

A COMPARISON OF PERCEPTIONS FROM HIGH SCHOOL STUDENTS WITH
AND WITHOUT DISABILITIES ABOUT THEIR SCIENCE CO-TEACHING
EXPERIENCES

by

Shantha Preston-Smith
A Dissertation
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Education

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and Human Development

Date: _____ Fall Semester 2015
George Mason University
Fairfax, VA

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Dedication

This is dedicated to my late husband Willie LaMitchell Smith and our fabulous daughter Jadaiah Javon Smith.

Acknowledgements

This six-year journey has been extremely difficult, yet revealing. I have learned so many life lessons through this experience. I dare say I can recall them all here and now. The biggest lesson learned is how great is the God I serve. So, my first acknowledgement is to Him who has been able to keep me from falling. Thank you God for sending phenomenal people in my life throughout this journey. When I was ready to quit or give up, you sent angels from far and wide to offer me an encouraging word or support to help me continue on. I thank you for revealing the strength I have inside and the love you have for me. After the sudden loss of my grandmother, I was devastated, and yet I continued. Two months before my final dissertation defense, the sudden loss of my husband of 10 years definitely was a legitimate reason to the human eye for me to quit. But, not only did you supply the strength for me to continue, your love, and the love of the people you sent around me, pushed me to carry on. You are an awesome God, and for this I give you all honor, glory, and praise.

Next, I acknowledge my husband. Dick, while you did not complete the journey with me, you certainly did your part to push me through. I thank you for being there for me on this journey. The laughs we shared about the crazy experiences during this road to Ph.D. will not soon be forgotten. You were a great father, and Jadaiah did not miss a beat because she had you as a parent. Thank you for sharing your life with me. I know you are cheering me on from Heaven!

I would also like to acknowledge my parents, Sylvia Preston and Sterling Preston. Every time I call, you come running. God blessed me with the best earthly parents! Every late night or early morning call to support Jadaiah and me, you were there. Mommy and Daddy have officially earned honorary Ph.D.s in parenting! I share this degree with you!

To the rest of my family: Sypress Davis, Perry Davis, Billie Gill-Chestnut, and Anjuli Chestnut. You have all supported me on this journey in different ways. I can't say thank you enough! My dissertation defense day was memorable because you were there with me to witness what I have labored and toiled over for so long!

Last, but certainly not least, I would like to thank my dissertation advisor and committee chair Dr. Peggy King-Sears. Wow! What can I say? We have shared every emotion imaginable to man! However, the emotion we've shared the most is love! Thank you for pushing me to be my best all the time. I appreciate you.

There are so many others I could name: Dr. Baker, Dr. Brigham, Dr. Evmenova, Heather, Tiffany, Devon, Katrina, Lateefah, Damali, the list could go on and on. Just know, I am grateful for every helping hand, encouraging word, listening ear, and loving thought!

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Abstract

A COMPARISON OF PERCEPTIONS FROM HIGH SCHOOL STUDENTS WITH AND WITHOUT DISABILITIES ABOUT THEIR SCIENCE CO-TEACHING EXPERIENCES

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This study investigated similarities and differences in perceptions of high school students with and without disabilities who received science instruction from co-teachers.

Disproportionate stratified sampling was used to select students from 17 co-taught science classes in two high schools located in the South Atlantic region of the United States. Students completed the Co-Teacher Student Questionnaire (CTSQ), which had 25 Likert-type statements and three open-response queries. Students designated their perceptions of which co-teacher completed specific tasks or roles, their level of agreement with statements about the co-teaching instruction, and their perceptions of which co-teaching model was used the most. Independent sample *t*-test and chi-square analyses were used to compare responses on the CTSQ from students with and without disabilities. Qualitative analyses were used to code responses for open-response queries. Results indicated statistical significance between students with and without disabilities for six items on the Co-Teacher Student Questionnaire. Seventy percent of students

without disabilities indicated One Teach, One Observe or Drift was the co-teaching model used the most, whereas 45% of students with disabilities selected this model. Other similarities and differences are described, along with implications for future research.

Chapter One

Co-Teaching

One model used to provide science instruction to high school students with disabilities—such as learning disabilities, health impairments, high-functioning autism, and emotional disabilities—is for general and special educators to co-teach in the general education setting. In this chapter, co-teaching is defined, and the characteristics of effective and ineffective co-teaching are provided, including examples from research. The different models of co-teaching are also described. Further, previous research on co-teaching from middle and high school is explored. Finally, this chapter concludes with the statement of the problem, the purpose of the study, the research questions, and the definition of important terms.

Co-Teaching Defined. Bauwens, Hourcade, and Friend (1989) defined co-teaching as “...an educational approach in which general education and special educators work in a coactive and coordinated fashion to jointly teach academically and behaviorally heterogeneous groups of students in educationally integrated settings” (p. 18). In 1995, Cook and Friend defined co-teaching as a service delivery model where two educators (general and special) combine their expertise, and are actively involved in the instruction of a diverse group of students in the same physical space. Since that time, others have added to the definition of the co-teaching service delivery model. Magiera and Zigmond

(2005) defined co-teaching as two educators sharing responsibility for planning, delivering, and evaluating the instruction for a diverse group of students. More recently, Harbort et al. (2007) defined co-teaching as a collaborative effort on all instructional and classroom management matters by the general and special education teachers to benefit all students in the classroom. To that end, the goal of co-teaching is to support students with disabilities with accessing the general education curriculum (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010).

Characteristics of Co-Teaching

Murawski (2002) outlined key characteristics of effective and ineffective co-teaching practices. Murawski stated that in an effective co-teaching scenario, both co-teachers are responsible for planning instruction, grading papers, teaching content, and facilitating activities. It is not sharing responsibility when co-teachers only accept responsibility for “their” individual students (e.g., the general education co-teacher is responsible for general education students and the special education co-teacher is responsible for special education students). Further, it is ineffective to have the general education co-teacher do all of the planning without the special education co-teacher having input on the plans. It is equally ineffective to have the special education co-teacher as the primary person who circulates and assists students all period, while the general education co-teacher is solely responsible for teaching content.

Murawski (2002) emphasized that co-teaching teams are not comprised of general education co-teachers paired with special education co-teachers who have roles similar to paraprofessionals (sometimes called instructional assistants or teacher aides). Instead, co-

teaching teams are comprised of credentialed general and special education co-teachers who are bringing different areas of expertise to the team, which in turn should impact the instruction that students with and without disabilities receive. Effective co-teachers exemplify four characteristics: shared roles and responsibilities; distinct areas of expertise (i.e., subject-specific knowledge from general educators and pedagogical knowledge from special educators); co-planning; and parity.

Shared roles and responsibilities. In a survey conducted by Kohler-Evans (2006), one of the top three most important features in a co-teaching relationship was shared responsibility between co-teachers. In an effective co-teaching situation, sharing is exhibited in instructional practices as well as in classroom management. Sharing means both co-teachers take part in planning, creating, delivering content, and determining classroom management procedures for students with and without disabilities (Bouck, 2007). For example, in one study, effective co-teachers shared roles such as grading, grouping, planning, and teaching (Simmons & Magiera, 2007). In another effective team, co-teaching focused on the general education and special education co-teachers setting up and providing instruction, managing instruction, and giving feedback to students at nearly equal rates (Morocco & Aguilar, 2002). Conversely, ineffective co-teaching can occur when general education co-teachers lead the instruction most of the time, while the special education co-teacher is seldom in the lead and more often in an “assist” or more subordinate role (Scruggs, Mastropieri, & McDuffie, 2007). When general education co-teachers are reluctant to co-teach, they are less likely to share instructional roles with special education co-teachers. For example, Morocco and Aguilar (2002) reported that a

special education co-teacher, who in other co-taught settings (middle school science and geography) shared roles and responsibilities demonstrating effective co-teaching practices such as contributing and clarifying instructions, was not able to share instructional roles in a middle school co-taught language arts classroom, because this general educator did not want to have another teacher in the classroom.

Distinct areas of expertise. Co-teachers bring distinct areas of expertise to their instruction. General education co-teachers are experts in the content being taught, whereas special education co-teachers bring expertise in pedagogy for students with disabilities and positive classroom management techniques. Effective co-teaching teams learn knowledge and skills from their partners to enhance their pedagogical skills when teaching content to all students (Friend et al., 2010; Scruggs et al., 2007). However, when co-teachers are unwilling or otherwise unable to learn from their partners, the full benefits of co-teaching are not realized.

Role sharing is sometimes impacted by the content knowledge of the special education teacher (Scruggs et al., 2007). For example, Morocco and Aguilar (2002) demonstrated how a special education co-teacher in a geography class, with a strong understanding of the content, was able to re-teach a concept in a different way and provide stronger instruction to struggling students. However, an ineffective illustration of co-teaching involved co-teachers who did not have the same level of understanding of the content. Conversely, Keefe, Moore, and Duff (2004) found that the roles of high school special education co-teachers were limited when they lacked knowledge of the content. For example, the general education co-teachers reported that special education co-

teachers' lack of content knowledge limited the roles of the special education co-teachers. The special educators were then more likely to oversee classroom management in the co-taught settings, and to contribute less to the instruction (Friend et al., 2010; Weiss & Lloyd, 2002). On the one hand, special educators who lack sufficient content knowledge may be contribute limited pedagogy for content they are unfamiliar with. On the other hand, general educators who know the content are also limited because they are less familiar with different pedagogy responses to the needs of students with disabilities. Ultimately, effective co-teachers evolve to take on more knowledge and skills of their partners so that each enriches their repertoire (Moin, Magiera, & Zigmond, 2009; Scruggs et al., 2007). A key way that co-teachers determine content and pedagogy is through co-planning.

Co-planning. One way for co-teachers to determine how to divide roles and responsibilities is during co-planning time. Dieker (2001) found one common theme among perceived effective co-teaching middle and high school teams was the commitment to structured common planning time. Similarly, Kohler-Evans (2006) stated that co-teachers reported the number one most important feature in the co-teaching relationship was common planning time. Not only is mutual planning time important so roles can be divided and shared, co-planning gives co-teachers an opportunity to discuss and determine teaching expectations, teaching methods, and instructional strategies (Austin, 2001; Hang & Rabren, 2009).

Other research on co-planning time revealed that when it was removed from one co-teaching team, the co-teaching roles in the classroom shifted. This shift in co-teaching

roles caused the special education co-teacher to have fewer opportunities to share the lead, and resulted in the special education co-teacher being less influential on the pedagogies used, which impacted responsibilities with students (Bouck, 2007).

Conversely, Fontana (2005) found that having co-planning time allowed co-teachers who work together needed time, especially when a conflict or tension arose over the inability to share responsibilities in the co-taught classroom. For example, while conflict arose in all four co-taught classes, weekly planning meetings were used to address concerns and lessen the impact of the conflict.

Parity. “Parity occurs when co-teachers perceive that their unique contributions and presence on the team is valued” (Villa, Thousand, & Nevin, 2008, p. 6). For example, a general education and a special education co-teacher showed that they valued one another’s ideas and validated their co-teaching partnership by conferring and reaching an agreement in front of students about how to proceed on an assignment (Morroco & Aguilar, 2002). In order to attain parity, communication between co-teachers is critical (Eaton, Salmon, & Wishchnowski, 2004; Huber, 2005; Zigmond & Magiera, 2001). Tobin and Roth (2005) described this communication between co-teachers during co-planning as cogenerative dialoguing, which supports reflection on the process of co-teaching and discussion over what went well, what did not work, and how to make the instruction better.

Parity is not only established through co-planning prior to instruction, but can also be seen between co-teachers in the classroom setting. For example, from observations of how co-teachers use the classroom’s instructional space, it should be clear that the

classroom belongs to both co-teachers (Fontana, 2005). Both co-teachers having dedicated personal space in the classroom can demonstrate parity, whereas if one co-teacher has space and the other co-teacher does not, parity for space is not evident. Further, parity can be displayed when both co-teachers provide instruction to students about the same amount of time and jointly make instructional decisions during class when needed (Morocco & Aguilar, 2002).

Co-Teaching Models

General and special education co-teachers can operationalize how they co-teach by using one of the co-teaching models. Friend and Cook (2003) described six co-teaching models (One Teach, One Observe; One Teach, One Assist, sometimes referred to as Drift; Station Teaching; Parallel Teaching; Alternative Teaching; and Team Teaching) that provide a structure in which both the general and special education co-teachers can work together to share their expertise. Cook and her colleagues (Cook (2004); Cook & Friend, 1995; Friend & Cook, 2012; Friend et al., 2010) described these six co-teaching models to depict ways in which the special and general co-educators can interact to meet the needs of all students. In the first model One Teach, One Observe, one teacher teaches, while the other watches students, perhaps takes data on students' behaviors, targets which students need re-teaching, or determines which students grasp the content and are ready to learn subsequent skills. In the second model, One Teach, One Drift, one co-teacher leads the lesson while the other co-teacher circulates among students and supporting students as needed. The support may include answering questions, providing prompts for steps to solve content problems, or reminding students

of resources to use. In the third model, Station Teaching (e.g., learning centers), each co-teacher works with a group of students, and a third group of students works on their own independently. In the Parallel Teaching model, each co-teacher has about half of the students to teach. With parallel teaching, co-teachers may instruct toward the same learning outcome, but use different techniques and materials. In the fourth model, Alternative Teaching, one co-teacher works with most of the students, and the other co-teacher works with a smaller group of students. The co-teacher instructing the small group may teach something different, such as remediation or enrichment of a specific skill, while the co-teacher with the larger group may lead practice activities. Finally, with the sixth co-teaching model of Team Teaching, both co-teachers lead the large-group instruction. They may be presenting the same information together by demonstrating, explaining, or even giving different views. This model is also called “tag team teaching,” because the two co-teachers take turns with presenting or explaining the information.

Co-Teaching Research

There is little research on whether co-teaching enhances the learning as well as the instructional experiences of students with and without disabilities (Austin, 2001; Bessette, 2007; Damore & Murray, 2009; Fennick & Liddy, 2001; Hang & Rabren, 2009; Pugach & Wesson, 1995), and even less is known specifically about co-teaching in the science classroom (Dieker, 2001). Yet, co-teaching continues to be a model of instruction implemented across the United States (Mastropieri et al., 2005; USDE, 2014), despite little efficacy of co-teaching (Murawski & Swanson, 2001; Scruggs et al., 2007; Zigmond & Magiera, 2001). According to Friend et al. (2012), in order to show effectiveness, co-

teaching research needs to be developed for different grade levels (elementary, middle, and high school students) and different content areas (English/Language Arts, Math, Social Studies, and Science). The co-teaching studies that follow describe some of the work that has been done in co-teaching research in middle and high schools in various content areas. Then, research focusing only on middle and high school science is described.

Middle and high school content areas. Fontana (2005) investigated the effectiveness of co-teaching on the student achievement of 16 students with disabilities in eighth-grade English and Math classes. Fontana discovered whether students with disabilities performed better in the co-taught classroom versus a non-co-taught (resource room setting) by comparing their final averages in English and Math in seventh grade to their final averages in eighth grade. Equivalency of grades between co-taught and non-co-taught (resource room setting) groups of students were determined by running an ANOVA using extant seventh-grade data. There were no significant differences in English or Math grades between the co-taught and non-co-taught (resource room setting) groups of students. After 38 weeks of instruction in co-taught classes, the results showed the group of students with disabilities in English and Math co-taught classes had higher final averages than students with disabilities who received their instruction in a resource room outside the general education classroom. Another way these eighth graders' achievement was measured in the co-taught setting was through individual pre and post assessments using standardized instruments in Math, Self-Concept, and Writing. While a significant improvement was found in Math and Self-Concept pre-post measures for

students with disabilities in the co-taught setting, gains were not realized in writing. Additionally, co-teachers were surveyed pre and post co-teaching on instructional adaptations used such as modifying in class or homework assignments, use of peer tutoring and cooperative learning groups, and visual and auditory presentation manner. Initial results found that co-teachers consistently use two out of the ten instructional adaptations. The final results found two of the three teachers increased to using eight of the ten instructional adaptations on a consistent basis. However, overall it was noted that co-teachers preferred instructional adaptations that were most beneficial for all students. Co-teachers were less inclined to use instructional adaptations that were most beneficial to small groups or individual students.

In another study, Bouck (2007) qualitatively investigated the construction of co-teaching between two co-teachers of eighth-grade U.S. History as they co-taught together for the first time, as well as what can be learned about co-teaching from this particular case. From this case, the complexities of co-teachers working together to establish their roles and responsibilities are described. There were eight roles that emerged for either teacher to play in this case, including: instructor or disciplinarian to the class or individuals, classroom manager, supporter, gate keeper or authority, or confidant or friend of students. Co-teachers had to work together to fill these roles, which at times limited teacher autonomy or caused one party to feel devalued which created tensions between the general and special education co-teachers. However, two factors—voluntary assignments and common planning time—made the co-teaching model easier. Volunteering for a co-teaching assignment and having common planning time made the

facilitation of dividing roles and sharing responsibilities easier. Another finding, in the case of these two co-teachers, was the dichotomy between newly gained freedoms and concessions necessary in when developing the co-teaching relationship. For example, both the general and special education co-teachers had more time to assume multiple roles within the classroom. However, adding another teacher to a classroom also forced either teacher to give up some of their autonomy and compromise.

In another co-teaching qualitative case study, Weiss and Lloyd (2003) examined middle and high school special education co-teachers' role and what factors influenced those roles. The study examined six special education co-teachers who co-taught across multiple content areas (English, Social Studies, Science, and Math). One role of the special education co-teachers was to provide support during teacher directed instruction. At the high school level, lack of acceptance by the general education co-teachers, lack of content knowledge, or even being scheduled into many different co-teaching assignments were some of the factors that influenced the level of support the special education co-teachers provided.

Middle and high school science. Harbort et al. (2007) examined the roles and responsibilities of co-teachers in three secondary science (Biology and Physical Science) classrooms. These researchers found that co-teachers used the One Teach, One Observe/Drift model, which they also noted as similar to large-group instruction, with fewer opportunities for differentiating instruction. In this study, the researchers found that the general education co-teachers presented content 30% of the time, while the special education co-teachers presented content less than one percent of the time. Similarly,

Brusca-Vega, Brown, and Yasutake (2011) found that middle school science co-teachers reported that they used a One Teach, One Observe/Drift model over 80% of the time. The science general education co-teachers were predominately providing science content or leading whole class instruction or direction. The special education co-teachers were mainly observed supporting instruction through small groups of students or individual students with disabilities who needed extra help.

Moin, Magiera, and Zigmond (2009) observed 53 high school science lessons led by co-teachers and found whole class direct instruction made up 42% of the lessons predominately led by the science general education co-teachers. The special education co-teachers functioned more as a paraprofessional (i.e., walking around in a management capacity, dealing with materials, helping students with note-taking). Teacher interviews were conducted to find out why co-teaching happened the way it did in the observations. Co-teachers noted two main concerns: lack of co-planning time and lack of content knowledge. Co-teachers reported co-planning time as a salient element in effective co-teaching. Additionally, the lack of co-teaching training limited the general education co-teachers' ability to make curricular adaptations and limited the science content knowledge of the special education co-teachers. Teacher interviews that expressed more satisfaction with the co-teaching experience involved a co-taught setting that provided more hands-on instruction, co-teachers with prior experience with co-teaching, and co-planning.

These co-teaching research studies from various content areas in middle and high schools addressed student achievement, co-teachers' roles and responsibilities, and

teachers' perspective of co-teaching. Across these studies, the co-teaching model referred to place the general education co-teacher as the one giving content instruction (Brusca-Vega et al., 2011; Harbort et al., 2007). Whole class instruction was a primary way that students in co-taught settings received instruction (Brusca-Vega et al., 2011; Moin et al., 2009; Weiss & Lloyd, 2003). One element that was absent from these studies is the students' perspective of co-teaching.

Statement of the Problem

According to the 35th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act 2013 (2014), more than 60% of students with disabilities were educated for 80% of their school day in general education settings. Another 19.8% of students with disabilities were educated in general education settings between 40-79% of their school day. The data indicated that nearly three fourths of students with disabilities spend most of their school day in general education settings. Most students with disabilities start earning credits to graduate high school with a standard diploma in the ninth grade. The National Longitudinal Transition Study-2 (NLTS2) data found that 72% of high school students with disabilities earn their overall credits in the general education setting (Newman et al., 2011). Further, over a quarter of these high school students with disabilities earned these credits by spending their instructional day in the general education setting.

The 2011 High School Transcript Study (HSTS) (Nord et al., 2011) cited that students with disabilities (SWD) earned fewer credits in core academic classes (i.e., English, Mathematics, Science, and Social studies) than students without disabilities

(SWOD) did. To earn a standard high school diploma, students must earn four credits in English and three credits each in Mathematics, Science, and Social Studies. However, 45% of students with disabilities did not have enough credits in these academic classes to graduate. Of the 45% of students with disabilities who had insufficient credits to earn a standard diploma, almost half lacked only the science requirement. These data indicated that students with disabilities need support not only in core academic classes, but especially in science.

In addition to having sufficient credits to graduate with a standard HS diploma, students in co-taught science classes are also accountable for passing high-stakes testing. Cortiella and Horowitz (2014) reported that 55% of students with learning disabilities are educated in states that require exit exams. A closer look at states' data revealed the difficulty that students with disabilities have passing these exit exams. For example, the science achievement of high school students with disabilities, as based on the exit exam, was not promising (Virginia State Department of Education, 2014). According to the results of the state Science Standards of Learning (SOL) end-of-course exams, in Biology, 52% of students with disabilities failed. In Earth Space, 46% of students with disabilities failed the SOL. In Chemistry, 37% of students with disabilities failed the SOL. Failure rates as high as 50% for students with disabilities indicated that large numbers of students with disabilities may not be receiving responsive instruction; at the very least, examination of why many students with disabilities are not passing science tests is needed.

