson cycle?

- Today we are _____ _____, then transitioning to_____ _____.
- Today we are pulling flexible groups to review/reteach_____.

INCLUSION TIME

4 How long is the special education teacher in the class? Can I adjust my instructional block to accommodate teacher support?

- The in-class support teacher is here for _____minutes of instruction. I will switch my _____during this time to maximize support for students.

Guiding Sentence Stems for Selecting Situational Co-Teaching Model(s)

LEARNING

2 What are the students doing to demonstrate learning? How complex is the activity? What is the lesson objective?

- Students will work in pairs using (manipulative) to _____ _____ _____ _____.

PLANNING

5 How much prep and planning are required for lesson adaptations with accommodations, specially designed instruction, and anticipated model of choice?

- Student(s) will need (accommodations/scaffolds) _____ _____for success with this activity/lesson.
- I need _____time to review and possibly rehearse activity with my co-teacher.

CONTENT KNOWLEDGE

3 What is the expertise, comfort level, of teachers with the content or to be taught?

- _____is great at _____ _____ ___, so he/she can _____ _____.
- Both teachers understand and have experience in teaching students to _____ _____.

PURPOSE OF MODEL

6 What's the purpose? (*Think about the model's implementation and benefits.*)

- The _____model will allow us to _____during the lesson activity.
- One or more additional models would be useful because_____.

Appendix F

Support Model Observation Checklist

Support Model Observation Checklist

Observer:	Subject:	Date/Time:
O Initial Observation	O Follow-up Observation	
O Video Observation	Permission slips acquired O Teacher O Students	
What Do I See?		

General Teacher:
_____
_____

O Whole Group O Small Group O Independent

Questions/Observations:_____
_____
_____
_____
_____

O Students engaged/ O Students not engaged

Supports:

O Use of manipulatives	O Use of visuals	O Language support
O Use of accommodations	O Use of graphics	O Check for understanding
O Digital integration	O Student movement	O Instructional pacing

Student Discourse Rating:

Low		Med		High
1	2	3	4	5

Special Education Teacher:
_____
_____

O Whole Group O Small Group O Independent

Questions/Observations:_____
_____
_____
_____
_____

O Students engaged/ O Students not engaged

Supports:

O Use of manipulatives	O Use of visuals	O Language support
O Use of accommodations	O Use of graphics	O Check for understanding
O Digital integration	O Student movement	O Instructional pacing

Student Discourse Rating:

Low		Med		High
1	2	3	4	5

Class Management

O Class expectations are established. O Both teachers share management.
_____
_____

Class Environment

O Students feel free to share thinking. O Positive student to teacher interaction
_____
_____

Support Model Observation Checklist

Elements of Various Support Models	O Team Teaching O Parallel Teaching O Station Teaching O Alternative Teaching O One Teach, One Assist O One Teach, One Drifts _____ _____ _____ O Collaboration between teachers is evident.
Elements of SIOP Strategies	O Lesson Preparation O Building Background O Comprehensible Input O Strategies O Interaction O Practice/Application O Lesson Delivery O Review and Assessment _____ _____ _____
Lesson Plan Review	O Lesson displays differentiation. O There is evidence of teacher collaboration. _____ _____ _____ _____
Next Step(s) for Instructional/ Support Model Improvement:	