Given these high failure rates, how co-teachers provide instruction in co-taught classroom is important. To illustrate this, Mastropieri et al. (2005) found that high-stakes testing impacted how instruction was provided in a chemistry co-taught classroom. Mastropieri et al. (2005) reported that co-teachers were under pressure to keep the fast pace of the curriculum mandated by the district, which subsequently limited in-class opportunities for additional practice or supplemental review for students in need. Considering one role of special education co-teachers is to use their pedagogical expertise to modify instructional content to increase accessibility for students with disabilities, Mastropieri and colleagues found that opportunities to modify instruction were sacrificed to keep the pace. Conversely, when high-stakes testing was not a concern, co-teachers were better able to collaborate and determine the instructional plan, inclusive of modifications and other pedagogical techniques, to teach the content (Mastropieri et al., 2005).

Because co-teaching as a service delivery model is likely to be used, more information is needed to make sure students with disabilities receive instruction that helps increase their scores on mandated high-stakes testing, pass core academic classes, and ultimately graduate from high school with a regular high school diploma (Vannest, Hagan-Burke, Parker, & Soares, 2011). The problem is that there is little research about co-teaching and how this service delivery model of instruction improves achievement for students with disabilities (Austin, 2001; Bessette, 2007; Damore & Murray, 2009; Fennick & Liddy, 2001; Hang & Rabren, 2009; Pugach & Wesson, 1995).

Co-teachers and students alike are the primary stakeholders in the co-taught setting. General and special education co-teachers are stakeholders because they are responsible for merging their instructional expertise to provide flexible and intentional instruction that meets the learning needs of students—especially students with disabilities (Friend, 2013). Students, specifically students with disabilities are stakeholders because the instruction provided in a co-taught classroom supports their access to the general education curriculum (Friend et al., 2010). Further, all students stand to benefit from having co-teachers working together collaboratively (Mastropieri et al., 2005). Although some research has focused on the perspectives of co-teachers and students as the primary stakeholders in the co-taught setting, more research is needed (Austin, 2001).

Currently there is a limited body of research on co-teachers' perspectives of co-teaching. Some of the research suggests that co-teachers' perceived collaborative teaching is beneficial (Scruggs et al., 2007). Overall, general and special education co-teachers saw the value of co-teaching for themselves and their students (Austin, 2001; Damore & Murray, 2009; Fennick & Liddy, 2001; Pugach & Wesson, 1995). Additionally, co-teachers acknowledged that for collaborative teaching to be effective, the method by which students are grouped makes a difference. For example, general and special education co-teachers recommended practices such as cooperative groupings, small groups, and flexible groupings (Austin, 2001; Bessette, 2007; Pugach & Wesson, 1995). In fact, one co-teacher recommended these grouping practices as a way of supporting students who do not see the relevance of the content being taught or are not engaged in the classroom instruction (Bessette, 2007). It is important to know how co-

teachers as primary stakeholders in the classroom view co-teaching. Information gathered from primary stakeholders can change the educational experiences that they provide for students.

While there is only some information from the co-teachers' perspective of co-teaching, even less exists for what students perceive about their experiences in the co-taught setting, and even less from the perspective of students in a co-taught science classroom. According to Friend et al. (2010), "The intent of co-teaching is to make it possible for students with disabilities to access the general curriculum while at the same time benefiting from specialized instructional strategies necessary to nurture their learning" (p. 11). In order to have a well-rounded body of research that informs the co-teaching practice, examines its implementation, and adds value to the educational experience of students with disabilities, more research from the students' perspective is needed.

Research examining students' perspectives of co-teaching may influence the instructional practices of co-teachers. The limited student voices in the current body of research presents an opportunity for growth. If the desired outcome for all high school students is to attain enough credits in their core classes and pass high-stakes testing to graduate, it is concerning that the National Dropout Prevention Center for Students with Disabilities (2013) reported across all states that 80% of students with disabilities did not meet their targeted graduation rate. It is equally alarming that 48% percent of all states reported an increase in dropout rates for students with disabilities. The current study will examine the instructional experiences from students in the co-taught classroom. Better

instructional practices in the co-taught classroom may lead to more positive graduation outcomes and lower drop rates for students with disabilities.

Significance of the Study

This research is significant because students' perspectives in science co-taught classrooms were acquired. Their perspectives will provide information unique to the science classroom. That is, students from other content areas may have different perspectives. Choosing the content area of science is significant because students with disabilities receive instruction from co-teachers (Vannest et al., 2011) and are expected to pass high-stakes exams in order to graduate from high school with a standard diploma. Therefore, finding out from students what they perceive about their experiences in co-taught science classrooms may help to determine what students identify as effective, as well as identify ways to improve co-teaching as a service delivery model.

As an analogy, sometimes co-teachers cannot see the picture of their instructional practice because they are in the frame itself; they are not looking at themselves in the same way that students observe them. In other words, co-teachers are in the daily routine of planning instruction (together or separately), delivering instruction, and assessing students' work, but the co-teachers do not look at themselves and their work together. The significance of this study is that results can give co-teachers information about how co-teaching may be perceived effective as well as ways to improve their instructional practices. For example, co-teachers may think that having each co-teacher answer questions helps students learn. However, students may perceive that one teacher can more clearly answer questions. Conversely, students may feel that one of their co-teachers not

able to answer content area questions, which also has implications for instruction. Given this information, co-teachers can plan instructionally to be responsive to students' instructional needs.

Finally, another significant aspect of this current study is that students with and without disabilities distinguished the roles and responsibilities of co-teachers. This is important because the perceptions of students with and without disabilities may be used to enrich the co-teaching service delivery model. For example, co-teachers can use this information to look at how students with and without disabilities perceive the division of teaching responsibilities. If students with disabilities feel that the special education co-teacher is busy supporting all students and not getting the support they need, co-teachers can potentially use this information to change how they share instructional roles. On the other hand, co-teachers can look at how students with and without disabilities perceive the co-teaching model used most often. If students with and without disabilities say that co-teachers use the One Teach, One Observe/Drift model most frequently, but that they would prefer working in smaller groups to get more individualized support, the co-teachers can use this information to change how to co-plan for instruction. Co-teachers using students' feedback can potentially improve the quality of instruction in the co-taught setting.

Purpose of the Study

The purpose of the current study was to investigate the perceptions of high school students with and without disabilities in co-taught science classrooms. Students were asked to participate in the current study at the end of the school year because students

were more likely to have informed perspectives about their experiences from their science co-teachers.

Research Questions

This study investigated the perceptions of high school students with and without disabilities about their co-taught science experiences. The three research questions that guided this investigation were:

1. What are high school students' perceptions of co-teaching in a co-taught science setting?
2. What are the similarities and differences that high school students with and without disabilities perceive about (2a) their co-teachers' roles and responsibilities and (2b) the co-teaching model used in the classroom?
3. What do high school students with and without disabilities (3a) suggest about whom they learn best from, (3b) suggest are benefits of being in a co-taught science class, and (3c) suggest co-teachers do differently to improve their [the students'] learning or co-teaching?

Delimitations

The following delimitations applied to this investigation. First, the instructional setting had to be science co-taught classes. Second, co-taught classes had to have special education and general education co-teachers. Third, participants were all students in the co-taught classes. Fourth, because students in all high school grades (9 to 12) were in the science co-taught classes, the decision was made to limit participants to grades 9 to 11. The rationale for limiting to these grades was because the timing of when the research

was conducted at the end of the school year coincided with the period in which students in grade 12 were either no longer attending school or were otherwise out-of-class and preparing for graduation activities.

Definitions of Terms

In this section, definitions of keywords and terms are provided. In research, defining key terms is critical because it ensures that the reader is operating with the same working understanding of important terminologies (Creswell, 2014).

Co-teaching. According to Friend (2013), “Co-teaching is a service delivery method provided by two or more professionals, with equal licensure and employment status, who share instructional responsibility and accountability for a single group of students for whom they both have ownership in a shared workspace” (p. 5).

Co-teaching models. Six co-teaching models are frequently identified in co-teaching research and literature (Bauwens & Hourcade, 1995; Cook & Friend, 1995; Nichols, Dowdy, & Nichols, 2010; Vannest et al., 2011). The models are: (a) One Teach, One Observe, with one co-teacher leading instruction and the other co-teacher observing students; (b) One Teach, One Assist or Drift, with one co-teacher leading instruction and the other co-teacher assisting students by circulating during instruction (i.e., drifting) to determine which students need assistance; (c) Station Teaching, with one or more stations in which students can independently and proficiently complete activities set up in the classroom, and other students are taught by each co-teacher; (d) Parallel Teaching, with co-teachers dividing the class in half into two groups; (e) Alternative Teaching, with one teacher teaching a large group and the other teaching the same concept with different

level materials; and (f) Team Teaching, with both co-teachers delivering instruction simultaneously to all students. For the purpose of this investigation, on the Co-Teacher Student Questionnaire (CTSQ) One Teach, One Observe and One Teach, One Assist/Drift were combined to be One Teach, One Observe/Drift. Therefore, instead of six co-teaching models, only five co-teaching models were recorded on the CTSQ.

General education teacher (GET). The GET was a fully certified science education teacher whose expertise was teaching science in the general education setting to typically performing students.

Special education teacher (SET). The SET was a fully certified special education teacher whose expertise was teaching students with disabilities.

Students with disabilities (SWD). For the purpose of this investigation, SWD were identified by the participating school district in accordance to the eligibility criteria as set by the participating school district in accordance to the eligibility criteria set forth by the Individuals with Disabilities Education Act (IDEA). The participating students were identified with the following disability labels: Specific Learning Disability (LD), Emotional Disturbance (ED), Autism, and Other Health Impaired (OHI). According to participating students' individualized educational programs, these students received science instruction in general education settings taught by science and special education co-teachers.

Students without disabilities (SWOD). For the purpose of this investigation, SWOD were not eligible for special education services under IDEA. These students

included students with a 504 plan, English Language Learners, or “typically” achieving students in science settings taught by co-teachers.

Summary

High school students in co-taught classrooms are responsible for high-stakes testing in content areas like science, and must earn enough credits in science to graduate and receive a standard high school diploma. Because we know many high school students with disabilities are being educated in the general education setting, research should seek the perspectives of all stakeholders in order to meet the instructional needs of students with disabilities. This is important since current data has showed that students with disabilities demonstrate difficulty in attaining their credit requirements in the content area of science (Nord et al., 2011). Moreover, the data showed that students with disabilities are not passing science high-stakes testing. In the current research, specifically hearing from students with and without disabilities may give the research community more information to move co-teaching in science forward.

Students with disabilities are in the general education setting, co-teaching is a service delivery model used to provide accommodations and modifications to students with disabilities as they access the general education curriculum (King-Sears & Bowman-Kruhm, 2011). Specifically, six co-teaching models can be implemented in the co-taught classroom. Varying the usage of these co-teaching models is supportive of students with disabilities because it allows the general education and special education co-teachers to work together to meet the needs of students (Cook & Friend, 1995). Unfortunately, when the co-teaching model is not varied, the general education teacher may be seen as the sole

teacher and the special education teacher is placed in a subordinate role as the assistant (Brusca-Vega et al., 2011; Harbort et al., 2007). Placing the special education teacher in this role limits their ability to differentiate, and is not the best use of their skillset (Harbort et al., 2007).

The current study sought to add to the current body of co-teaching research by eliciting perspectives from students with and without disabilities about their co-teaching experiences in the science classroom.

Chapter Two

A literature search was performed to find research studies conducted prior to December 2014 about students' perceptions of co-teaching after the researcher received approval from George Mason University's Institutional Review Board (IRB) (Appendix A). The systematic procedures followed to locate research about students' perceptions of co-teaching are described in this section. The search procedures, including inclusion and exclusion factors, are explained (see Appendix B for included studies).

Literature Search Procedures

Research was gathered by searching specific key combinations in three databases: *ERIC*, *Education Research Complete*, and *Academic Search Complete*. The search was restricted to studies published in peer-reviewed journals. There was no restriction for dates of publication. Keyword combinations used included: (a) co-teaching paired with meta-analysis, student attitudes, perceptions, student perspective, and disabilities; (b) team teaching paired with student perspective, student attitudes, and disabilities; (c) a single search using the terms inclusion, perceptions, and co-teaching; (d) a single search using the terms inclusion, student perceptions, and middle school and (e) single search with the term perceptions of co-teaching.

Inclusion Criteria

To be included in this review, research had to meet the following criteria: (a) identified the setting as a co-taught classroom with a general education teacher and

special education teacher; (b) included a focus on student perceptions; (c) was an original research study or meta-analysis; (d) was written in English; (e) measured perceptions either quantitatively or qualitatively; and (f) took place in an elementary, middle, or high school. Consequently, articles were excluded if they focused on settings that were co-taught, but did not include students with disabilities, or if the focus solely included students with disabilities in a general education setting. Out of a possible 167 studies, seven research articles matched these search parameters.

Students' Perceptions of Co-Teaching

In the following section, the seven research articles on students' perceptions are described. First, research that included both SWD and SWOD as participants was identified and described. Next, studies that included only SWD as participants were identified and described. Participants, methodology, and salient findings were presented. Finally, a synthesis was presented that described these studies for the overall study characteristics (i.e., number of participants, settings, methodologies, co-teaching model) as well as for content similarities and differences (i.e., use of time, teacher accessibility, and assistance in the co-taught setting).

Co-Teaching Studies Including Students With and Without Disabilities

Five out of the seven studies included students with and without disabilities. One study included elementary school only (through grade 5). Two of these studies included elementary through high school (grades 2-12). Lastly, two of these studies included middle through high school (7-11).

Elementary school only. In the first study, Pugach and Wesson (1995) interviewed 18 students from two fifth-grade classes to gather students' perceptions about their team-taught classrooms. Out of a possible 55 participants (42 SWOD and 13 SWD), nine SWOD were randomly chosen. At the time of the interview, 10 out 13 SWD remained in the class (due to attrition) and of those 10, nine SWD returned their permission to participate. Thus, nine SWD and nine SWOD were interviewed regarding their social relationships, academic needs, and relationships with their co-teachers. The interview questions were field-tested and then revised based on a previous pilot study. Pugach and Wesson (1995) asked students questions such as: "You have more than one teacher this year. Do you like it that way? Why or why not?" (p. 294) and "Let's say you were having problems with your classroom lessons and needed extra help. Would you rather meet in a small group with one of your co-teachers outside of the classroom - like in the hall or a small classroom? Or in a small group inside the classroom? Why?" (p. 294). The transcripts from these interviews were analyzed through content analysis and constant comparison. Through this process, three major themes emerged: (a) classroom social climate, (b) instructional effects, and (c) co-teacher roles and tasks.

With regard to the first major theme of classroom social climate, Pugach and Wesson (1995) reported that the SWD and SWOD in co-taught settings held positive attitudes towards themselves and others. Students felt they were working harder and doing better than in previous years. Students reported giving and receiving help as common practice in this co-taught environment. The majority of SWD reported a reduction in wait time for teacher assistance when co-teaching occurred. Further, if both

co-teachers were unavailable to assist with questions, about half of the students (four SWD and four SWOD) reported that they would just ask a classmate. The second theme, instructional effects, showed that students valued cooperative learning, flexible student grouping, and varied instructional activities. Specifically, seven SWD and all SWOD spoke positively about varied instructional activities in their co-taught classroom (e.g., hands-on activities, computer usage, and multisensory experiential activities). Finally, for the third major theme, co-teacher roles and task, students identified the special education teacher (SET) as a helper and the general education teacher (GET) as the subject-matter specialist. Students reported that the SET was more accessible to assist students and support instruction by providing clearer explanations. Although the SET was considered as a helper, five out of 18 (two SWOD and three SWD) students mentioned that all the co-teachers were able to share instructional roles equally.

Elementary school through high school. Gerber and Popp's (1999) work is the second of five studies identified and described for students with and without disabilities. These researchers conducted focus groups of SWD, SWOD, and their parents to gather perceptions about co-teaching. While the total number of potential respondents was not reported in this study, these researchers reported that participants were selected from five out seven school districts. Specifically, 70 SWD, 53 SWOD, 37 parents of SWD, and 32 parents of SWOD in elementary through high school grades were interviewed regarding their experience with the co-taught classroom. The interview questions were developed based on current literature in the field, as well as feedback from field experts. Students were asked questions such as, "Do you like having two teachers in your classroom?" (p.

290) and “What are the advantages and disadvantages of having two teachers in your classroom?” (p. 290). SWD and SWOD participated in separate focus groups. On average, six SWD and 10 SWOD participated in focus groups at the elementary school and high school level. At the middle school level, the average was six SWD and six SWOD. The transcripts from these interviews were analyzed in three stages: reducing data, seeking data trends, and drawing conclusions. Through this process, patterns and themes related to co-teaching emerged.

When reporting the findings, Gerber and Popp (1999) used terms such as “Students with LD...” (p. 290), “Students across grade levels...” (p. 291), “A few students...” (p. 291), or “The vast majority...” (p. 292) in lieu of percentages or numerical values. First, the researchers noted instructional advantages and disadvantages for SWOD. For example, SWOD mentioned earning better grades, receiving more assistance, and receiving frequent feedback in the co-taught setting as advantages. However, SWOD noted the inability to get away with misbehaving because of increased supervision in co-taught classes as a disadvantage. In addition, SWOD reported the teachers’ lack of consistency in responding to students’ requests. Further, SWOD mentioned becoming more confused when the co-teachers gave two different explanations. However, some SWOD remained indifferent, or did not see a difference with having two teachers. Overall, most SWOD enjoyed the co-taught setting.

Next, Gerber and Popp (1999) reported advantages and disadvantages of SWD in the co-taught setting. SWD reported receiving more attention from co-teachers and more time on assignments, to which the students attributed their higher grades in co-taught

classes. Additionally, SWD reported learning more strategies to do things in different ways and learning more techniques to improve memory and organization. The disadvantages noted were similar to those reported by the SWOD and included confusion with two teachers, differing styles, and not being able to get away with misbehaving.

Bessette's (2007) work is the third of five studies identified and described for students with and without disabilities. The researcher used students' drawings and descriptions from students in co-taught settings at three elementary and two middle schools to gather their perceptions about the nature of co-teaching. The total number of potential respondents was not identified in this study, nor was the participant selection criteria explained. Further, it was unclear how many student drawings and student descriptions were included in this study. However, Bessette reported that eight SWD and 37 SWOD participants were selected from the elementary school (ES) level. Additionally, there were 14 SWD and 26 SWOD at the middle school (MS) level. Students were given the following prompt, "Draw what it looks like in your classroom when both of your teachers are working" (Bessette, 2007, p. 1380). Students were also given the opportunity to record a brief description of their drawing. The drawings were analyzed through a four-step coding process. The first three steps in the process included emergent analytic coding (checklist of explicit features in the drawings), trait coding (analyzing specific traits in drawings as positive or negative), and holistic coding (interpretive checklist of traits with high levels of agreement). Finally, during the fourth step, a holistic review was conducted when the co-teacher's looked at their own students' drawings and responded to the following questions:

1. What patterns do you see in the drawings?
2. Why do you think you are seeing these patterns?
3. What do you think might be done differently in your class as a result of what you see? (p. 1381)

Subsequently, a themes matrix was created with traits. On this matrix, the frequency and percentages of traits from elementary and middle school drawings were reported. For example, the trait of “classroom appeared organized” was reported as 95% present in the elementary drawings and 64% present in the middle school drawings (Bessette, 2007, p.1387). Finally, the findings were described in terms of common features and differences between elementary and middle school drawings.

Bessette (2007) found that common features in the drawings were how recent the events pictured were, the level of detail provided, and the authenticity or realistic nature of the drawings. It was determined that in both elementary and middle grades, students were depicting recent events. This information was verified by similarities among student drawings, as well as through student confirmation. The researcher noted the high level of detail presented in the both elementary and middle school drawings. Specifically, minute details of the classroom features, as well as emotional responses (i.e., anger, frustration, or stress) portrayed in the classroom, were depicted in the drawings. Lastly, the researcher discussed authenticity in terms of realistic depictions in the drawings that appeared as grade-appropriate actions or behaviors. The students’ drawings depicted moments that demonstrated lack of focus, unpreparedness, or signs of fear and

frustration. Examples provided included: “Do you have a pencil?” or “Hey, what are you doing Friday night?”

Bessette (2007) reported other common features in the drawings, such as identifying the co-teaching model depicted: One Teach, One Observe (33% ES and 74% MS), and One Teach, One Drift (10% ES and 68%). Other common features included good classroom management (58% ES and 45% MS), poor student behavior exhibited (42% ES and 55% MS), classroom appears organized (95% ES and 64% MS), and teachers respecting students (90% ES and 71% MS). Bessette indicated that the number of times a specific feature was illustrated in the drawing might relate to the level of importance students place on these features at the elementary and middle school levels. Bessette (2007) also found clear differences among elementary and middle school drawings in the areas of academic difficulty, motivation, teacher disposition, and instructional settings.

1. Academic difficulty: Middle school students were five times more likely to draw themselves experiencing academic difficulty in their classroom than elementary students (ES = 13% and MS = 64%).
2. Motivation: Elementary students were nearly three times more likely to depict themselves as motivated students than middle school students (ES 69% and 25% MS).
3. Teacher disposition: Elementary students were also three times more likely than their middle school counterparts to depict their teachers as friendly,

optimistic, approachable, or in close proximity to one another (ES 73% and 47% MS).

4. Instructional settings: Middle school students were more than twice as likely to depict a One Teach, One Observe co-teaching approach when compared to elementary students (ES 33% and MS 77%).

Middle school through high school. Embury and Kroeger's (2012) work is the fourth of five studies identified for students with and without disabilities. The researchers noted that the site for this investigation was chosen for convenience. In total, at the school, there were that 678 seventh and eighth graders. These researchers interviewed 11 SWD and SWOD from two language arts classrooms (grades seven and eight) to elicit students' perceptions of co-teaching. Specifically, six SWOD and one SWD were seventh graders. Three SWOD and one SWD were eighth graders. These researchers did not identify how these seventh and eighth graders were chosen. All students were interviewed regarding the roles of teachers in their classroom. There were four interview questions:

1. "What are the roles of your teachers?"
2. Do you like having two teachers?
3. Why do you think you have two teachers?
4. How would you feel if one of your teachers was a special education teacher?"

(Embury & Kroeger, 2012, p. 112).

Researchers did not indicate any previous field-testing of these questions. The transcripts from these interviews were analyzed through inductive analysis and open

coding. Through this process, student descriptions were categorized into five possible divisions of roles for the special and general education teachers: (a) teach or teach other, (b) re-teach, (c) discipline, (d) organize, and (e) support.

Additionally, some analyses were conducted in relationship to the co-teaching models used in the two co-taught language arts classrooms. Embury and Kroger (2012) stated the co-teaching model used in these classrooms were self-reported by co-teachers. No observation tool was used to verify the accuracy of these models in the two language arts classrooms. The seventh-grade co-teachers reported using the One Teach, One Assist co-teaching approach. In this approach, the GET was reported as the instructional leader (e.g., planning, lecturing, grading) and the SET was reported as being utilized as an assistant (e.g., individually working with students and monitoring individualized education plan goals and progress). The eighth-grade co-teachers reported using multiple co-teaching approaches such as station teaching, parallel teaching, and team-teaching. The eighth-grade GET and SET reported sharing instructional roles in their classroom.

From this analysis, the researchers attributed some difference in students' perceptions to the co-teaching model. For instance, in the seventh-grade class where the teaching roles were not shared, the GET was referred to by students as "regular" or "real," which implies that the SET is not a real teacher and demonstrates the lack of parity between the two teachers. Conversely, despite different co-teaching models being used in the seventh- and eighth-grade co-taught language arts classes, there were similarities in statements by SWD and SWOD. Two similar statements made by students with and without disabilities addressed the appreciation of having two teachers because

of the decreased waiting time, as well as allowing the students who needed help the opportunity to get it.

Embury and Kroeger (2012) also found the roles of the seventh-grade GET and SET to be clearly delineated by students. The GET's role was categorized as teach, discipline, and organize. The SET's role was teach-other and re-teach. For example, student comments described the GET as the head teacher who gets things prepared, while the SET helps out and comes over to make sure material is understood. The role delineation shows the GET as the instructional leader and the SET as an assistant. For example, seven student statements made about teaching attributed to the GET included student examples such as: "real class," "goes over," and "makes sure." However, five students' statements made about teaching other attributed to the SET included two mentions of "different [class]" and three "goes over." In comparison, the roles of the eighth-grade GET and SET were not as clear. Their roles were both categorized as teach, re-teach, discipline, and support. For example, three out of four students responded that both teachers had the same jobs, which were to help students learn and understand the material. The students' comments indicated that they felt the roles of the teachers were interchangeable.

In the fourth of five studies for students with and without disabilities, Wilson and Michaels (2006) surveyed students from two middle schools and three high schools to gather quantitative and qualitative data about the perceptions of students with and without disabilities about co-teaching. Wilson and Michaels (2006) reported a survey response rate of 100%. Specifically, 127 SWD and 219 SWOD were surveyed regarding their

perceptions about the benefits and drawbacks of co-teaching as it pertained to their literacy development. The researchers enhanced the content validity of the instrument by using field experts to analyze the survey for content, clarity, appearance, and overall appropriateness for high school students. Students were asked to respond either yes or no to nine statements. Additionally, they responded to questions using a five-point Likert-like scale, which were coded with a score of five being the most favorable rating and one being the least favorable. For example, a question asked “In general, do you like being taught in a class with two teachers?” and in response, students circled one of the following value labels: “I couldn’t pass without two teachers,” “I did better with two teachers,” “It didn’t matter to me,” “I did worse with two teachers,” or “I really disliked having two teachers” (Wilson & Michaels, 2006, p. 209). The survey concluded with three open-ended questions in which students responded to the benefits, the drawbacks, and what they have gained personally from the co-teaching experience.

The quantitative portion of the survey used by Wilson and Michaels (2006) was analyzed using independent *t*-tests and Chi-Square tests to compare the SWD and SWOD perceptions of co-teaching. The quantitative comparisons of students with and without disabilities perceptions of co-teaching found that both groups rated co-teaching favorably and would choose co-taught classes again next year. Additionally, while SWD rated their content area grades significantly lower, both groups perceived that co-teaching increased their reading and writing skills.

The qualitative portion of the survey used Tesch’s (1990) three-step process to analyze responses. This process analyzed text by chunking, sorting, and categorizing the

responses into themes. The responses were categorized under five themes that highlight the benefits and drawbacks of co-teaching. Four themes were the same for benefits and drawbacks: structural support, multiple perspective and styles, skills and grades, and generic statements. The fifth theme listed as a benefit was availability of help. The fifth theme listed as a drawback was titled “no drawbacks.”

With regard to benefits of their co-taught setting, these researchers stated that SWD and SWOD both ranked availability of help (approximately 55% SWD and 47% SWOD) and structural supports (approximately 20% SWD and 27% SWOD) as the first and second greatest benefits. For instance, students noted benefits such as an increased likelihood to get help or increased ability to get questions answered, as well as more individual attention. The other benefits such as skills and grades (approximately 19% SWD) and multiple perspectives (approximately 19% SWOD) ranked third for students with and without disabilities. Both SWD and SWOD indicated better explanations, better grades, and better understanding of assignments as examples. Further, multiple explanations and different teaching styles were considered as benefits in their co-taught setting. While SWD and SWOD (approximately 47% SWD and 36% SWOD) reported no drawbacks, there were drawbacks reported. One drawback reported was the use of multiple perspectives and styles (approximately 16% SWD and 28% SWOD). This issue manifested when co-teachers offered contradicting explanations to a student. Although structural supports were previously reported as a benefit, the lack of structural support was found to be a drawback (approximately 27% SWD and 33% SWOD). For example,

students reported that when one co-teacher was teaching, and the other co-teacher was talking to other students or walking around, they found this behavior to be distracting.

Co-Teaching Studies Including Students With Disabilities

In this section, the last two studies out of the seven from the literature search are identified and described. These studies included only students with disabilities. One study included only high school (grade 11 and 12). The other study included elementary through high school (grade 1-12).

High school only. The first study conducted by Leafstedt, Richards, LaMonte, and Cassidy (2007) is the sixth of seven studies being identified and described for this review of research. These researchers conducted two focus groups at two different high schools to gather perspectives from SWD who are participating in co-taught classrooms. While the researchers did not report the total potential respondents for this study, they did report that participants were selected by using the special education teachers' opinion of whether student was a self-advocate who would be willing to discuss their disability. Specifically, 10 SWD who were juniors and seniors in high school were interviewed regarding their experiences in a co-taught environment. Most of these students also participated in a resource period designed for SWD where they could study, work on assignments, or support the learning of their science co-taught class. A special education teacher taught this resource period.

Leafstedt et al. (2007) did not indicate any origin or previous field-testing of the interview questions. These researchers asked students three questions:

1. How has your participation in the general education program changed your life at school?
2. In your personal experiences, how has your inclusion in the general education classroom changed your teachers' jobs?
3. In your personal experiences, how has your participation in the general education classroom impacted other students in the classroom? (Leafstedt et al., 2007, p. 179)

Follow-up questions were asked based on students' responses to these questions. One focus group was held at each school; however, the number of students who participated in each focus group was not reported. Transcripts were analyzed by two to four researchers to identify themes and patterns. Four themes emerged: (a) access to special education services, (b) delivery of instruction, (c) peer and teacher response, and (d) class size.

When reporting these qualitative findings, Leafstedt et al. (2007) used terms like "Most comments focused..." or "Students reported..." in lieu of percentages or numerical values, which is consistent with how qualitative research findings are reported. These researchers also relied on reporting student voices to support their findings. In other words, when the researchers reported findings, findings were generally followed by direct quotes from the student participants. The theme about access to special education services generated the largest amount of responses reported in the findings. In order to receive specialized instruction, students felt the need to go outside the general education classroom (referring to resource classroom where only students with disabilities may go

outside of the general education setting and get instruction from a special education teacher). Students with disabilities felt the general education and special education co-teachers were both inaccessible to the entire class. Further, SWD reported a difference between their resource period (special education setting) and the co-taught setting.

Students with disabilities reported being able to get needed specialized instruction in this resource setting from the special education teacher, as well having the time needed to understand the material. Moreover, the students felt a level of comfort with the SET being the provider of specialized instruction. To illustrate this, one student stated, “Sometimes if I don’t understand something instead of going to the real teacher [referring to the science co-teacher] for help, I can ask somebody else [noting the special education co-teacher or paraprofessional] that I know better” (Leafstedt et al., 2007, p. 180).

For the delivery of instruction theme, Leafstedt et al. (2007) reported, “Students were very clear in their discussions that the special education co-teacher taught differently than the general education co-teacher and that the different instruction provided by the special educators was further differentiated when students were in the special education environment” (p. 180). Students with disabilities were clear on what accommodations they needed to learn and understand better—accommodations like extended time for work completion, slower explanations, truncated assignments, and workload reduction. Ultimately, SWD felt that the special education resource room setting provided a more effective atmosphere for these things to occur than the co-taught setting.

Lastly, Leafstedt et al. (2007) reported on themes of SWOD and teacher responses to SWD receiving special education services and class sizes. There was a difference in how each focus group noted co-teachers and how SWOD responded to the special education services. One group, where co-teaching implementation was newer, reported trying to avoid the social stigma associated with receiving special education services in the general education setting. In contrast, the other focus group reported that their classmates were envious of the additional support they received. The researchers noted that another difference besides the length of time co-teaching implementation had taken place at each school was the type of co-teaching model taking place at each school. One school used the One Teach, One Assist and alternative teaching models, while the school with the longest running co-teaching program only used the One Teach, One Assist model. Students from both focus groups agreed that general education co-teachers provided accommodations based on current performance in class and not on Individualized Education Plans. Both focus groups reported students' desire for a smaller class size or one-on-one instruction, which is typically unavailable in the co-taught general education setting.

Elementary school through high school. The second study for only students with disabilities and final study out of the seven identified through the literature review was conducted by Hang and Rabren (2009). These researchers surveyed students from four elementary schools, one junior high school, one middle school, and one high school to gather SWD perceptions' of co-teaching. Additionally, students' academic and behavior records were reviewed to further explore the efficacy of the co-taught model.

Specifically, 58 SWD (representing 52% of all the SWD being co-taught in the school system) were surveyed regarding their perceptions of co-teaching using the Student's Perspective Survey. Five experts and nine co-teaching research team members, who reviewed the questions for clarity and relevance, established content validity. Reliability was established via Cronbach's alpha (α), and ranged from .64 - .77 on each of the four domains. The survey was divided into four domains: (a) difference between resource and co-taught classroom, (b) student expectations, (c) challenges, and (d) advantages and disadvantages. Students were asked a series of 19 questions on a five-point Likert scale, questions with zero being the value assigned to "strongly disagree" and four to "strongly agree." Students responded to statements such as the following, in reference to being in a co-taught classroom: "I learn more/less," "I receive more attention from teachers," and "I am expected to do more than I can do." Further, to examine the effectiveness of co-teaching as a service delivery model, the students' records were reviewed to compare standardized test scores, attendance records, and discipline referrals from the year prior to co-teaching.

The students' responses on the Student's Perspective Survey provided by Hang and Rabren (2009) were analyzed with a one-way ANOVA at the .05 significance level and then compared to the same questions asked of general and special education teachers on the Teacher's Perspective Survey (not discussed here) to determine if there were statistically significant differences in perspectives of the three groups. A pre-post repeated measures design was used to analyze data such as standardized test scores,

attendance records, and discipline referrals to determine if academic or behavioral differences existed after one year of co-teaching.

Hang and Rabren (2009) reported a student survey response rate of 86%. Results indicated that students with disabilities held positive perspectives of co-teaching. The students believed this co-teaching experience increased their self-confidence and learning. Further, students with disabilities felt supported and believed that their behavior was better in the co-taught setting. While a statistically significant difference existed between the three groups (general education teachers, special education teachers, and students with disabilities), the strongest interaction was for special education co-teachers agreeing more strongly that students with disabilities received sufficient support. There was no other place where statistical significance existed between the three groups. The efficacy data reported by Hang and Rabren (2009) (i.e., standardized test scores, attendance records, and discipline referrals from prior and current year) revealed that students performed better on the standardized assessment after receiving co-taught instruction ($t = 2.96, p \leq .01$; $t = 6.97, p \leq .001$), and no academic achievement differences were found between SWD and all the students at the same grade level. However, a significant difference was found in behavioral performance of students with disabilities when compared to the previous year. Students with disabilities experienced increased discipline referrals, absences, and tardiness when compared to their previous year in co-taught settings ($t = 2.72, p \leq .001$; $t = 2.60, p \leq .05$).

Overall Study Characteristics

In sum, seven studies examined perceptions of co-teaching through the lenses of students. Five of these studies were perceptions of co-teaching from students with and without disabilities, and two studies were perceptions of co-teaching from only students with disabilities. There were 605 participants in total across these studies (298 SWD and 307 SWOD). Their grade levels ranged from elementary (ES) through high school (HS). Specifically, two studies included ES through HS, one ES and MS, one MS and HS, one MS only, and one ES only. Two studies targeted participants from a single content area (English/Language arts). The other five studies included a combination of content areas (Mathematics, Science, and Social Studies).

Of the six co-teaching models (Cook & Friend, 1995), all six were described as classrooms across four studies. One Teach, One Assist or One Teach, One Observe was the most documented co-teaching approach. Three studies did not describe the co-teaching approach used in the classroom. Finally, these studies were comprised of quantitative and qualitative methodologies. The predominant methodologies represented across studies were qualitative (two interviews, two focus groups, and one student drawings). There was one quantitative (survey and record review) and one mixed methodology (a survey that also included open-ended questions).

Benefits and drawbacks. Overarching themes from this search included what SWD and SWOD found valuable or beneficial, as well as what was considered a drawback in the co-taught setting. SWD and SWOD valued provisions such as the use of time, accessibility, and assistance in the co-taught setting. In fact, students cited wait time

reduction as a benefit of the co-taught setting (Embury & Kroeger, 2012; Pugach & Wesson, 1995). Further, students valued the presence of an additional teacher (Gerber & Popp, 1999; Pugach & Wesson, 1995; Wilson & Michaels, 2006), citing the special education teacher as being most available to help (Pugach & Wesson, 1995). At the same time, students also reported the increased teacher presence as a negative drawback, because they were not able to get away with misbehaving (Gerber & Popp, 1999; Wilson & Michaels, 2006). Another drawback noted was that the SET was also considered inaccessible to SWD, which left some SWD preferring the resource period with the special education teacher where they felt extended time was provided (Leafstedt et al., 2007).

While teacher accessibility was usually valued in the co-taught setting, that was not always the case. The SET's accessibility called into question their ability to be recognized as an instructional leader. In two studies, the GET was described as the "real" teacher, while the SET was described in an assistant role (Embury & Kroeger, 2012; Leafstedt et al., 2007). Moreover, middle school students were nearly twice as likely to depict this type of image in their drawings (Bessette, 2007). To illustrate this further, one student stated, "Sometimes instead of going to the real teacher for help, I can ask somebody else that I know better" (Leafstedt et al., 2007, p. 180).

These studies also noted instructional techniques that were beneficial to SWD and SWOD, such as cooperative learning, flexible student grouping, varying instructional activities (Pugach & Wesson, 1995), reducing and/or truncating assignments (Leafstedt et al., 2007), and better or multiple explanations to aid in understanding (Pugach & Wesson,

1995; Wilson & Michaels, 2006). However, teachers giving explanations in direct contradiction to each other also caused confusion (Gerber & Popp, 1999; Wilson & Michaels, 2006). For example, Wilson and Michaels (2006) listed an example of a perceived drawback as “Teachers may contradict each other” (p. 217).

Additional drawbacks cited were the lack of consistency in approaches to students’ requests (Gerber & Popp, 1999; Wilson & Michaels, 2006). These researchers provided statements such as “They might disagree on certain things” (Wilson & Michaels, 2006, p. 217) and “One teacher says you can go out and the other says you can’t” (Gerber & Popp, 1999, p. 291). Even still, some SWD and SWOD reported no drawbacks in the co-taught setting (Wilson & Michaels, 2006). Lastly, students reported getting help outside of the co-taught classroom (Leafstedt et al., 2007; Wilson & Michaels, 2006). In one case, the researchers concluded it to be positive, citing that it may increase student motivation and increase student success (Wilson & Michaels, 2006). However, the students reported having to seek outside support as a reason to support the resource special education setting and the need for a smaller classes or one-on-one instruction (Leafstedt et al., 2007).

Academic performance. Students with and without disabilities reported performing better academically as a benefit of the co-teaching setting in three studies. Hang and Rabren (2009) reported students performing better on standardized assessments after receiving co-taught instruction for one year. Further, SWD and SWOD reported getting better grades in co-taught classes (Gerber & Popp, 1999). Lastly, statistically significant differences were reported between SWOD and SWD on their self-reported

grades, with nearly an eight-point difference favoring SWOD (Wilson & Michaels, 2006).

Summary

A systematic search of the literature yielded only seven studies over an 18-year time period that explored how students perceive co-teaching. Students' perceptions were elicited qualitatively through interviews, focus groups, and student drawings. Additionally, students' perceptions were elicited quantitatively through a surveys and record review (e.g., Hang & Rabren, 2009). Lastly, students' perceptions were elicited in a mixed methodology, using surveys that included statements with Likert-scale responses and open-ended questions.

This synthesis focused on students' perspective of their co-taught experiences. Based on the quantity of studies found, there is limited research about the perceptions of students with and without disabilities about receiving instruction from co-teachers. The systematic search of the literature yielded only seven studies over an 18-year time period. Further, only two of these studies addressed perspectives from a single content area. However, the content areas in these two studies were English/language arts. Each content area presents different types of information, each co-taught classroom is organized differently, and co-teachers use different instructional practices. For example, lab experiments are unique to the science content area. Further, different content areas require content specific knowledge and skills. For example, a teacher of chemistry requires subject specific knowledge. Therefore, co-teachers need content-specific knowledge and skills specific to the curriculum being taught. Finally, given the limited

number of studies, the current research was an opportunity to add to the research base reviewed in this synthesis.

Chapter Three

The methods of this investigation related to the research questions and the corresponding research design are described in this chapter. Details about how co-taught settings and participants were selected are provided. The origin, as well as the development and validation of the research instrument are described. The procedures for how the disproportionate random selection of participants occurred are also given. Additionally, creditability of data collection, participant response rate, and participant demographics are included. Lastly, data analysis methods per each research question are explained.

Research Questions and Corresponding Research Design

An appropriate research design is necessary to meaningfully answer the research questions. First, the questions asked in this current study all examined student perceptions. For example, one question examined how students with and without disabilities perceived the roles and responsibilities of the co-teachers. Additionally, students reported what co-teaching model was used most often in their co-taught science classes. Further, students reported which teacher they perceived they learned best from, how they benefited being in a co-taught classroom, and suggested ways learning or co-teaching could be improved. Fink (2009) stated, “Survey research methods describe feelings and perceptions, values, habits, and personal background or demographic characteristics” (p. 4). Since the current study sought students’ perception of their science

co-teachers, a survey research design was deemed appropriate to answer the questions of this investigation.

The design is critical, as it is the foundation on which data collection and analysis are built. In the current study, the inclusion of quantitative and qualitative data was important to support an understanding of students' perception of co-teaching. Survey research is also amenable to the combining of quantitative and qualitative analysis, which also makes it a good fit for this investigation.

Settings

Schools. Two comprehensive high school schools serving students in grades 9-12 (School One and School Two) within one school district participated in this research. A comprehensive high school is a free, public, four-year institution, which offers all students general academic courses, as well as advanced and specialized courses. Other high school models, such as alternative schools or vocational schools, were not eligible for inclusion in this investigation, because co-taught science classes were not present among their general academic courses.

Both School One and School Two were located in the same school district in the South Atlantic region of the United States. The overall student demographic information reported per school was accessed from publicly available websites for the school, the school district, and the state during the 2013-2014 year.

School One had 1,455 students enrolled. Percentages per ethnicity consisted of: American Indian/Alaskan Native (0.5%), Asian (10.8%), Black/African American (23.9%), Hispanic (44.2%), Native Hawaiian/Other Pacific Islander (0.0%), White

(16.6%), and multiple ethnicities (3.9%). The student with disabilities population was composed of students identified as: Autistic (27 students), Emotional Disturbed (38 students), and Intellectually Disabled (17 students). There were 715 students (49.14%) who received free and reduced-price meals.

School Two had 1,931 enrolled. Percentages per ethnicity consisted of: American Indian/Alaskan Native (0.4%), Asian (10.9%), Black/African-American (10.8%), Hispanic (30.7%), Native Hawaiian/Other Pacific Islander (.01%), White (41.4%), and multiple ethnicities (5.9%). The student with disabilities population consisted of students identified as: Autistic (44 students), Emotionally Disturbed (35 students), Intellectually Disabled (18 students), Multiple Disabilities (10 students), Other Health Impaired (76 students), and Specific Learning Disabled (119 students). There were 629 students (32.57%) who received free and reduced-price meals.

Co-taught classrooms. A total of 17 co-taught science classes from School One and School Two were eligible to participate in the current study based on the inclusion and exclusion criteria (Table 1). Eligibility was based on classes that met the following criteria: (a) the class was co-taught, (b) the class had co-teachers who were fully certified GET and fully certified SET (co-teachers who were provisionally certified or were long-term substitutes or paraprofessionals did not meet this criteria), (c) the class had students with and without disabilities (i.e., learning disabilities, other health impairments, speech-language impairments, autism, and emotional behavior disorders), and (d) the content area being taught was science. Overall, a total of 17 co-taught science classes between the

two schools were eligible to participate in the current study based on the inclusion and exclusion criteria (Table 1).

Table 1

Co-Taught Science Classes

Co-Taught Science Subject	Number of Classes School One	Number of Classes School Two	Number of Classes School One and School Two
Biology	4	3	7
Biology Intensified	0	1	1
Earth Space	3	3	6
Principles of Physics	2	1	3
Chemistry	0	1	1
Total Sections	9	9	17

Teachers. In total, there were 12 GETs and 14 SETs who facilitated this research. Overall, with the exception of Biology, there was not a big difference in the number of general and special education co-teachers per subject. Table 2 combines the number of sections of each subject and the number of general education and special education co-teachers in order to illustrate similarities and differences in the distribution of general education and special education co-teachers in different subjects between the two schools.

This was not the case for Biology. For example, at School One, two GETs co-taught four sections of Biology; however, each class (section) had a different SET. Biology, the first course presented in Table 2, is typically a ninth-grade course in this school district. Both schools used a “learning community model.” In ninth grade, the

learning community model supports students who are transitioning from middle school to a new, and typically larger, high school to be a part of a smaller community within the larger body of students. With the learning community model, students share the same core teachers. Thus, since Biology is a ninth-grade course, each learning community had a different Biology general education co-teacher.

Table 2

General Education Teachers (GET) and Special Education Teachers (SET) by Number of Classes per Subject

Subject	# of classes	School One General Education Teachers (GET) and Special Education Teachers (SET)		# of classes	School Two General Education Teachers (GET) and Special Education Teachers (SET)	
		GET	SET		GET	SET
Biology	4	2	4	3	3	3
Biology Intensified	0	n/a	n/a	1	1	1
Earth Space	3	1	1	3	2	1
Principles of Physics	2	1	1	1	1	1
Chemistry	0	n/a	n/a	1	1	1
Total	9	4	6	9	8	8

Student Participants

In the current study, there were 395 students across the 17 co-taught science classes. Of the 395 students, 142 were students with disabilities and 253 were SWOD (Table 3).

Table 3

Sample Frame

	School One	School Two	Combined
Total Sections of Qualified Science Classes	9	8	17
Students With Disabilities	81	61	142
Students Without Disabilities	109	144	253
Total Number of Students	190	205	395

Creswell (2008) suggested that, when making decisions about an intended group of study, the researcher should start with the total number of individuals in the group (sampling frame) with common characteristics (Table 3). In this study, the common characteristics are students in the same qualified class, SWD, and SWOD. Next, a smaller sample (subgroup) should be drawn from this larger population. When moving from this larger population (sample frame) to a smaller subgroup, the researcher must assure that the sample drawn is large enough to draw conclusions about the larger population. In survey research, the sampling error formula is used to systematically calculate the number of participants needed to draw these conclusions. According to Creswell (2008), the definition of sampling error formula is “A calculation for determining size of a sample based on a calculation for determining size of a sample based on the chance (or proportion) that the sample will be evenly divided on a question, sampling error, and a confidence interval” (Creswell, 2008, p. 630). Based on this information, an online sample calculator (Raosoft, n.d.) was used to determine how many students should be targeted for this research. A sample size of 195 students was recommended based on a

margin of error of .05%, a confidence level of 95%, population size of 395, and a response distribution of 50%.

In short, if 50% of the 395 from the sample frame responded (approximately 195 students), there would be about 95% chance their answers would represent the sample frame. Additionally, this means that about 5% of the time their answers would be within the margin of error +/-5% (45% to 55%).

Instrumentation

The Co-Teaching Student Questionnaire (CTSQ) is a Web-based instrument developed by King-Sears, and was recently published in conjunction with a research study by King-Sears and colleagues (King-Sears, Brawand, Jenkins, & Preston-Smith, 2014). These researchers compared co-teachers' perspectives about various aspects of co-teaching, then compared their responses to perspectives from the students with disabilities in their co-taught science class. Content for the CTSQ was developed from research and literature about co-teaching, with the purpose of eliciting students' perspectives about their experiences with co-teachers. From the four sections, two required Cronbach alpha calculations. The reliability scores were .70 for Section Two and .90 for Section Three.

High school students with and without disabilities completed the CTSQ, which had four sections (King-Sears et al., 2014). In Section One, students provided characteristics such as age and grade. In Section Two, students responded to 10 "Which Teacher: General Educator, Special Educator, or Both Educators?" statements. In this section, students typed in the general educator's name as Teacher A and the special

educator's name as Teacher B so they could accurately reference co-teachers when they selected responses to 10 statements. Responses could be Teacher A, Teacher B, or Both Educators. Students completed two practice statements with the researchers prior to responding to statements in this section. Statements were developed for students to discern which co-teacher demonstrated specific roles and responsibilities in their co-taught class. Examples are: "When I need help, the teacher I ask is..." and "The teacher who seems to plan the most instruction for this class is..." At the end of Section Two, there was an open-ended space for students to write any additional comments they wanted about this part of the CTSQ.

In Section Three, students indicated their level of agreement on 15 "Agreement Statements" (e.g., "I learn better with two teachers") by clicking on one response for a four-point Likert scale (1 as strongly disagree, 2 as disagree, 3 as agree, and 4 as strongly agree). Two practice statements preceded the 15 CTSQ statements to ensure students knew how to respond to statements in this section. The statements in this section referred to topics such as having two teachers in the classroom, and learning with two teachers. At the end of the third section, an open-ended space prompted, "If there is anything else you want to say about having these two teachers working with you and other students in the class, you can write it here."

In Section Four of the CTSQ, each co-teaching model was identified and described along with an illustration (i.e., One Teach, One Observe/Drift, Station Teaching, Parallel Teaching, Alternative Teaching, and Team Teaching). Students were

directed to look at the five models, study each one, and decide which model the co-teachers used most.

For the current study, only minor changes were made from the original CTSQ. The 10 “Which Teacher: General Educator, Special Educator, or Both Educators?” and 15 “Agreement Statements” were the same. Additionally, the “Which Co-Teaching Model is Used Most?” portion of the CTSQ remained the same by using the 10 identical items from King-Sears et al. (2014). However, open-response queries from Sections Two and Three of the original CTSQ were not used in the current study. In the original queries students were asked: “If there is anything else you want to say about having these two teachers working with you and other students in the class, you can write it here.” These open-response queries were removed from Sections Two and Three and replaced with two different queries for this research. Section Five was added to the CTSQ with two different open-response queries: (a) “What do you think is a benefit of having two teachers in this class?” and (b) “What do you think is a drawback of having two teachers in this class?” These open-response queries were added to be more specific and to increase the possibility of eliciting different kinds of student feedback.

Table 4

Original CTSQ to CTSQ for This Research Comparison (Pre-Content Validity)

Action	Original CTSQ	CTSQ for this Research
Student Assent Read Aloud	Same	Same
Section One: Student Information	Same	Same
Section Two: Which Teacher	10 Which Teacher: General Educator, Special Educator, or Both Educators	10 Which Teacher: General Educator, Special Educator, or Both Educators
Section Three: Agreement Statements	1 Open-Response Query: “If there is anything else you want to say about having these two teachers working with you and other students in the class, you can write it here” 15 Agreement Statements	No Open-Response Query 15 Agreement Statements
Section Four: Which Co-Teaching Model is Used Most?	1 Open-Response Query: “If there is anything else you want to say about having these two teachers working with you and other students in the class, you can write it here” Same	No Open-Response Query Same
Section Five: Open-Response Queries	The original CTSQ only had 4 sections	“What do you think is a benefit of having teachers in this class?” “What do you think is a drawback of having two teachers in this class?”

Content validity. For the purpose of assessing content validity, two versions of the CTSQ were created in SurveyMonkey®: one for professional field experts and one

for student field experts. The only difference between the two content validity CTSQs was one question that asked the professional and student field experts about their co-teaching experiences. The professional field expert's question was related to their professional experiences, while the student field expert's question was about their co-taught classroom experiences.

All field experts were accessed through the personal and professional network of the researcher. The professional field experts and a secondary high school educator were emailed and invited to participate in the content validity of the CTSQ (See Appendix C). The email to professional field experts and a secondary high school educator introduced the researchers of this current study, the purpose of the research investigation, the purpose of content validity, and an incentive for participation. The participants were asked to use the link provided in the email if they desired to participate. The high school educator used the letter to find students who were willing to participate.

In total, there were 12 field experts (eight professional field experts connected to the field of special education and co-teaching and four high school student experts with co-teaching experiences from a student perspective) (see Appendix D for field experts' information). The eight professional field experts' experiences are outlined in Table 5. The four student field experts were high schools students who received instruction from co-teachers in various co-taught classes. One student noted having two teachers in Advanced Placement Government, English, and Instructional Studies. A second student noted having two teachers in their English class, while a third student noted having two teachers in Principles of Physics and Algebra II. In the previous school year (2012-2013),

all students (100%) received instruction from co-teachers. Their co-taught classes included: English, United States Virginia History, and Data Analysis. All students were African-American in the tenth (two students) or twelfth (two students) grade. Two of these students were identified as students with disabilities. Three girls and one boy participated. Most students (75%) noted they were enrolled in a class with two teachers in the current 2013-2014 school year.

Table 5

Years of Professional Experience(s) with Co-Teaching

Participant	Experience
Field Expert 1	11 years as Assistant Principal 10 Years as Adjunct Professor in Teacher Preparation Program 6 years as Speech Language Pathologist
Field Expert 2	3 years as High School Special Education Teacher (co-taught Science) 3 years as High School Special Education teacher (History/English co-taught)
Field Expert 3	2 years as High School Special Education Teacher (co-taught Science)
Field Expert 4	4 years as High School English Teacher (co-taught settings) 3 years as High School World History 2 Teacher 6 years as Researcher on Co-teaching
Field Expert 5	8 years as a High School Special Education Teacher (co-taught Mathematics, Science, Social Studies, English, Technology) 2 years as German General Education Teacher (co-taught)
Field Expert 6	4 years as High School Chemistry teacher (co-taught)
Field Expert 7	7 years as High School General Education Teacher (co-taught Social Studies)
Field Expert 8	No response

Each questionnaire began with an introduction to the five sections in the content validity CTSQ. The five sections were: Demographics about You, Which Teacher:

General Educator, Special Educator, or Both Educators, Agreement Statements, Which Co-Teaching Model Is Used Most, and Open-Response Queries.

The last page of the CTSQ asked the participant to provide their contact information so that they could receive their incentive. As an incentive for completing the content validity CTSQ, all field experts received gift cards to Starbucks. Professional field experts received \$25 gift cards and student field experts received \$10 gift cards.

In Section One, “Demographics about You,” the field experts completed questions in the Demographics Section specific to their area of expertise. For example, professional field experts were asked about co-teaching experiences as educators or researchers, and student field experts were asked about their participation in co-taught classes.

Section Two and Three were broken into (a) statement of importance and (b) statement of clarity. The field experts reviewed the exact statements from the “Which Teacher: General Educator, Special Educator, or Both Educators” and the “Agreement Statements” portions of the CTSQ (10 and 15 statements, respectively). First, field experts read statements such as “When I need help, the teacher I ask is” and “I learn better with two teachers” and rated each statement. All experts rated the statements for importance on a five-point Likert scale: 1 = not at all important, 2 = somewhat important, 3 = important, 4 = very important and 5 = extremely important; critical. Next, they rated “Which Teacher: General Educator, Special Educator, or Both Educators” and “Agreement” statements as either “Not clear, revise” or “Clear” based on language, vocabulary, and ambiguity. Experts also had an option to write comments or suggestions

after rating the statements for importance. Additionally, if statements were not clear, experts were asked to provide specific feedback on how to make the statement clear or why it was unclear by identifying the statement number so the researcher knew which statement(s) needed additional scrutiny.

Section Four asked the field experts to consider the importance and clarity of the question of which co-teaching model is used the most. First, they rated how important it was to ask students about the six co-teaching models. On the CTSQ, One Teach, One Observe and One Teach, One Assist (Drift) were combined due to their similarities. Thus, field experts rated five co-teaching models (i.e., One Teach, One Observe/Drift, station teaching, parallel teaching, alternative teaching, and team teaching) using the same five-point Likert scale: 1 = not at all important, 2 = somewhat important, 3 = important, 4 = very important and 5 = extremely important/critical. Next, field experts examined each visual representation of the models with a description and rated the clarity based on language, pictures, and ambiguity. For each of the five models, field experts indicated their response by choosing: “Not clear, revise” or “Clear.” If field experts chose, “Not clear, revise,” they were provided a separate response text box to explain why the item was not clear or how to make it clearer.

Section Five consisted of two Open-Response Queries. The two queries were: (a) “What do you think is a benefit of having two teachers in this class?” and (b) “What do you think is a drawback of having two teachers in this class?” The same process of rating items for importance and clarity was followed in this section. If the experts did not think

a statement was clear, or had specific feedback regarding a statement, a box was provided for specific comments or suggestions.

Analysis of content validity. In order to revise the CTSQ, content validity was analyzed by creating separate tables in Microsoft Word®. Appendix E captures the general feedback provided by the professional and student field experts. Appendices F and G capture each individual statement in Section Two and Three of the CTSQ. Appendix H includes the feedback from field experts from Section Four of the CTSQ. Appendix I includes the Open-Response Queries from Section Five.

The first feedback table was divided into three columns (See Appendix E). The first column indicated which field expert the provided feedback (e.g., professional or student). The second column contained the general feedback, not related to one specific statement in the CTSQ. The third column contained the responses/reactions to each field expert's feedback. For example, in the second column, one field expert said, "The way the questions are set up, it sounds like "who is the better teacher"- at least from my kid perspective." In the third column, the researcher responded to this field expert's feedback. "Students can choose one teacher or the other teacher or both educators. If there were only two possible responses, then we agree it might sound like 'who is better?' But, we intentionally included "Both" as a possible response, anticipating students would find "Both" an appropriate response versus one or the other educator."

The second table was divided into five columns (See Appendix F). Statements from Section Two (Which Teacher? General Educator, Special Educator, or Both Educators) and Section Three (Agreement Statements) of the CTSQ were in the first

column. The field experts' feedback on statement importance and clarity were in the next two columns. The fourth column showed responses/reactions from the researcher. The last column averaged the ratings from the statements of importance from the professional and student field experts. The third and fourth feedback tables (See Appendices G and H), reflected the experts' feedback and researcher's responses/reactions to Sections Four and Five of the CTSQ, "Which Co-teaching Model is Used Most?" and the open-response queries.

After the researcher and developer of the original CTSQ read and responded to all comments made by field experts, the CTSQ was revised based on the data gathered from field experts (Table 6). First, professional and student field experts' scores on statement importance from Section Two (Which Teacher? General Educator, Special Educator, or Both Educators) and Section Three (Agreement Statements) were averaged. The scores ranged from 3.0 (meaning important) to 4.6 (very important). Based on this, all of the questions were deemed appropriate and remained on the CTSQ.

Table 6

Final CTSQ Pre-Post Content Validity Comparison

Action	CTSQ for this Research (Pre-Content Validity)	CTSQ for this Research (Post-Content Validity)
Student Assent	Same	Same
Section One: Student Information	Same	Same
Section Two: Which Teacher: General Educator, Special Educator, or Both Educators	10 Which Teacher: General Educator, Special Educator, or Both Educators No Open-Response Query	10 Which Teacher: General Educator, Special Educator, or Both Educators 1 Open-Response Query was added: "I learn best from... Please explain your choice."
Section Three: Agreement Statements	15 Agreement Statements No Open-Response Query	1 of the 15 Agreements was re-worded: The teacher who explains things in different ways is..." was re-worded to "The teacher who can explain things in more than one way is..."
Section Four: Which Co-Teaching Model is Used Most?	5 co-teaching models pictured and described	5 co-teaching model pictures repositioned 5 co-teaching model pictures reformatted pictures
Section Five: Open-Response Queries	2 Open-Response Queries "What do you think is a benefit of having teachers in this class?" "What do you think is a drawback of having two teachers in this class?"	The 2 open-Response Queries were re-worded to: The two main benefits I've experienced from having two co-teacher in this class are; and If I could give two suggestions for how these two co-teachers could do something differently to improve my learning or their co-teaching in this class, my suggestions would be."

Based on feedback about the CTSQ's visual format and suggestions for re-wording, corresponding revisions were made:

1. Repositioning pictures of the co-teaching models;
2. Reformatting pictures of the co-teaching models;
3. Reformatting statements to allow students to explain further; and
4. Re-wording statements.

Three items were re-worded for clarity based on field experts' comments. First, "The teacher who explains things in different ways is" was re-worded to "The teacher who can explain things in more than one way is..." The two open-response queries were also re-worded. Initially, the open-response queries were: "What do you think is a benefit of having two teachers in this class?" and "What do you think is a drawback of having two teachers in this class?" Half of the field experts made comments regarding changing the way these statements were worded. For example, one expert said, "Consider asking the students 'What is feedback you would give to your two teachers to make them even better co-teachers or partners?'" Another expert said, "Do you just want ONE benefit and drawback or open it up to more?" Therefore, the two open-response queries were re-worded to, "Think about your experience so far this school year in this co-teaching class. Please write an answer to each of the following:

'The two main benefits I've experienced from having two co-teacher in this class are,' and

'If I could give two suggestions for how these two co-teachers could do something differently to improve my learning or their co-teaching in this class, my suggestions would be...'"

Final CTSQ. In Section One, students provided their student identification number, age, grade, ethnicity, and course subject. In Section Two, students typed in the general educator's name as Teacher A and the special educator's name as Teacher B. Next, students completed two practice statements to ensure they knew how to respond to the statements in this section. Finally, after students completed the two practice statements, students responded by clicking on the circle marked "Teacher A," "Teacher B," or "Both Teacher A and B." Students responded to statements like, "When I need help, the teacher I ask is" and "The teacher who seems to plan the most instruction for this class is." In addition to clicking which teacher on Question 10 ("I learn best from") there was also one of the three Open-Response Queries where students were allowed to explain their choice in the text box provided.

In Section Three, the students completed two practice statements to ensure they knew how to respond to the statements in this section. After completing the practice statements, the students indicated their level of agreement on statements, such as "It's hard two teachers at the same time" and "I learn more in this class when I am in this class with two teachers," on a four-point Likert scale (1 as strongly disagree, 2 as disagree, 3 as agree, and 4 as strongly agree).

In Section Four, students responded to questions about each co-teaching model (Which Co-teaching Model is Used Most?). Each co-teaching model was identified and described along with an illustration. Students chose which co-teaching model is used the most (Model 1: One Teach, One Observe/Drift; Model 2: Station Teaching; Model 3: Parallel Teaching; Model 4: Alternative Teaching; and Model 5: Team Teaching).

Lastly, Section Five of the CTSQ contained the last two open-response queries. The first open-response query was “The two main benefits I’ve experienced from having two co-teachers in this class are” and the second open-response query was “If I could give two suggestions for how these two co-teachers could do something differently to improve my learning or their co-teaching in this class, my suggestions would be.”

Reliability. Reliability was established on the CTSQ post-content validity using Cronbach’s alpha. Reliability values of 0 to .5 are considered unacceptable, .5 to .60 are questionable, .60 to .70 are acceptable, .70 to .80 are good, and .80 to 1.0 are excellent (George & Mallery, 2003; Sweet & Grace-Martin, 2003). Thus, on the “Which Teacher” portion of CTSQ, the Cronbach’s alpha was .70, thereby falling into the acceptable range. On the “Agreement Statements,” the Cronbach’s alpha was .90, thereby falling into the excellent range. After testing for content validity, the final CTSQ was developed for this investigation (see Appendix J).

Random Selection of Student Participants

Fowler (2009) stated, “The way to evaluate a sample is not by the results, the characteristics of a sample, but by examining the process by which it was selected” (p.19). This section describes the process used to move from the sample frame (all students who were eligible to participate in the research from School One and School Two) to randomly selecting the actual sample (students who were targeted to take the CTSQ for this research).

According to Fowler (2009), an appropriate sampling strategy is comprehensive, efficient, and considers probable selection. In this current study, the school district’s

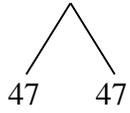
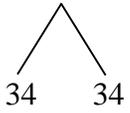
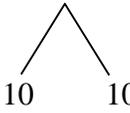
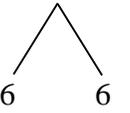
Office of Planning and Evaluation was able and willing to provide a Microsoft Excel® table with all of the potentially eligible co-teachers and their students. Using a “more or less complete list of individuals” (Fowler, 2009, p. 20) such as the one provided by the school district is a common sampling practice. Additionally, Fowler indicated that knowing where the selection came from establishes the likelihood the list was comprehensive. Because each student’s name appeared only once on the list provided by the school district, all students had an equal chance of selection.

After establishing the sample frame (all of the students who were eligible to participate, because they were enrolled in co-taught science classes that met the criteria), the researcher determined the actual sample for the research. To do this, probability sampling was used. Probability sampling is considered the most rigorous form of sampling when looking to generalize from a subgroup to an entire population (Creswell, 2008; Fowler, 2009). Thus, disproportionate stratified random sampling, one type of probability sampling, was chosen for this research. “Researchers use disproportionate allocation to strata in order to increase the number of persons with important characteristics within their final study sample and increase the efficiency of the sample design over simple random sampling” (Lavrakas, 2008, p. 3). Because students with disabilities are an integral part of this research and typically make up a smaller portion of the co-taught classroom, the disproportionate stratification was used to increase the probability that a sufficient number of SWD would be included in the research sample for analyses.

Disproportionate stratified random sampling was calculated by individual science content area to ensure that there would be enough students sampled per science area. The Disproportionate Stratified Sample Table depicts the numbers as the *N* of the SWD and SWOD per science area was calculated (Table 7).

Table 7

Disproportionate Stratified Sample Process

	Biology	Earth Space	Principles of Physics	Chemistry	Total
Students with disabilities	53	64	19	6	142
Students without disabilities	136	74	26	17	253
Total	189	138	45	23	395
Percentage of total population per content area	48%	35%	11%	6%	100%
Stratified disproportionate sample based on 195 recommended sample size	$48\% \text{ of } 195 = 94 \text{ students}$  47 47 SWD/SWOD	$35\% \text{ of } 195 = 68 \text{ students}$  34 34 SWD/SWOD	$11\% \text{ of } 195 = 20 \text{ students}$  10 10 SWD/SWOD	$6\% \text{ of } 195 = 12 \text{ students}$  6 6 SWD/SWOD	194 *202

This multi-step sampling process began with taking the total number of students with and without disabilities in each science content area (Biology, Earth Space,

Principals of Physics, and Chemistry) (see Table 7). In total, there were 395 students enrolled in all of the co-taught science classes. Next, the total number of students enrolled in science co-taught classes (395) was used to find what percentage of students made up each science content area (Biology, Earth Space, Principles of Physics, and Chemistry). For Biology, there were 189 students (53 SWD and 136 SWOD) divided by 395 (the total amount of students enrolled in all of the co-taught science classes). This meant 48% of the students enrolled in co-taught classes were enrolled in Biology.

After repeating this for each science content area, it was found that 35% of students in co-taught science classes were enrolled in Earth Space, 11% of students were enrolled in Principles of Physics, and 6% of students were enrolled in Chemistry. Next, given the percentage of students per science content area, disproportionate sampling was performed to find out how many SWDs and SWODs should be targeted from each content area based on the formula: % of population total per course x number of students recommend for sample \div 2. For Biology, 48% of 195 students (the recommended sample size) equalled 94 students, 47 SWD randomly selected and 47 SWOD randomly selected.

After repeating this for each science content area, it was found that 68 students (34 SWD randomly selected and 34 SWOD randomly selected) were targeted from Earth Space, 20 students were targeted from Principles of Physics (10 SWD randomly selected and 10 SWOD randomly selected), and 12 students were targeted from Chemistry (six SWD randomly selected and six SWOD randomly selected). Thus, initially 194 students enrolled in co-taught science were going to be randomly selected.

However, as School Two only offered a co-taught Chemistry class, the decision was made to oversample from this class. Therefore, instead of using the 12 students calculated from the disproportionate sampling (six SWD and six SWOD), an additional eight students were randomly selected. This increased the total of number of Chemistry students to 20. Because there were only six students with disabilities enrolled in Chemistry, all six of them were selected, and then 14 SWOD were randomly selected to get to 20 students. Therefore, after oversampling in Chemistry, the final number of students to be randomly selected from co-taught science was 202.

The last step in this process of disproportionate sampling was random selection of students. The names of students with and without disabilities were copied and pasted from the school districts excel sheet to a new Microsoft Excel® sheet. Three sheets were created for each content area. Sheet One combined students in the content area from School One and School Two (i.e., School One and Two with Biology classes combined). Sheet Two contained information on students with disabilities in the content area and Sheet Three contained information on SWOD from the content area (i.e., Sheet Two contained all SWD in Biology, while Sheet Three represented all SWOD in Biology). Next, a random number generator (Statrek, n.d.) was used to select the number students, with and without disabilities, as determined by the disproportionate sample calculation. For example, based on the 136 SWOD in Biology, the random number generator was used to select 47 students from the Microsoft Excel® sheet (see Table 7). This process was repeated for students with and without disabilities for each content area.

Procedures

Five procedures were followed in order to collect data for this research. First, after Institutional Review Board (IRB) permission was attained, qualified classrooms were located. Second, students were randomly selected for participation. Third, parents of randomly selected students were notified about the research through Parent Informed Consents. Fourth, students assented to participation and the CTSQ was administered at School One and School Two. Fifth, the researcher distributed teacher honoraria.

IRB, district, and school permission, qualifying classrooms. First, the approval of the George Mason University IRB was acquired (See Appendix A), followed by School One and Two's district permission to determine qualifying classrooms. The school district's Office of Planning and Evaluation was contacted to provide access to a list of each potential science co-taught classroom at School One and School Two.

Next, the researcher contacted the principals at both schools to seek permission to conduct research at their school (see Appendix K). After each principal agreed to their school's participation in the research, contact was initiated with the potentially eligible co-teachers by phone, through in-person meetings, or through school email.

The co-teachers received the following:

1. Locating a Qualified Science Classroom letter/email (see Appendix L). This document introduced the researcher and the purpose of the CTSQ.
2. Co-Teacher(s) Facilitation Quick Guide At-A-Glance (see Appendix M). This document contained a list of six roles and responsibilities required for the co-teacher(s) who accepted the role of facilitator for this research (i.e., decide on

facilitator(s), complete the Co-Teachers Eligibility Form, determine dates for Parent Informed Consent/CTSQ administration, distribute and collect the Parent Informed Consent, maintain student roster, and maintain communication with the researcher as needed).

3. Student Recruitment Brochure (see Appendix N). The brochure informed co-teachers of their responsibility as facilitators in this research process, as well as outlined the students' responsibilities if chosen to participate in the research. The brochure also outlined incentives for facilitating co-teacher(s) and random selection of students in a class. Additionally, the brochure outlined how classrooms were qualified (science co-taught classroom, fully certified science co-teacher, fully certified special education teacher, students with high-incidence disabilities).

After one or both co-teachers agreed to facilitating the five roles and responsibilities as outlined in the Co-Teacher(s) Facilitation Quick Guide At-A-Glance, a confirmation of classroom eligibility was completed by the co-teachers. This form was also used to determine received the honorarium. Co-teachers were also able to complete the Co-Teachers Eligibility form online or a hard copy (see Appendix O). If the co-teachers did not want responsibility for any step in facilitation, the researcher became responsible for facilitation.

Student selection. In order to recruit the randomly selected students, the co-teachers or the researcher informed the students about the research opportunity. The recruitment started with the reading of the Student Recruitment/Informed Consent Script

with students (see Appendix P). Initially, the researcher went to School One and School Two and read the script to the class in each co-taught science class. The content in the script provided the students with information about the research and the researcher. Next, the researcher read the student incentive on the second page in the Recruitment of Students from Qualified Classrooms Brochure. The content in the brochure informed the randomly selected students about what was expected as a participant, as well as what they could expect to receive if they took part in the current study. Finally, after reading the script and the student incentive to the entire class, the researcher handed out parent informed consent forms to the randomly selected students.

Parent informed consent. A parent informed consent was distributed to randomly selected students by their co-teachers or the researcher. The content in the parent informed consent provided the following information about the research (see Appendix A):

1. Research purpose;
2. Risks;
3. Benefits;
4. Confidentiality;
5. Participation;
6. Incentive for participation;
7. Alternatives to participation.

Parents of students selected through the disproportionate stratified random sampling process received two copies of the parent informed consent from their child.

The parent informed consent was available in English or Spanish. The Parent informed consent included written instructions to sign, check the appropriate box, and return by the designated date with the student to the co-teacher(s). Parents were instructed to keep one copy for their records.

CTSQ administration. The researcher went to each site at the designated time selected by the researcher and co-teachers. A script was followed (see Appendix Q) that outlined procedures from entry to exit of the research site. The CTSQ was administered over a two-day period at each site. School One and Two had even day, odd day schedules with classes lasting 90 minutes. For example, on an even day students would attend periods two, four, six, and eight. The researcher went to the co-taught science classroom during the appropriate period and collected the Parent Informed Consent forms. At this time, randomly selected students whose parents agreed for them to participate left the classroom with the researcher. In cases where multiple classes were surveyed during the same time, (e.g., two second period co-taught science classes) the group traveled to pick up other research participants. Once all students with completed consent forms were gathered, the researcher and the students went to one of the designated computer labs.

Only the researcher and the students were present during CTSQ administration. Neither co-teacher was present in the room during CTSQ administration, in order to avoid any influence their presence might have had over students' responses. Computers were preset to the first screen of the CTSQ. Administration lasted no longer than 20 minutes; students were allowed to return to class independently. Upon entry to the computer lab, attendance was taken and each student was given a slip of paper, which

indicated who was represented by the designations of Teacher A and Teacher B for their co-taught science class. Prior to administration, the researcher read aloud the Student Assent (see Appendix A), which was located on the first screen of the CTSQ. The last statement on the student assent reads, “If you agree to participate, click next.” Clicking next is how students indicated consent. The student assent was written in age-appropriate language and was free from technical jargon that students may not have understood.

Final review. Teacher honoraria were distributed approximately two weeks after CTSQ administration to teachers who completed the steps as outlined in the Co-teacher(s) Quick Facilitation Guide.

Creditability of Data Collection

At the point of CTSQ administration, the students had been in school almost 10 months. The timing enabled the participants to have sufficient time to get to know their general and special education co-teachers. The date of the CTSQ administration was mutually agreed upon between the researcher, the school administrator, and both educators. The researcher and the co-teachers reminded students the day before CTSQ administration to be in class at the specified time. Additionally, if students with signed permission were absent during their assigned CTSQ period, every attempt was made to get them into a different CTSQ session. These steps were taken to ensure the highest possible response rate. Further, the researcher followed the administration script to ensure standardization of the administration procedures. Lastly, there were no GETs or SETs present during administration. The absence of both co-teachers was intentional to allow students to express their true feelings about their science co-teachers.

Response Rate

A layered approach was taken to acquire a high response rate. First, the researcher and the co-teachers began distribution of the Parent Informed Consent up to one month prior to scheduled CTSQ administration. Follow-up for students who did not return the consent form continued through CTSQ administration days. Each school had two consecutive CTSQ days scheduled. Students who were scheduled for the second day received an additional reminder and permission the day before actual administration. Students who were scheduled for the first day of administration and did not return their parent informed consent were given another copy and given an opportunity to participate in day two of administration.

Based on the disproportionate sampling, 202 students received the parent informed consent. After parent informed consent and student assent, there were 103 students from School One and School Two that responded to the CTSQ. Thus, the response rate was 51%. According to Creswell (2008), 50% or better is standard in leading educational journals (p. 402), and thus is deemed good for this investigation.

Participants' Demographics on CTSQ

On the CTSQ, students self-reported ethnicity by choosing all responses that applied to them. The ethnicity information was not verified, so it is reported according to what students indicated on the CTSQ.

Responders. The samples ethnic diversity is representative of the overall school demographics in that 24% of the students who responded were White, 20% were Black or African-American, 47% Hispanic, 14% Asian, 2% Native Hawaiian or Other Pacific

Islander, and 1% American Indian or Alaskan Native. Three students selected “Other,” citing White and Black, Middle Eastern, and Black and Hispanic. One student selected, “Prefer not to Answer.”

Approximately half of the students enrolled in this sample were female (49.02%) and the other half (50.98%) were male. Only one student skipped answering this question. The students in the sample were in ninth (43.69%), tenth (28.16%), and eleventh (28.16%) grades. Due to the time of the school year, twelfth graders were participating in end of the year activities and not required to be in class. In Table 8, the student demographics are described.

Table 8

Student Demographics

Category	Percentages
Gender	
Female	50 (49.02%)
Male	52 (50.98%)
	1 non-responder
Ethnicities	
White	24%
Black or African American	20%
Hispanic	47%
Asian	14%
Native Hawaiian or Other Pacific Islander	2%
American Indian or Alaska Native	1%
Prefer not to answer	1%
Other	White and Black Middle East Black and Hispanic
Science	
Biology	47.57%
Earth Space	25.24%
Chemistry	11.65%
Principle of Physics	15.53%
Grade	
9	43.69%
10	28.16%
11	28.16%
Students without disabilities	58(56.3%)
Students with disabilities	
Specific Learning Disability	21 (20.4%)
Emotional Disability	5 (4.9%)
Autism	2 (0.9%)
Other Health Impaired	13 (12.6%)
Missing disability information	4 (3.9%)

In total, 103 students responded to the CTSQ. However, after reviewing the data set of the students' responses, only 99 students' data could be used to conduct the analysis. Four students' data were not usable because analyses required groupings based on whether the students did or did not have a disability, and four students omitted their student identification number. Consequently, it could not be determined whether the students did or did not have a disability.

Non-responders. To minimize non-responders while collecting CTSQ data students were given multiple opportunities to participate (e.g., multiple attempts distributing parent informed consent, weekly reminders about approaching CTSQ date, make-up times for students missing initial CTSQ times). There were 99 students who did not respond to the CTSQ. Three of these students turned in their parent informed consent, but were absent on CTSQ days and make-up days. The other 96 students did not return the parent informed consent form; thus, they were ineligible to participate in the CTSQ.

Data Analysis

In Table 9, the research questions are aligned to the specific sections of the CTSQ. The CTSQ measured a series of dependent variables in Sections Two and Three, such as co-teachers' roles and responsibilities through the lenses of students with and without disabilities (independent variables).

Table 9

Research Questions with Correlating CTSQ Questions and Analysis

Research Questions	Quantitative		Qualitative
1. What are high school students' perceptions of co-teaching in a co-taught science setting?	Independent Variable All Students (students with and without disabilities)	Dependent Variable Section Two: "Which Teacher: General Educator, Special Educator, or Both Educators" statements. Students responded to 10 statements. Section Three: "Agreement" statements. Students responded to 15 statements.	
2. What are the similarities and differences that high school students with and without disabilities perceive about (2a) their co-teachers' roles and responsibilities and (2b) the co-teaching model used in the classroom?	Students with disabilities Students without disabilities	Part (2a) Section Two: "Which Teacher: General Educator, Special Educator, or Both Educators" statements. Section Three: "Agreement" statements. Part (2b) Section Four: "Co-Taught Model Used Most"	
3. What do high school students with and without disabilities (3a) say about whom they learn best from (3b) say are benefits of being in a co-taught science class and (3c) say co-teachers to do differently to improve their [the students'] learning or co-teaching?	N/A	N/A	Part (3a) Section Two: "Which Teacher: General Educator, Special Educator, or Both Educators" statements. (Statement 10 only: I learn best from...) Part (3b) Section Five: "Open-Response" Part (3c) Section Five: "Open-Response"

Five items from Section Three of the CTSQ (Agreement Statements) were intentionally reverse-worded, to control for response set, which is to break up the participants' response pattern. These items were:

1. It is hard having two teachers at the same time;
2. I would rather learn with only one teacher in the classroom;
3. Having two teachers makes me confused sometimes;
4. One teacher is mostly in charge of our behavior, and the other is mostly in charge of teaching;
5. One of my teachers explains things better than the other.

Thus, prior to data analysis of the three research questions, these items were recoded to ensure they matched the affirmatively worded questions in this section of the CTSQ. Recoding was completed using the transform function in SPSS. The recoding process reflected the Likert scale choices (strongly disagree to strongly agree) and transposed them. For example, the item, "It is hard having two teachers at the same time" was originally coded as 1 = strongly disagree and 5 = strongly agree. To create the affirmative responses, the new codes were 5 = strongly disagree and 1 = strongly agree.

Research question one. Using a statistical analysis program, IBM Statistical Package for the Social Sciences® Version 19 (SPSS), descriptive statistics were run on each item in Section Twos, Three, and Four of the CTSQ (Which Teacher? General Educator, Special Educator, or Both Educators, Agreement Statements, and Which Co-Teaching Model is Used Most?) to calculate the perceptions of all students in science co-taught classrooms. For example, students responded to 10 "Which Teacher? General

Educator, Special Educator, or Both Educators” on a Likert-type scale. Percentages are reported based on student responses to statements such as: “When I need help the teacher I ask is,” or “The teacher who seems to be in charge the most is.” The same process was followed, on the 15 Likert scale statements. Percentages are reported based on student responses to these statements. Additionally, students responded to this question in Section Four of the CTSQ, “Which Co-Teaching Model is Used Most?” Students identified which co-teaching model they perceived to be used most in their classroom. Percentages are reported based on which of the five co-teaching models they perceived to be used most in their classroom.

Research question two. Inferential statistics were used to analyze the second research question. To address the first question about the similarities and differences between students with and without disabilities on their co-teachers’ roles and responsibilities, two different analyses were conducted. In Section Two (Which Teacher? General Educator, Special Educator, or Both Educators) a chi-square test for association between the roles and responsibilities of GET, SET, or both educators (three levels) and students with and without disabilities (two categories) was conducted using SPSS. The alpha level was set at $p < .05$. Section Three (Agreement Statements) was addressed with independent t -test in order to compare two independent groups of students with and without disabilities (Creswell, 2008). Means and standard deviations for 14 Likert scale items were calculated separately for students with and without disabilities. Independent t -tests were then conducted to compare the two groups on all Likert scale items. The alpha level was set at $p < .05$ to draw conclusions about the similarities and differences in

perceptions between the students with and without disabilities. The following are the null and alternative hypotheses used in testing (Creswell, 2008).

Null Hypothesis: There is no difference in perceptions of co-teachers' roles and responsibilities between students with and without disabilities.

Alternative Hypothesis: There is a statistically significant difference in perceptions of the co-teachers' roles and responsibilities between students with and without disabilities.

The Levene's test was used to assess the equality of variances between students with and without disabilities. The output for "equal variances not assumed" was used in those cases when the p value or the Levene's Test for Equality of Variances was less than .05. The equal variances between the groups were not assumed in two out of 14 agreement statements: in response to statement #12 ("Having two teachers makes me confused sometimes") and statement #13 ("I enjoy having two teachers in this class").

To address the second part of the first question about the co-teaching model used in the classroom, descriptive statistics were used to present the percentage based on the frequency distribution for students with and without disabilities for each model. Students with and without disabilities were shown pictures with descriptions of five models of co-teaching and asked to rate which model their co-teachers used the most.

Research question three. Qualitative methods were used to analyze the third research question. Qualitative analysis were used on the Open-Response Queries from Section Two (Which Teacher? General Educator, Special Educator, or Both Educators)

and Section Five (Open-Response Queries) of the CTSQ, where students were allowed to respond in the text boxes if they chose to do so.

Creswell (2014) suggested that the first stages of analyses of qualitative data are data preparation and reading. In preparation, Microsoft Excel® spreadsheets were created for the first open-response query, “Who do you learn best from?” One sheet was created for SWD and another sheet for SWOD. After students selected, “Teacher A,” “Teacher B,” or “Both Educators” as the one they learned best from, students explained why they selected that teacher in the text box. The first column of each Microsoft Excel® spreadsheet included all of the student responses (Sheet One SWD and Sheet Two SWOD). After preparing the Microsoft Excel® spreadsheets, the researcher read over the data to ensure accuracy of placement.

After preparing the data and reading over it, the coding process began. The initial coding process started by constructing categories based on participants’ responses. As stated by Merriam (1998), “Devising categories is largely an intuitive process, but it is also systematic and informed by the study’s purpose, the investigator’s orientation and knowledge, and the meanings made explicit by the participants themselves” (p. 179). A constant comparative method was used to compare students’ comments and group them based on small phrases used in the comments. This process allows the researcher to take data and compare it for similarities and differences (Merriam, 1998). In cases where a statement contained more than one idea, the statement was divided and placed into appropriate categories.

After constructing categories for SWD using the participants' comments, the same process of creating categories was used for the SWOD, and additional categories were added as needed. This process continued until all the data were used and a master list of categories was created. Once all data were used, this master list was used to continue analysis. A process of inductive and deductive reasoning was used to collapse categories (Merriam, 1998). As suggested by Merriam, as themes emerged, ideas were continually tested using the participants' comments.

Data analysis of the second and third open-response queries, ("What are the benefits of being in a co-taught science class?" and "What do you suggest co-teachers do differently to improve your [the students'] learning or co-teaching?") began with creating the Microsoft Excel® spreadsheets for SWD and another sheet for SWOD. Next, the previous discussed process of constructing, comparing, and collapsing categories was followed (Merriam, 1998). The data were reduced until themes emerged. For reporting purposes, students' comments were proofed using Microsoft Word to ensure correct spelling and edited where necessary. In no way were the content of students' comments changed. The changes made were to give the reader clarity. For example, the statement: "she helps me a lot and shows me how to do the worksheet if I don't know how to do it also she recommends what is best and what I should do and sometimes makes me stay after school to help me" was refined for clarity while maintain the student's intended messages. The new statement read, "She helps me a lot and shows me how do the worksheet if I don't know how to do it. Also, she recommends what is best and what I should do. Sometimes makes me stay after school to help me."

Trustworthiness of qualitative data analysis. Trustworthiness, or research validity, is verification of the data collection procedures (Glesne, 2006). Carlson (2010) stated:

Qualitative inquirers mindfully employ a variety of techniques to increase trustworthiness of the research they conduct; that is, how much trust can be given that the researcher did everything possible to ensure that data was appropriately and ethically collected, analyzed, and reported. (p. 1103)

For all open-response queries, a series of steps were followed to address trustworthiness while analyzing the data. For the first query, “I learn best from,” the researcher trained a doctoral student to complete inter-rater reliability on organizing the statements according to Teacher A, Teacher B, Both Educators, or General Statements. The SWD spreadsheet reflected that there was 100% agreement (41 out of 41 agreements). The SWOD spreadsheet indicated that there was 89% agreement (50 out of 56 statements). For the six statements where agreement was not reached, collaboration was used to mediate differences until 100% agreement was met. Internal validity was also addressed during analysis of this qualitative data. When analyzing qualitative data, internal validity is a verification process that asks a colleague outside of the research to examine and comment on the findings as they emerge. Merriam (1998) identified this as peer examination (p. 204). For the statement “I learn best from,” the researcher and the doctoral student simultaneously walked through the process of constructing, comparing, and collapsing categories until themes initial themes emerged. A discussion between the

researcher and the doctoral student continued until consensus was reached about what the data informed.

For the second and second and third open-response queries (“What are the benefits of being in a co-taught science class?” and “What do you suggest co-teachers do differently to improve your [the students’] learning or co-teaching?”), the researcher worked with the same doctoral student to establish reliability through an audit trail (Merriam, 1998). For an audit trail, “the investigator must describe in detail how data were collected, how categories were derived, and how decisions were made throughout the inquiry” (Merriam, 1998, p. 207). First, the researcher walked through the process of constructing, comparing, and collapsing categories until themes initial themes emerged independently. Next, the complete process was discussed with the same colleague to strengthen the understanding of what the data informed. Lastly, having open-response queries allowed corroboration between the findings on open-response queries and how students responded on Likert-scale questions.

Summary

In summary, based on three research questions, a survey research design was chosen. In the current study, high school students with and without disabilities in grades 9-11 were targeted. In total, participants spanned 17 co-taught science classes (Biology, Earth Space, Principles of Physics, and Chemistry) in two high schools from a single school district. Based on the methods described in this chapter, 202 students with and without disabilities were randomly selected to participate. After following the research

procedures (i.e., recruitment, parent informed consent, CTSQ administration) 103 students responded to the CTSQ.

In the next chapter, each research question will be discussed with the results obtained from data collection.

The names of the Section Two and Section Three on the Co-Teaching Student Survey (CTSQ) will be discussed differently in the next two chapters. The change in terminologies during the analyses and discussion of the results are intended to better convey what the CTSQ represents and help the reader better distinguish between results. The statements in Section Two (Which Teacher? General Educator, Special Educator, or Both Educators) the students tell what they perceive to be teachers' roles and responsibilities and are analyzed two ways. Thus, Which Teacher? General Educator, Special Educator, or Both Educators is now referred to as (a) Which Teacher? All Students' Perceptions or (b) Which Teacher? Students' with and without Disabilities Perceptions. The statements in Section Three (Agreement Statements) inform what students perceive to be the impact on their learning and are analyzed two ways. Thus, Section Three of the CTSQ, formerly known as Agreement Statements, will be referred to as (a) Perceived Impact on Learning: All Students or (b) Perceived Impact on Learning: Students with and without Disabilities.

Chapter Four

Three research questions were analyzed:

1. What are high school students' perceptions of co-teaching in a co-taught science setting?
2. What are the similarities and differences that high school students with and without disabilities perceive about (2a) their co-teachers' roles and responsibilities and (2b) the co-teaching model used in the classroom?
3. What do high school students with and without disabilities (3a) suggest about whom they learn best from, (3b) suggest are benefits of being in a co-taught science class, and (3c) suggest co-teachers do differently to improve their [the students'] learning or co-teaching?

The analyses and results are reported below for each research question. Tables and a figure are also included.

Research Question One

The first research question examined how all students perceived the roles and responsibilities of the co-teachers in science co-setting. In order to attain this data, ten statements on Section Two of the CTSQ (Which Teacher? All Students' Perceptions) and 15 statements on Section Three of the CTSQ (Perceived Impact on Learning: All

Students) were analyzed. Descriptive statistics were used, and Tables 10 and 11 report percentages based on frequency distribution for all students responses to each statement.

Table 10

Which Teacher? All Students' Responses

Statements	General Educator	Special Educator	Both Educators
2.1 When I need help, the teacher I ask is:	25.3%	12.1%	62.6%
2.2 The teacher who grades my work the most is:	70.7%	12.1%	17.2%
2.3 The teacher who seems to be in charge of the lessons the most is:	85.9%	4.0%	10.1%
2.4 The teacher who walks around and helps students the most is:	9.1%	53.5%	37.4%
2.5 The teacher who organizes the materials for instruction is:	71.4%	4.1%	24.5%
2.6 The teacher who seems to plan most instruction for this class is:	86.9%	1.0%	12.1%
2.7 The teacher who explains things most of the time is:	61.6%	12.1%	26.3%
2.8 I learn best from:	40.8%	11.2%	48.0%
2.9 The teacher who explains things in more than one way is:	32.3%	23.2%	44.4%
2.10 The teacher who explains things to me when I make a mistake is:	22.4%	20.4%	57.1%

Table 2

Perceived Impact on Learning: All Students' Responses

Statements	Strongly Disagree	Disagree	Agree	Strongly Agree
3.1 When the two teachers are teaching, I think they divide the teaching in half so that one teacher is not doing more work than the other.	11.3%	43.3%	29.9%	15.5%
3.2 The two teachers seem comfortable sharing responsibilities when they are teaching together.	3.1%	6.2%	54.6%	36.1%
3.3 I believe both teachers are equal teachers in the classroom.	7.2%	36.1%	33.0%	23.7%
3.4 I believe both teachers enjoy teaching this class.	2.1%	14.4%	50.5%	33.0%
3.5 I learn more when I am in this class with two teachers.	6.3%	25.0%	35.4%	33.3%
3.6 The two teachers use more ways to teach than when I am in other classes where there is only one teacher.	6.2%	29.9%	40.2%	23.7%
3.7 I learn better with two teachers.	6.3%	27.4%	41.1%	25.3%
3.8 It is hard to have two teachers at the same time.	5.2%	7.3%	56.3%	31.3%
3.9 I wish all my classes had two teachers.	13.5%	41.7%	29.2%	15.6%
3.10 I would rather learn with only one teacher in the classroom.	10.4%	20.8%	50.0%	18.8%
3.11 Students seem to behave better when there are two teachers in this class.	7.3%	26.0%	43.8%	22.9%
3.12 Having two teachers makes me confused sometimes.	4.1%	23.7%	56.7%	15.5%

3.13 I enjoy having two teachers in this class.	6.3%	15.6%	58.3%	19.8%
3.14 One teacher is mostly in charge of our behavior, and the other teacher is mostly in charge of teaching.	29.2%	30.2%	33.35%	7.3%
3.15 One of my teachers explains things better than the other.	26.0%	42.7%	26.0%	5.2%

On Section Four of the CTSQ (Which Co-Teaching Model is Used Most?), students were directed to look at the five models, study each one, and decide which model the co-teachers used most (i.e., One Teach, One Observe/Drift, Station Teaching, Parallel Teaching, Alternative Teaching, and Team Teaching). Figure 1 reports the percentages of all students. The majority of all students with and without disabilities reported the model used most frequently in their co-taught science class was One Teach, One Observe/Drift.

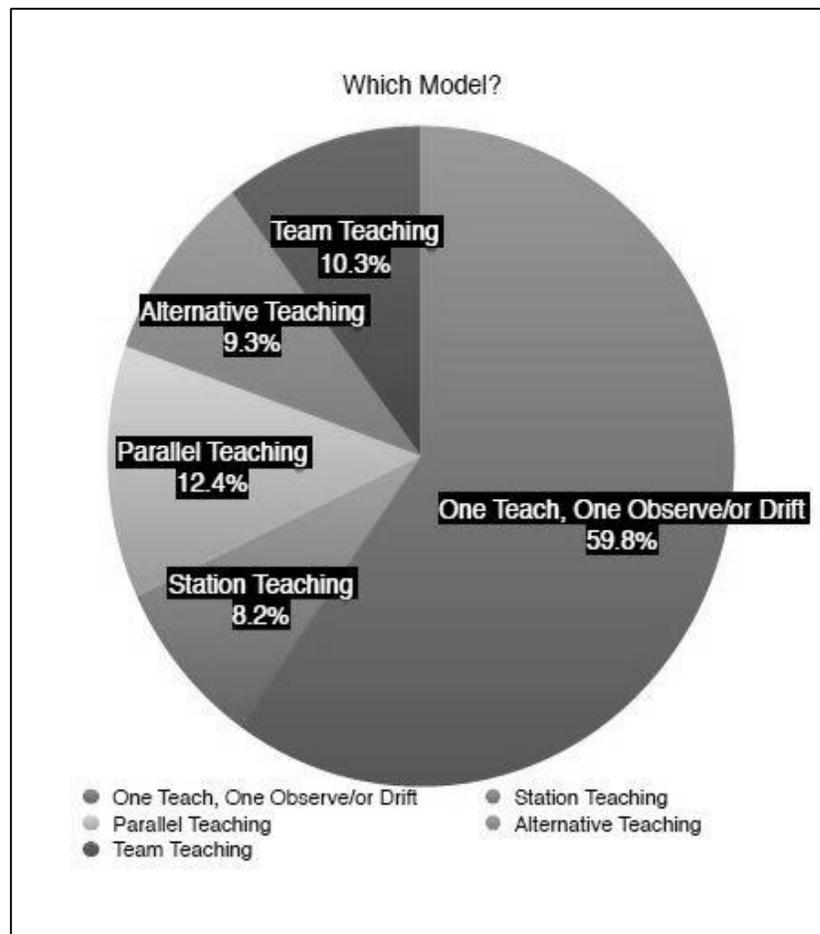


Figure 1. Which co-teaching model is used most? All students' responses.

Research Question Two

Research Question Two asks, “What are the similarities and differences that high school students with and without disabilities perceive about (2a) their co-teachers’ roles and responsibilities and (2b) the co-teaching model used in the classroom?” The first portion of the related to co-teachers’ roles and responsibilities is from Section Two of the CTSQ (Which Teacher? SWD and SWOD). The second portion of the question about the

co-teaching model used most in the classroom is from Section Four of the CTSQ (Which Co-Teaching Model is Used Most? SWD and SWOD).

Which Teacher? SWD and SWOD. Unlike Research Question One, which looks at how all students perceive their co-teachers' roles and responsibilities, Research Question Two compares and contrasts the perceptions of students with disabilities (SWD) and students without disabilities (SWOD). The data was disaggregated by the two groups of students in the co-taught science settings and reported. In Table 12, percentages and p -values are reported for SWD and SWOD using the Pearson's chi-square test. The Pearson's chi-square test shows that there is a statistically significant association between students with and without disabilities in response to statement 2.8 (The teacher who can explain things in more than one way is) $X^2(2) = 6.01, p = .05$. This means that less than a 5% percent chance existed that this relationship could be found in a sample when no relationship existed in the population. In response to statement 2.10 (I learn best from) $X^2(2) = 7.86, p = .02$, there was another statistical significant association between SWD and SWD. This means that there is less than a 2% chance that this relationship could be found in a sample when no relationship existed in the population.

Also, there are six adjusted standardized residuals (ASRs) greater than 2.0 in absolute value (bolded in Table 12), indicating that there are six cells that contribute to the presence of the difference in the distribution of responses between students with and without disabilities. Thus, ASRs that are less than -2.0 indicate that the number of cases in that cell is significantly smaller than would be expected if the null hypotheses were true. Those include (a) SWD and GET in statement 2.8 (ASR = -2.3), (b) SWOD and

GET in statement 2.10 (ASR = -2.2), and (c) SWOD and SET in statement 2.10 (ASR = -2.3). In addition, adjusted standardized residuals that are more than 2.0 indicate that the number of cases in that cell is significantly larger than would be expected if the null hypotheses were true. Those include (a) SWOD and GET in statement 2.8 (ASR = 2.3), (b) SWD and GET in statement 2.10 (ASR = 2.2), and (c) SWD and SET in statement 2.10 (ASR = 2.3). However, the results should be interpreted with caution due to cases of expected frequency smaller than five.

Table 3

Which Teacher: SWD and SWOD Responses

Statements	Co-teachers	SWD	SWOD	<i>p</i>
2.1 When I need help the teacher I ask is...	GET	17.1%	31.0%	.08
	SET	19.5%	6.9%	
	Both	63.4%	62.1%	
	Educators			
2.2 The teacher who grades work the most is...	GET	78.0%	65.5%	.39
	SET	9.8%	13.8%	
	Both	12.2%	20.7%	
	Educators			
2.3 The teacher who seems to be in charge of the lessons the most is...	GET	82.9%	87.9%	.78
	SET	4.9%	3.4%	
	Both	12.2%	8.6%	
	Educators			
2.4 The teacher who walks around and helps student the most is...	GET	12.2%	6.9%	.58
	SET	48.8%	56.9%	
	Both	39.0%	36.2%	
	Educators			
2.5 The teacher who organizes the materials for instruction is...	GET	70.7%	71.9%	.94
	SET	4.9%	3.5%	
	Both	24.4%	24.6%	
	Educators			
2.6 The teacher who seems to plan most instruction for this class is...	GET	80.5%	91.4%	.21
	SET	2.4%	0.0%	
	Both	17.1%	8.6%	
	Educators			
2.7 The teacher who explains things most of the time is...	GET	48.8%	70.7%	.08
	SET	14.6%	10.3%	
	Both	36.6%	19.0%	
	Educators			
2.8 The teacher who can explain things in more than one way is...	GET	19.5%	41.4%	.049*
	ASR	-2.3	2.3	
	SET	31.7%	17.2%	
	ASR	1.7	-1.7	
	Both	48.8%	41.4%	
	Educators	.7	-.7	
2.9 The teacher who explains things to me when I make a mistake is...	GET	20.0%	24.1%	.85
	SET	22.5%	19.0%	

	Both Educators	57.5%	56.9%	
2.10 I learn best from...	GET	27.5%	50.0%	.02*
	ASR	2.2	-2.2	
	SET	20.0%	5.2%	
	ASR	2.3	-2.3	
	Both Educators	52.5%	44.8%	
	ASR	.7	-.7	

Note. GET = General Education Teacher, SET = Special Education Teacher, ASR = Adjusted Standardized Residual* $p \leq .05$.

Perceived impact on learning: SWD and SWOD. As previously mentioned, Research Question Two compares and contrasts the perceptions of students with disabilities (SWD) and students without disabilities (SWOD). The data was disaggregated by the two groups of students in the co-taught science settings and reported. In Table 13, the results are reported for Section Three of the CTSQ (Perceived Impact on Learning: SWD and SWOD), including means, standard deviations, and p -values.

Based on the independent t -test, there are four statements with a statistically significant difference between students with and without disabilities. They are:

1. Statement 3.3 (“I think both teachers are equal teachers in the classroom”): SWD ($M = 3.1$; $SD = 0.88$) and SWOD ($M = 2.5$; $SD = 0.87$), $t(95) = 3.01$; $p = .003$.
2. Statement 3.8 (“It is NOT hard to have two teachers at the same time”): SWD ($M = 2.9$; $SD = 0.98$) and SWOD ($M = 3.3$; $SD = 0.64$), $t(94) = -2.02$; $p = .05$.
3. Statement 3.12 (“Having two teachers DOES NOT make me confused sometimes”): SWD ($M = 2.6$; $SD = 0.77$) and SWOD ($M = 3.0$; $SD = 0.67$),

$t(95) = -2.37; p = .020$ (*Note*: equal variances between groups were not assumed based on the Levene's test).

4. Statement 3.13 ("I enjoy having two teachers in this class"): SWD ($M = 2.7$; $SD = 0.86$) and SWOD ($M = 3.1$; $SD = 0.68$), $t(94) = -2.29; p = .025$ (*Note*: equal variances between groups were not assumed based on the Levene's test).

Table 4

Perceived Impact on Learning: SWD and SWOD Responses

Statement Number	Students with Disabilities	Students without Disabilities
3.1 When the two teachers are teaching, I think they divide the teaching in half so that one teacher is not doing more work than the other.	2.7 (0.92)	2.4 (0.86)
3.2 The two teachers seem comfortable sharing responsibilities when they are teaching together.	3.3 (.0.69)	3.2 (0.71)
3.3 I think both teachers are equal in the classroom.	3.1 (0.88)**	2.5 (0.87)**
3.4 I believe that both teachers enjoy teaching this class.	3.2 (0.62)	3.1 (0.81)
3.5 I learn more when I am in this class with two teachers.	3.0 (0.97)	2.9 (0.88)
3.6 The two teachers use more ways to teach than when I am in the other classes where there is only one teacher.	2.9 (0.95)	2.8 (0.82)
3.7 I learn better with two teachers.	2.8 (0.92)	2.9 (0.82)
3.8 I disagree with this: it is hard to have two teachers at the same time.	2.9 (0.89)*	3.3 (0.64)*
3.9 I wish all my classes had two teachers.	2.4 (0.96)	2.5 (0.89)
3.10 I disagree with this: I would rather learn with only one teacher in the classroom.	2.8 (0.88)	2.8 (0.88)
3.11 Students seem to behave better when there are two teachers in this class.	2.7 (.0.96)	2.9 (0.80)
3.12 Having two teachers DOES NOT make me confused sometimes.	2.6 (0.77)**	3.0 (0.67)*
3.13 I enjoy having two teachers in this class.	2.7 (0.86)*	3.2 (0.68)*
3.14 I disagree with this: One teacher is mostly in charge of our behavior, and the other teacher is mostly in charge of teaching.	2.3 (0.97)	2.1 (0.93)
3.15 I disagree with this: One of my teachers explains things better than the other	2.2 (0.83)	2.0 (0.86)

Note. Italicized statements were reverse worded. 1-strongly disagreed; 2-disagree; 3-agree; 4-strongly agree.

* $p < .05$. ** $p < .01$.

Table 13 was used to highlight the statistical significance on 4 statements from Section Three (Perceived Impact on Learning: SWD and SWOD). Table 14 reports the results for Perceived Impact on Learning using percentages. Again, in Section Three, students responded to 15 statements on a Likert scale with Strongly Disagree (SD), Disagree (D), Strongly Agree (SA), and Agree (A). Below, the four statements that demonstrated a statistically significant difference between students with and without disabilities are reported in percentages. These percentages will be used in Chapter 5 to discuss and analyze the data.

1. Statement 3.3 (“I think both teachers are equal teachers in the classroom”): 70% of SWD agreed (strongly agreed or agreed) that both teachers are equal in the classroom. However, over half of SWOD disagreed (strongly disagreed or disagreed) with the same statement.
2. Statement 3.8 (“It is NOT hard to have two teachers at the same time”): Almost 80% of SWD and a little over 90% of SWOD disagreed with this statement (strongly disagree or disagree).
3. Statement 3.12 (“Having two teachers DOES NOT make me confused sometimes”): 60% of SWD disagreed with this statement (strongly disagreed or disagreed and 80% of SWOD disagreed).
4. Statement 3.13 (“I enjoy having two teachers in this class”): Almost 70% of SWD and over 80% of SWOD agreed with this statement (strongly agreed or agreed).

Table 5

Perceived Impact on Learning: SWD and SWOD Response in Percentages

Statement Number	Students with Disabilities		Students without Disabilities	
	SD/D	SA/A	SD/D	SA/A
3.1 When the two teachers are teaching, I think they divide the teaching in half so that one teacher is not doing more work than the other.	45.0%	55.0%	61.4%	38.6%
3.2 The two teachers seem comfortable sharing responsibilities when they are teaching together.	7.5%	92.5%	10.5%	89.5%
3.3 I think both teachers are equal in the classroom.	30.0%	70.0%	52.7%	47.3%
3.4 I believe that both teachers enjoy teaching this class.	12.5%	87.5%	19.3%	80.7%
3.5 I learn more when I am in this class with two teachers.	25.6%	55.0%	35.1%	64.9%
3.6 The two teachers use more ways to teach than when I am in the other classes where there is only one teacher.	17.5%	72.5%	42.1%	57.9%
3.7 I learn better with two teachers.	28.2%	71.8%	37.5%	62.5%
3.8 I disagree with this: It is hard to have two teachers at the same time.	79.4%	20.6%	93.0%	7.0%
3.9 I wish all my classes had two teachers.	55.0%	45.0%	55.3%	44.7%
3.10 I disagree with this: I would rather learn with only one teacher in the classroom.	75.0%	25.0%	64.3%	35.7%
3.11 Students seem to behave better when there are two teachers in this class.	41.0%	59.0%	28.0%	72.0%
3.12 Having two teachers DOES NOT make me confused sometimes.	60.0%	40.0%	80.7%	19.3%
3.13 I enjoy having two teachers in this class.	30.8%	69.2%	15.8%	84.2%
3.14 I disagree with this: One teacher is mostly in charge of our behavior, and the other teacher is mostly in charge of teaching.	50.0%	50.0%	33.9%	66.1%
3.15 I disagree with this: One of my teachers explains things better than the other.	37.5%	62.5%	26.8%	73.2%

Note. Italicized statements were reverse worded. SD/D -strongly disagreed/disagree, SA/A -strongly agreed/agree.

Which co-teaching model is used most? SWD and SWOD. On Section Four of the CTSQ (Which Co-Teaching Model is Used Most?), students were directed to look at the five models, study each one, and decide which model the co-teachers used most (i.e., One Teach, One Observe/Drift, Station Teaching, Parallel Teaching, Alternative Teaching, and Team Teaching). For Research Question Two, the data for students with and without disabilities were disaggregated. The majority of SWD (45%) and SWOD (70.2%) perceived that One Teach, One Observe/Drift was used the most in the science co-taught classroom. Table 15 reports the percentages for students with and without disabilities on Section Four of CTSQ (Which Co-Teaching Model is Used Most?).

Table 6

Which Co-Teaching Model is Used Most? SWD and SWOD Responses

	Students with Disabilities	Students without Disabilities
4.1 One-Teach, One-Observe/Drift	45.0%	70.2%
4.2 Station Teaching	7.5%	8.8%
4.3 Parallel Teaching	20.0%	7.0%
4.4 Alternative Teaching	15.0%	5.3%
4.5 Team Teaching	12.5%	8.8%

Research Question Three

Research Question Three came directly from the three opportunities students had to give open-responses. The first opportunity to respond to an Open-Response Query was in Section Two (Which Teacher? SWD and SWOD). Students with and without disabilities responded to survey statement whom they perceived they learn best from

Teacher A (general education co-teacher), Teacher B (special education co-teacher), or Both Educators. Next, students were allowed to explain their answer choice. The Second and Third open-response queries were from Section Five of the CTSQ. At the end of the CTSQ, students responded about what they perceived to be benefits of being in a co-taught science class and responded with comments about what co-teachers could do differently to improve their [the students'] learning or co-teaching.

First open-response query. Ninety-eight percent of all students provided responses for the First Open-Response Query, "I learn best from." In the following section, how qualitative data was analyzed will be reviewed and the results will be reported. Finally, the themes that emerged will be given and defined.

Coding. As discussed in Chapter 3, the initial coding of this qualitative data was done by categories being constructed from the students responding either Teacher A (general education co-teacher), Teacher B (special education co-teacher), or Both Educators. In total, there were 98 responses that needed to be classified (42 SWD and 56 SWOD). Next, a constant comparative method was used to compare students' comments based on small phrases used in the comments. This process was used until all of the data was reviewed. Analysis continued with categories being created based on student responses. These categories were collapsed until clear themes emerged. The same coding process was followed for students with and without disabilities.

There were 16 responses from students with and without disabilities that were unclassified statements. Unclassified statements included responses that did not reference a specific teacher (Teacher A, Teacher B, or Both Educators). For example, one student

said: “He puts in a way we can understand.” Additionally, responses that did not specifically answer the question “I learn best from” or were unclear were put in the unclassified statements category as well. For example, one student responded, “Teacher A (GET) explains most of the material in the class. She tells me most of what I need to know in the subject of the class. Teacher B (SET) usually makes sure that I keep up with the class and do it correctly.” Another student responded, “Teacher A (GET) teaches lessons and always has the final say, but is never very clear. I often ask Teacher B for help. Sometimes Teacher B (SET) doesn't know though. In that case, I ask Teacher A (GET). Teacher A (GET) is more knowledgeable, but harder to learn from.” See Table 16 for sample student responses representing various teachers.

Table 7

First Open-Response Query "I Learn Best From:" SWD and SWOD Sample Responses

	Students with Disabilities	Students without Disabilities
Teacher A General Education Co- Teacher	"Teacher A is who I learn best from because she does the main teaching and when I don't understand something, I ask her for help."	"I learn best from Teacher A because she is the one that usually teaches and explains to the class what activities we will be doing. Therefore, I learn more from her."
	"I learn best from Teacher A. She is the main teacher in the classroom so I feel that she knows the things better than Teacher B. Teacher B is learning the things for the first time and is just a student. She doesn't know how to help exactly the same way that Teacher A does."	"I learn best from Teacher A because she seems to have more knowledge on the subject than Teacher B. She explains the lesson best. She explains it in a way that is easier for students to understand."
Teacher B Special Education Co- Teacher	"Teacher B helps out more and she always helps me when I need it."	"Teacher B makes things clearer to me."
	"I have Teacher B more so I ask more help from her."	
Both Educators	"Because either it's Teacher A or Teacher B, I ask them both the same questions half of the time and they both help me learn the material either way."	"Because whenever I need help with anything at class whoever sees it first just helps me or explains it better."
	"Both teachers help me and they never give up on any of us students. They both help us no matter what. If we don't understand it then they will try to show us in a way we will understand it even if it takes a long time."	"Both of them have a good way of teaching or explaining things, specially when I am not doing well in some work."
Unclassified Statements	"He puts it in a way I can understand."	"She does more of the talking"
	"She helps me a lot and shows me how do the worksheet if I don't know how to do it. Also, she recommends what is best and what I should do. Sometimes makes me stay after school to help me"	"Teacher A explains the lesson that I sometimes understand, but when I don't I go to teacher B"

There were a total of 82 responses after removing the unclassified responses from students with and without disabilities. Of these responses, 35% of were from SWD (29

classified responses) and 65% were provided by SWOD (53 classified responses). These remaining 82 student responses' were categorized into four final themes.

Themes. The four themes that emerged after the qualitative analysis of the Open-Response Query "I learn best from" were: (a) Main teacher or teacher knowledge; (b) Answer questions or helps me learn and understand the material; and (c) Different ways of teaching or styles. The theme that emerged with the highest number of responses from SWD and SWOD for the GET was "Main teacher or teacher knowledge." In total, 21 student responses were classified under this theme (4 SWD and 17 SWOD) (see Table 17). The theme that emerged with the highest number of responses from SWD and SWOD for SET was "Helper or support." In total, 15 student responses were classified under this theme (4 SWD and 11 SWOD) (see Table 17). The theme that emerged with the highest number of responses from SWD and SWOD for Both Educators was "Answer questions or helps me learn and understand the material." In total, there were 25 responses classified under this theme (14 SWD and 11 SWOD; see Table 17). Next, each theme is defined with examples from student responses.

Theme 1: First open-response query. Here students' responses about from whom they learn better from were about a co-teacher(s) being the main teacher or the level of content knowledge held by a co-teacher. For example, one student reference stated, "I feel like Teacher A (GET) is kind of the main teacher. She is pretty new so she's not the best teacher. Teacher B kind of just follows up on what Teacher A (GET) says and does." Another student response for this theme stated, "I learn best from Teacher A (GET). She is the main teacher in the classroom so I feel that she knows the things better than

Teacher B (SET). Teacher B (SET) is learning the things for the first time and is just a student. She doesn't know how to help exactly the same way that Teacher A (GET) does.”

Theme 2: First open-response query. Here, students' responses about whom they learn better from has to do with the co-teachers' abilities to explain the material or their level of understanding of the material being presented by the co-teacher(s). For example, one student response for this theme stated, “I feel like Ms.* is able to explain concepts to me more effectively.” Another student response that supported this theme stated, “Mr.* helps out more when you need help. He is more clear when explaining things and giving examples.”

Theme 3: First open-response query. Here, students' responses about whom they learn better from were about the co-teachers' way of teaching. Some students' responses referenced the co-teachers' abilities to teach in multiple ways or the different teaching styles that support student understanding. For example, one student said, “Ms.* and Ms.* teach differently, but they both work together to teach a lesson.” Another student said, “They both teach things in several different ways.”

Theme 4: First open-response query. Here, students' responses about whom they learn better from were about the co-teacher being helpful or supporting student learning in some capacity. Some students' responses may include a specific co-teacher being referred to as an assistant. For example, one student responded, “Teacher B is just there if we need help and does not know a lot about chemistry.” Another student responded, “I learn best with both teachers for extra support.”

Table 8

Themes: I Learn Best From.... (Teacher A, Teacher B, or Both Educators)

		Students with disabilities (SWD) # of comments	Students without disabilities (SWOD) # of comments
General Education Co-Teacher	Main Teacher/Teacher Knowledge	4	17
	Answer Questions/ Help me Learn and Understand the Material	1	6
	Different Ways of Teaching/ Styles	0	1
Special Education Co-Teacher	Answer Questions/ Help me Learn and Understand the Material	3	1
	Helper/ Support	4	11
Both Co-Teachers	Main Teacher/ Teacher Knowledge	0	2
	Answer Questions/ Help me Learn and Understand the Material	14	11
	Different Ways of Teaching/ Styles	1	3
	Helper/ Support	2	1
	Total: 82	29	53

Second open-response query. Nearly 100% percent of all students provided responses for the second open-response query, “What do high school students with and

without disabilities perceive as benefits of being in a co-taught science class?” In the following section, how qualitative data was analyzed will be reviewed and the results will be reported. Finally, the themes that emerged will be provided and defined.

Coding. As discussed in Chapter 3, the process of constructing, comparing, and collapsing categories until themes emerged was followed. Table 18 gives sample student responses representing how they were categorized. After qualitative analysis of students perceived benefits of co-teaching four themes and one subtheme emerged (see Table 19). Across the two populations (SWD and SWOD), the four major themes were: (a) Help and extra support (41 student responses); (b) Learning and understanding (28 student responses); (c) Behavior related (18 student responses); and (d) Instructional practices (6 student responses). Additionally, six students’ comments reported no benefit or were not clearly stated; therefore, they were categorized as unclassified. Lastly, under the theme “Help and extra support,” the subtheme “Asking questions” emerged for students with and without disabilities.

Table 9

Second Open-Response Query - Benefits of Co-Teaching: SWD and SWOD Sample Responses

	Students with Disabilities (SWD)	Students without Disabilities (SWOD)
Help/ Extra Support	<p>“When one teacher is busy I can ask the other teacher,” or “Two main benefits would be that we all get help from both teachers. We also have a better chance of getting a better grade because we complete work faster with more help.”</p> <p>Subtheme: Asking Questions</p>	<p>Also, there is more availability of help during labs ect.” or “They both help out a lot”</p> <p>Subtheme: Asking Questions</p>
	<p>“...and you don’t have to wait for just one teacher to get to you if you have a question”</p>	<p>“One teacher does not have to deal with all the student questions (especially during labs).”</p>
	<p>“There is always a teacher available to help with questions.”</p>	<p>“The 2 main benefits that I’ve experienced are first I don’t have to wait for one teacher to call on me in order to have my question answered. Second, I don’t have to interrupt the class in order to get my question answered.”</p>
Learning and Understanding	<p>“A clearer understanding of what I have to do and what something means or relates to.”</p>	<p>“When one is teaching and I don’t understand what he/she is saying. I just ask the other to explain what is going on.”</p>
	<p>“... when the teacher explains something to the class and they don’t understand the second teacher can give her examples and then the students might understand it better then.”</p>	<p>“Learning better and more understanding of the subject.”</p>
Behavior Related	<p>“The class runs smoother with both teachers”</p>	<p>“Better behavior”</p>
	<p>“Makes the behavior of the class better”</p>	<p>“All the students behave more”</p>
	<p>“I probably behave better when there is a co teacher in the class.”</p>	<p>“It can help with behavior”</p>
	<p>“I focus more while I do my work”</p>	<p>“The classroom also behaves more with two teachers.”</p>

	“...getting to pay attention.”	“Keeps the class more focused”
		“I am able to pay more attention”
Instructional Practices	“I can learn in different ways”	“If I am confused about something the other teacher explain it in a different way”
	“Having two teachers helped me learn different ways to learn about the subject”	“If I don’t understand how one teacher is explaining something, the other teacher can explain it in a different way.”
	“That you get two different perspectives from both teachers”.	“They explain in different ways.”
		“Having two opportunities to get the information makes less stress on me and the teacher”
		“Two teachers allows students to talk to whichever teacher they prefer, making them more comfortable.”

Table 10

Second Query Themes: Perceived Benefits All Responses

Themes	Total Responses
Help and Extra support	41
Learning and Understanding	28
Behavior Related	18
Instructional Practices	6
Unclassified Responses	6

Themes. The theme that emerged as the perceived highest biggest benefit for SWD (19 responses) and SWOD (22 responses) was help and extra support. Behavior and instructional practices emerged as the least-perceived benefit for students with

disabilities, with only six student comments for both themes. For students without disabilities, instructional practices emerged as the least perceived benefit (see Table 20).

Table 11

Second Open-Response Query Perceived Benefits for SWD and SWOD

	Students with Disabilities	Students without Disabilities
Help and extra support	19	22
Learning and Understanding	11	17
Behavior Related	6	12
Instructional Practices	6	8

Theme 1: Second open-response query. The first theme that emerged as a perceived benefit was that students reported additional help or extra support as a benefit of having two teachers in the classroom. Students responded using words or phrases such as “help,” “availability,” or “when one teacher is busy.” Students appreciated either teacher being accessible to get support and the decreased wait-time for help. Specifically, some students with disabilities made comments such as: “When one teacher is busy I can ask the other teacher,” or “Two main benefits would be that we all get help from both teachers. We also have a better chance of getting a better grade because we complete work faster with more help.”

For SWOD, comments were made that referenced this additional help or extra support. Specifically, these comments used the phrase “when one teacher is busy.” Students without disabilities made comments such as: “Also, there is more availability of help during labs etc.” or “They both help out a lot.”

A noted difference between SWD and SWOD was only the SWOD made a point of distinguishing the special educator. For example, one SWOD stated: “Having two teachers gives the main teacher more time to actually teach because the helper teacher can put in grades and check homework.” Another SWOD stated: “If I don’t get something while Teacher A (GET) is in front of the class teaching, I usually ask Teacher B.”

A third student commented: “Alternate teacher is really able to help me with the work in class when I need help.” A fourth stated: “When you have a question you can get extra help, but there is always one teacher that knows the material better. If both teachers were equally capable then it would work better.” A fifth stated: “One can answer questions about smaller things, such as homework assignments, while the other is still teaching and so that way we don’t waste as much time.”

The subtheme of asking questions emerged for both students with and without disabilities under the theme help or extra support. Students made comments that were specifically related to asking questions, getting questions answered, the reduced wait time associated with getting questions answered, or increased teacher availability although one teacher is answering questions. These comments were evident from SWD statements such as “You don’t have to wait for just one teacher to get to you if you have a question” or “There is always a teacher available to help with questions.” These comments were also evident in SWOD. For example, one SWOD commented, “One teacher does not have to deal with all the student questions (especially during labs).” Another stated: “The two main benefits that I’ve experienced are first I don’t have to wait for one teacher to

call on me in order to have my question answered. Second, I don't have to interrupt the class in order to get my question answered.”

Theme 2: Second open-response query. The second theme that emerged as a perceived benefit of having two teachers surrounded students learning and understanding the material presented. Students used words or phrases such as: learn, understand, clarify, or explain. One student with a disability commented that a benefit of having two teachers was having “A clearer understanding of what I have to do and what something means or relates to.” Another SWD said, “When the teacher explains something to the class and they don't understand, the second teacher can give her examples and then the students might understand it better then.” SWOD made comments such as, “When one is teaching and I don't understand what he/she is saying. I just ask the other to explain what is going on.” Another SWOD stated a benefit of having to two teachers was “Learning better and more understanding of the subject.”

Theme 3: Second open-response query. The third theme that emerged as a perceived benefit was related to behavior. These comments suggested that having two teachers either changed student behavior, or put another teacher in charge of student behavior. These behavior statements used words or phrases such as: behave better, run smoother, attention, and focus. Students without disabilities made several statements about better class behavior making statements such as: “Better behavior,” or “All the students behave more,” or “It can help with behavior,” and “The classroom also behaves more with two teachers.” One SWOD took personal responsibility, stating, “I behave better.” SWD made statements about better class behavior: “The class runs smoother with

both teachers” and “Makes the behavior of the class better.” One student with a disability also accepted personal responsibility, stating, “I probably behave better when there is a co-teacher in the class.” Students also made comments about attention and focus. A SWOD noted having two teachers “keeps the class more focused” and “I am able to pay more attention,” while SWD made comments such as, “I focus more while I do my work” and “getting to pay attention.” One comment of interest related to behavior from a SWOD was related to teacher behavior as opposed to student behavior. The SWOD stated, “Classes can be more fun if the two teachers get along.”

Theme 4: Second open-response query. The last theme to emerge that students saw as a perceived benefit of having two teachers related to instructional practices. For this theme, students made statements that suggested a benefit of having two teachers was related to the way the teachers teach. The comments suggested that students appreciated the use of the co-teachers’ instructional practices in the classroom. These statements used words or phrases such as: explain in a different way, multiple ways, and different perspectives. Students without disabilities made statements such as. “If I am confused about something the other teacher explains it in a different way,” “If I don’t understand how one teacher is explaining something, the other teacher can explain it in a different way,” or “They explain in different ways.” Other SWOD made statements such as, “Having two opportunities to get the information makes less stress on me and the teacher” and “Two teachers allows students to talk to whichever teacher they prefer, making them more comfortable.”

Students with disabilities made comments such as, “I can learn in different ways,” “Having two teachers helped me learn different ways to learn about the subject,” and “That you get two different perspectives from both teachers.”

Both students with and without disabilities made comments that suggested that there was no benefit of having two teachers or the comments were not clearly stated; therefore, they were not categorized into a theme. For example, one SWD stated, “I haven’t had any benefits from having two teachers. I don’t think that it is necessary to have two teachers.” Another SWD stated, “Not much, unless the teacher has a good attitude.” One SWOD stated, “They both do the same work.” Another SWD stated, “Honestly, I don’t really have any benefits because Teacher B is not a good teacher.”

Third open-response query. The third open-response query on Section Five of the CTSQ asked students, “If I could give two suggestions for how these two co-teachers could do something differently to improve my learning or their co-teaching in this class, my suggestion would be.” In total, 92% of CTSQ participants (37 SWOD and 53 SWD) responded to this query.

Coding. The same qualitative process was used for the second and third queries. Student responses again were used in constructing, comparing, and collapsing categories until themes emerged. Table 21 gives sample student responses representing how they were categorized. In total, five themes emerged for students with and without disabilities (see Table 22): (a) Shared responsibility/coordination of efforts (35 responses); (b) Instructional practices (12 responses); (c) Behavior (7 responses); (d) Teacher knowledge (5 responses); and (e) Help and extra support (7 responses). Additionally, 26 students’

comments reported no benefit or were not clearly stated; therefore, they were categorized as unclassified. Lastly, under the theme “Help and extra support,” the subtheme “Asking questions” emerged for students with and without disabilities.

Both students with and without disabilities made no suggestions, or made comments that were not clear and therefore could not be categorized. In total, 26 comments were made that used words or phrases such as “no suggestions” and “nothing.” Other comments gave positive feedback. For example, “Nothing, they do really well,” or “Nothing, they’re doing fine just the way they’re teaching us.”

Table 12

Third Open-Response Query - Benefits of Co-Teaching: SWD and SWOD Sample Responses

	Students with Disabilities (SWD)	Students without Disabilities (SWOD)
Shared Responsibility/ Coordination of Efforts	“I suggest the both co-teachers help teach the class and both co-teachers answer the students’ questions if they have any.”	“Special Education Co-teacher can teach more...General Education Co-Teacher can walk around more” and “Both Co-Teachers should teach the same lesson together, not just one doing all the teaching and the other just helping out, it should be a team effort.”
	“While one teacher is teaching, the other can get the next lesson ready so they don’t have to wait. When half the class has finished they can move on with one teacher and the other teacher can work with the people who haven’t finished yet.”	
	“Sometimes one doesn’t talk at all and sometimes one talks too much.”	“be on the same page before class begins and agree on time management
	“should never speak at the same time.”	
	“The Special Education Co-teacher talks.”	“More responsibility for Special Education Co-Teacher.”
		“The Special Education Co-Teacher should help more.”
		“The Special Education Co-Teacher could try to teach the class if qualified”
		“The Special Education Co-Teacher should be more involved with the lesson and teach a little more.”
		“No students with disabilities specifically singled-out.”
Instructional Practices	“Explain more”	“They can explain things better”
	“They need to explain the topic better together.”	“Give teacher each other day while the other one helps around and the teachers get in a group with kids when doing activities”
		“My second would be teach at the same time so you can explain it from two different

		points of view”
Behavior Related	“Make the class feel more entertaining.”	“They should be stricter with the students who are constantly interrupting the class. They shouldn’t ignore when another student is getting made fun of.”
	“To have different fun ways of teaching.	“Look at the students more who are behaving.”
		“Focus on the ones that want to learn.”
Teacher Knowledge	“Have both teacher proficient in teaching the subject they are in.”	“The teachers would all know beforehand the details of what students might ask about, because without both having the same information, they might confuse students by saying different things.”
		“They should have clear and detailed knowledge of the subject.”
		“Both co-teachers should be equally prepared and know the material they’re teaching, because if only one of the two teachers knows the material most students are not going to treat them equally.”
Help and Extra Support	“Some teachers need to understand that they are just there to help not to take control.”	
	“Help people who need help most.”	
	“Both of them coming up to me and asking so many questions.”	

<u>Themes</u>	<u>Total Comments</u>
Shared Responsibility/Coordination of Efforts	35
Instructional Practices	12
Behavior Related	7
Teacher Knowledge	5
Help and Extra Support	7
Unclassified Comments	26

Themes. There were five themes for students with and without disabilities (see Table 21). Four themes were shared by students with and without disabilities: (a) shared responsibility/coordination of efforts, (b) instructional practices, (c) behavior, and (d) teacher knowledge. One theme, help/extra support, was specific to students with disabilities. The majority of responses for suggestions for improving their co-teaching learning environment were regarding co-teachers sharing responsibility or coordinating their efforts (15 SWD and 20 SWOD). The second-highest theme to emerge for SWD surrounded co-teachers help and extra support (7 comments), whereas for SWOD responses the second highest theme surrounded co-teachers instructional practices (9 comments).

Table 22

Third Open-Response Query: Improve Learning or Co-Teaching

Themes	Students with Disabilities	Students without Disabilities
Shared Responsibility/Coordination of Efforts	15	20
Instructional Practices	3	9
Behavior Related	4	2
Teacher Knowledge	1	4
Help and Extra support	7	N/A

Theme 1: Third open-response query. The first theme that emerged that students with and without disabilities perceived would improve their learning (or how teachers co-teach) in the science co-taught learning environment was shared responsibility/

coordination of efforts. The students perceived that both teachers should work together. Students used words or phrases such as: “coordinate,” “same page,” or “both teachers.” Students without disabilities made responses such as: “Teacher B can teach more... Teacher A (GET) can walk around more” and “Both teachers should teach the same lesson together, not just one doing all the teaching and the other just helping out, it should be a team effort.” Other SWOD responded both teachers should “be on the same page before class begins and agree on time management.” Students with disabilities responded, “I suggest the both teachers help teach the class and both answer the students’ questions if they have any,” or “While one teacher is teaching, the other can get the next lesson ready so they don’t have to wait. When half the class has finished they can move on with one teacher and the other teacher can work with the people who haven’t finished yet.”

Several SWOD specifically singled out “Teacher B” (SET). These students made responses such as: “More responsibility for Teacher B,” “The second teacher should help more,” “Teacher B could try to teach the class if qualified,” or even “Teacher B should be more involved with the lesson and teach a little more.” No students with disabilities specifically singled out “Teacher B” in their responses. Several SWD responses regarded who was talking. One student stated, “Sometimes one doesn’t talk at all and sometimes one talks too much.” Another student said that the teachers “should never speak at the same time.” Another student said, “The other talks.”

Theme 2: Third open-response query. The second theme students with and without disabilities perceived would improve their learning (or how teachers co-teach) in

the science co-taught learning environment regarded instructional practices. The responses used words and phrases such as, “explain more,” “different points of view,” and “divide the class.” Students without disabilities made suggestions such as, “They can explain things better,” “Give teacher each other day while the other one helps around and the teachers get in a group with kids when doing activities,” and “My second would be teach at the same time so you can explain it from two different points of view.” Students with disabilities responded: “Explain more” and “They need to explain the topic better together.”

Theme 3: Third open-response query. The third theme students with and without disabilities perceived would improve their learning (or how teachers co-teach) in the science co-taught learning environment was related to behavior. All of the responses made by students with disabilities were related to teachers monitoring their own behaviors in the classroom. For example, one SWD stated, “Make the class feel more entertaining.” Another responded, “To have different fun ways of teaching.” Students without disabilities responded, “They should be stricter with the students who are constantly interrupting the class. They shouldn’t ignore when another student is getting made fun of.” Another SWOD responded, “Look at the students more who are behaving.” A third student put it this way, “Focus on the ones that want to learn.”

Theme 4: Third open-response query. The fourth theme students with and without disabilities perceived would improve their learning (or how teachers co-teach) in the science co-taught learning environment was about teacher knowledge. Both SWD and SWOD responded that both teachers needed to have content area knowledge. For

example, one SWOD said: “The teachers would all know beforehand the details of what students might ask about, because without both having the same information, they might confuse students by saying different things.”

Another SWOD said: “They should have clear and detailed knowledge of the subject,” while another stated it this way, “Both teachers should be equally prepared and know the material they're teaching, because if only one of the two teachers knows the material most students are not going to treat them equally.” The comment made by a student with a disability suggested, “Have bother teacher proficient in teaching the subject they are in.”

Theme 5: Third open-response query. The final theme only students with disabilities (SWD) perceived would improve their learning (or how teachers co-teach) in the science co-taught learning environment related to help and extra support. The comments made asked co-teachers to consider the way they support. For example, one SWD responded, “Some teachers need to understand that they are just there to help not to take control.” Another student responded, “Help people who need help most.” One response even looked teacher questioning behavior, stating, “Both of them coming up to me and asking so many questions.”

Summary

In summary, this chapter stated each research question and objectively stated the results. Inferential and descriptive statistical analyses were used on Section One, Section Two, Section Three, and Section Four of the CTSQ. Qualitative analyses were used on

three open-response queries, one from Section Two and two from Section Five of the CTSQ. In the next chapter, the results will be discussed.

Chapter Five

This chapter presents the discussion of research findings for ninety-nine students with and without disabilities according to their responses on the Co-Teacher Student Questionnaire (CTSQ). The purpose of this research was to examine high school students' perspectives of their co-taught science experience. The CTSQ responses from students with disabilities (SWD) and students without disabilities (SWOD) are discussed by research question and corresponding survey section in the following manner:

1. Research Question One: What are secondary students' perceptions of co-teaching in a co-taught science setting? (Section Two: Which Teacher? All Students' Perceptions); (Section Three: Perceived Impact on Learning: All Students); and (Section Four: Which Co-Teaching Model is Used Most? All Students).
2. Research Question Two: What are the similarities and differences that high school students with and without disabilities perceive about (2a) their co-teachers' roles and responsibilities? (Section Two: Which Teacher? Students with and without Disabilities Perceptions); (Section Three: Perceived Impact on Learning: Students with and without Disabilities); and (2b) What do high school students with and without disabilities perceive about the co-teaching

model used most? (Section Four: Which Co-Teaching Model is Used Most? SWD and SWOD).

3. Research Question Three: What do high school students with and without disabilities (3a) suggest about whom they learn best from (3b) suggest are benefits of being in a co-taught science class and (3c) suggest co-teachers do differently to improve their [the students'] learning or co-teaching? are Open-Response Queries and the data are integrated into the discussion where applicable.

Research Question One: Major Findings for All Student Responses

Section Two, Section Three, and Section Four of the CTSQ were analyzed initially for what all high school students perceived about their co-taught science setting. Major findings in this section included: (a) The students perceived the that general education co-teacher was leading the instructional process, (b) The co-teaching model used most was One Teach, One Observe or Drift, and (c) The students perceived the general education co-teacher (GET) and the special education co-teacher (SET) enjoyed working together. These data now discussed as they relate to co-teaching research and co-teaching literature.

Section two. In Section Two of the CTSQ (Which Teacher? All Students' Perceptions), the data showed the GET was in charge of the planning (86.9%) and delivering the lesson (85.9%). Additionally, approximately three-quarters of all students in a science co-taught class (71.4%) thought that the GET was also responsible for organizing materials. Slightly over half of all students (53.5%) viewed the SET as the one

who walks around and helped the most. While walking around and helping students is important, it does not capitalize on the full expertise of the special education co-teacher (Harbort et al., 2007). These data indicate there are more opportunities for the SET teacher to be more active in the instructional process of planning, organizing, and delivering the lesson. Planning, organizing, and delivering instruction are subsumed in the instructional process. When the GET is the co-teacher predominately delivering instruction, the SET co-teacher's role becomes more limited, which impacts how the SET is perceived by students. Data from the current study are consistent with that of other researchers who found that special education co-teachers are not functioning in instructional leadership roles (e.g., Friend, Reising, & Cook, 1993; Scruggs et al., 2007; Weiss & Brigham, 2000). Thus, based on the data more work is needed to get co-teachers sharing teacher roles and responsibilities.

One way co-teachers can share roles and responsibilities is their use of more than one co-teaching model. In a meta-synthesis of over thirty qualitative studies, Scruggs and his colleagues (2007) found that the One Teach, One Drift was the most common co-teaching model used in the co-taught classrooms. Similarly, in Section Four (Which Co-Teaching Model is Used Most? All Students), nearly 60% of students indicated the One Teach, One Observe or Drift model of co-teaching (refer to Figure 1 in Chapter 4). Examination of why co-teachers are not using different co-teaching models, most of which require SET and GET co-teachers to assume more active roles should occur, as well as mechanisms to provide professional development and technical assistance for co-teachers to they can implement different co-teaching models is needed.

Some researchers note that GET do not feel prepared or comfortable teaching students with disabilities (Boyer & Mainzer, 2003; Damore & Murray, 2009). When GET co-teach with SET, it is the SET's expertise in pedagogies for students with disabilities that should be incorporated into instruction. According to the data in Section Two (Which Teacher? All Students' Perceptions), the highest percentage associated solely to the SET was 53.5% for walking around helping students. However, SETs should be using their pedagogical expertise by both designing and delivering instruction to all students, with roles exchanged between GET and SET. Why are GET not also assisting students while the SET is delivering instruction? The GET co-teachers, with expertise in the content area, could be circulating to assist students to provide valuable assistance to impact students' learning, but seldom does this occur. Moreover, if GET and SET work in tandem with shared roles and responsibilities, each is likely to acquire knowledge and skills from the other for pedagogies and content expertise, which can increase how well they feel prepared for this aspect of co-teaching.

Section three. In Section Three of the CSTQ (Perceived Impact on Learning: All Students), the data from all students showed that 90.7% agreed (agreed or strongly agreed) that the two teachers seemed comfortable sharing responsibilities when they do co-teach. Additionally, many students believed both co-teachers enjoyed teaching their class 83.5% agreed (agreed or strongly agreed). Although the co-teachers may need to increase their sharing co-teaching roles and responsibilities, the data from Section Three of the CSTQ (Perceived Impact on Learning: All Students) showed that students did perceive a working co-teacher relationship at times. This is important because as Keefe et

al. (2004) found in their research, the relationship between co-teachers was connected to the success of the co-teaching team. Therefore, a desired outcome of the GET and SET in a co-taught setting is balanced is not only do co-teachers enjoy working together and feel comfortable, but they also are leveraging their individual expertise and sharing the roles and responsibilities.

Research Question Two: Major Findings for SWD and SWOD

The second analysis of Section Two, Section Three, and Section Four of the CTSQ was to examine what high school students with and without disabilities perceived about their co-taught science setting. Major findings included: (a) There was a statistically significant association between the two groups of students' responses for two of the ten statements in Section Two of the CTSQ (Which Teacher? Students with and without Disabilities Perceptions), (b) There was a statistical significance in four of the fifteen statements in Section Three of the CTSQ (Perceived Impact on Learning: Students with and without Disabilities), and (c) There were other statements in both Section Two and Three that, while not of statistical significance, the statements were informative in understanding what students' perceived about their science co-taught class. Connections and discussion are provided based on previous co-teaching research and the students' responses to the Open-Response Queries.

Section two. In Section Two of the CTSQ (Which Teacher? Students with and without Disabilities Perceptions) there were two statements with statistical association in the data disaggregated between students with and without disabilities. The first statement that was statistically significant asked students to select "The teacher who explains things

in more than one way.” The statistical significance occurred for SWD (19.5%) and SWOD (41.4%) selecting only the GET as the one who explains things in multiple ways. Specifically, the data showed that SWOD were slightly more than twice as likely to select only the GET as the teacher who explains things in more than one way. The students’ responses from the First Open-Response Query in which students were asked to identify from whom they learned best, corroborated this data further. Several students’ comments were related to GET being able to explain things in multiple ways. In fact, one theme that emerged related to answering questions and helping students learn and understand the material. SWOD made 6 responses about GET being able to explain things better or made science easier to understand with comments such as: “I feel like Ms. * (GET) is able to explain concepts to me more effectively,” “GET gives us examples from real life situations and connects them with our lesson,” and “When I need help with something Mr. * (GET) will come and give me examples so I can get it done. I can also ask Mrs.* (SET), but she will most likely just read the question and give me the answer.”

While there was statistical significance for students with and without disabilities choosing the GET explaining things in multiple ways, some students with disabilities (31.7%) selected only SET. Additionally, almost half of SWD (48.8%) selected both co-teachers as the ones who explained things in more than one way, while 41.4% of the SWOD selected both co-teachers (see Table 12 in Chapter 4). These findings were similar to other student responses made on the First Open-Response Query (I learn best from...). There were statements made by SWD that supported both teachers as being able to help explain things. The theme that emerge answering questions and helping students

learn and understand material also emerged for both co-teachers. There were fourteen SWD that responded both co-teachers and statements included: “I learn best from both of them because Ms. * (GET) explains things how they should be and Teacher B explains things in an easier way for me to understand,” “Both teachers have different answers but both of them make the answer make sense in a way that I can understand,” and “I learn best from both teachers because when I’m in need of extra help each teacher will come to me and explain something I need help to understand and to get me to get it. So that’s why I say both teachers.”

The second statement that was statistically significant between the two groups of students in Section Two of the CTSQ (Which Teacher? Students with and without Disabilities Perceptions) was for the statement, “I learn best from.” Students with and without disabilities selected either Teacher A (general education co-teacher), Teacher B (special education co-teacher), or Both Co-Teachers. For this statement, statistical significance was indicated in two different places. First, an adjusted standard residual of above an absolute value of 2 indicated strength in significance for SWD (27.5%) and SWOD (50.0%) who indicated they learned best from the general education teachers. These data indicate that SWOD were almost twice as likely to select the GET as the one who they learn best. Conversely, the second place where statistical significance was indicated was where SWD (20.0%) were more than four-times as likely to select the SET as whom they learn best from, rather than SWOD (5.2%). Ideally, students should be able to learn best from both co-teachers. This was the case, albeit not of statistical significance, for a little over half of SWD (52.5%) and 44.8% of SWOD who indicated

they learn best from both teachers. While some co-teaching research has shown SWD and SWOD valued the presence of an additional teacher (Gerber & Popp, 1999; Pugach & Wesson, 1995; Wilson & Michaels, 2006), that value was not completely realized in the current study.

There were three additional statements, with no statistical significance, but interesting to explore. The three additional statements in Section Two (Which Teacher? Students with and without Disabilities Perceptions) were about planning, delivering instruction, and organizing materials. Previously, when the data in Section Two (Which Teacher? All Students' Perceptions) were examined, the majority of all students chose the general education co-teacher as the one who is mostly planning and delivering instruction, as well as organizing materials. The disaggregated data for students with and without disabilities showed the general education co-teachers: responsible for planning (80.5% SWD and 91.4% SWOD), delivering instruction (82.9% SWD and 87.9% SWOD), and organizing materials (70.7% SWD and 71.9% SWOD). While these three statements indicated students with and without disabilities mostly selected the general education co-teachers, the converse of this statement, that students mostly selected only special education co-teachers, did not occur. For example, for five out of the ten statements in Section Two (Which Teacher? All Student Perceptions) specifically planning the most, delivering instruction, organizing materials, grading work, and explaining things most of the time, less than 15% of students with and without disabilities chose special education co-teachers.

From Section Two of the CTSQ (Which Teacher? Students with and without Disabilities Perceptions), several findings are important: (a) SWD were more than twice as likely to choose the GET as being able to explain things in multiple ways and learning better from them, (b) Students with and without disabilities choose the GET for primary instructional roles such as planning, teaching, and organizing the materials, and (c) in five out of the 10 statements (planning, teaching, grading, organizing materials, and explaining things the most) in Section Two (Which Teacher? Students with and without Disabilities Perceptions) less than 15% of students with and without disabilities chose only special education co-teachers for any of the roles or responsibilities. These three ideas combined with themes that emerged from the First Open-Response Query (I learn best from...) in mind, in the next sections, discussion about the role of content knowledge, shared responsibility, and the co-teaching model in the co-taught science occurs.

Content knowledge. One reason the students with and without disabilities may have selected only the general education co-teachers as for primary instructional roles,, the one who is able to explain things in a different way, and the one they learning best from them is perhaps due to their content area expertise. This is best seen from two themes that emerged for the general education co-teacher on the First Open-Response Query about from whom students learn best (see Table 17). There were 28 responses by students with and without disabilities for the themes: Main Teacher or Teacher Knowledge and Answers Questions or Helps me Learn and Understand the Material. Students made responses such as: “Ms. * (GET) is the actual Biology teacher, so she is more knowledgeable in the subject including specific details. MS. * (SET) walks around

the room and is also helpful, however it seems as though Ms. * (GET) knows more about the subject and is much better at explaining,” “The reason I chose GET is because she is the Chemistry Teacher,” and “SET is learning things for the first time and is just a student. She doesn’t know how to help exactly the same way that GET does.” Some of the students in this study indicated that while their special education co-teachers did not seem to know the science content as well as GET. If this is so, then the SET’s lack of content knowledge may be a barrier for supporting the learning of students with and without disabilities. However, another possibility is that because the SET helps in different ways, students may be confused if they perceive they are hearing two different explanations versus the same explanation stated in different ways. Because there could be multiple reasons for why the students indicated the SET may not know the science content, and because this is the first study in which such data were acquired, further exploration via interviews with students and their co-teachers would help further examine the deeper and more authentic reasons underlying what students indicated in this study

Researchers consider the co-teaching relationship between the special education co-teachers and the general education co-teacher a complementary partnership where the special education co-teacher brings expertise in learning accommodations and remediation and the general education co-teacher brings expertise in content knowledge (Austin, 2001; Volonino & Zigmond, 2007). However, the content specific knowledge of the special education co-teacher should be a primary consideration when co-teaching arrangements are planned. As stated by the President’s Council of Advisors on Science and Technology (2010), in order for students to understand the material both content and

pedagogical knowledge of the co-teachers is key. Other researchers have also found that special education co-teachers may not feel comfortable with delivering content if they lack the content knowledge being taught (Nichols et al., 2010; Weiss & Lloyd, 2003), and while it may seem counter-intuitive, one solution to special education co-teachers gaining content area knowledge may rest in higher education. For example, higher education can support special education co-teachers being more knowledgeable in a specific content area. More on this subject will be shared later in the chapter when practical implications are given.

Shared responsibility. The aforementioned data results like data reported from Which Teacher? Students with and without Disabilities Perceptions (i.e., planning instruction 80.5% SWD and 91.4% SWOD, delivering instruction 82.9% SWD and 87.9% SWOD, and organizing materials 70.7% SWD and 71.9% SWOD supports what other researchers have found: co-teachers are not sharing roles and responsibilities. For example, students' perspectives in other co-teaching research (Bessette, 2007; Embury & Kroeger, 2012; Leafstedt et al., 2007) indicated students believed the special education co-teacher performed the role of assistant, and the general education co-teacher was the one who delivered instruction. Similarly, student responses to the Third Open Response Query (What co-teachers could do differently to improve my learning or their co-teaching?) aligned with the data and other researchers. One theme out of the 4 themes to emerge shared by students with and without disabilities was Shared Responsibility and Coordination of Efforts. This theme received the highest number of responses (35 responses). One SWD stated, "I suggest both co-teachers help teach the class and both

co-teachers answer the students' questions if they have any." One SWOD stated, "SET can teach more, GET can walk around more and both co-teacher should teach the same lesson together, not just one doing all the teaching and the other just helping out, it should be a team effort." From these student responses, we know that students perceived teachers can do more to work together.

As Murawski (2009) stated, "Successful co-teaching in the general education classroom is about co-planning, co-instructing, and co-assessing" (p. 24). In the current study, the students do not perceive that many co-teachers are co-planning, co-instructing, or co-assessing, based on the CTSQ results and the theme that emerged from the student responses to the Third Open Response Query (What co-teachers could do differently to improve my learning or their co-teaching?). Perhaps if the co-teachers engaged in these practices co-planning, co-instructing, and co-assessing, more students may respond that they learn best from both co-teachers. Co-planning time also allows the special education co-teacher time to prepare instructional modifications and accommodations for students with disabilities. Similarly, it gives the general education co-teachers time to learn instructional modifications and accommodations, which may benefit other students. Sharing classroom instructional responsibilities (such as co-instructing and co-assessing) allow both teachers more time freedom in the classroom to be able to execute the roles their co-teaching roles (Bouck, 2007).

Co-teaching models. Another reason students may have perceived co-teachers as unequal partners is based on the co-teaching model used in the classroom. The findings from what all students perceived in Section Three (Which Co-Teaching Model is Used

Most? SWD and SWOD) showed 59.8% selected One Teach, One Observe or Drift to be the model used most often. The findings from students with and without disabilities showed One Teach, One Observe or Drift was selected by SWOD (70.2%) and almost half the time by SWD (45.0%). Here it is seen that the SWOD perceived co-teachers used the One Teach, One Observe or Drift more frequently than students with disabilities. However, both percentages align with previous findings that the GET were perceived as the main teacher and the SET functioned more like a paraprofessional or support position (Friend et al., 1993; Scruggs et al., 2007; Weiss & Brigham, 2000). Using the One Teach, One Observe or Drift model frequently locks one of the co-teachers (typically the special educator) into roles that do not capitalize on having two teachers in the classroom to meet needs of students with and without disabilities. Moreover, while no one co-teaching model is better than the other (Cook & Friend, 1995), absent co-teachers' use of multiple models, co-teachers have few opportunities to blend their areas of expertise and share instruction. Moreover, co-teachers who do not vary between and among the co-teaching models may inadvertently be deferring to models that negatively affect the parity for special educators (Friend et al., 1993; Scruggs et al., 2007; Solis, Vaughn, Swanson, & McCulley, 2012; Weiss & Brigham, 2000).

When examining what all students perceived in Section Three (Which Co-Teaching Model is Used Most? All Students) Parallel Teaching (12.4%) and Alternative Teaching (9.3%) were selected as being used by 21.7% of all students (refer to Figure 1 in Chapter 4). These data suggests some co-teachers may be using varied grouping methods. Data from students with disabilities indicated they were almost three times

more likely than SWOD to choose parallel teaching (SWD 20.0% and SWOD 7.0%). Further, although a smaller population of students in each group, SWD were three times more likely to indicate alternative teaching as the co-teaching model used most (SWD 15% and SWOD 5.3%). As noted by Cook and Friend (1995), Parallel and Alternative co-teaching models require students to be placed in groups. Thus, some SWD perceived they were being grouped, while fewer SWOD perceived groupings occurred. Although student groupings were not observed as a component of the current study, the difference may be attributed to whether SWD were pulled into some form of grouping which did not impact the SWOD normal instructional routine.

Section three. In Section Three of the CTSQ (Perceived Impact on Learning: Students with and without Disabilities) the data disaggregated between students with and without disabilities show there were four statements with statistical significance. Students responded to fifteen statements with their level of agreement. The means and standard deviations were reported on a four-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree (see Table 13). Additionally, the data was presented in percentages (see Table 14 in Chapter 14). For discussion purposes, Table 14, which reports the data in percentages, will be used.

The first statement where there was a statistically significant difference between students with and without disabilities was “I think both teachers are equal in the classroom.” Seventy percent of SWD agreed (strongly agreed and agreed) that both teachers were equal and 30% of SWD disagreed that both teachers were equal (strongly disagreed and disagreed). On the other hand, SWOD were nearly equal in their responses

52.7% disagreed (strongly disagreed and disagreed) and 47.3% agreed (strongly agreed and agreed). Co-teachers, having shared roles and responsibilities, leads to parity, which is a major way that students can view their co-teachers as equal. According to students in the current study, although some co-teaching teams were rated equal, many co-teaching teams still need to demonstrate different behaviors in order for their students to see them as having shared roles and responsibilities. That is, many students did not see the parity between co-teachers demonstrated.

The second statement that indicated a statistically significant difference between responses from students with and without disabilities was “I enjoy having two teachers in this class....” For this statement, 69.2% of SWD agreed (strongly agreed and agreed) and 30.8% disagreed (strongly disagreed and disagreed). Students without disabilities more clearly agreed (84.2% strongly agreed and agreed), while only 15.8% SWOD disagreed (strongly disagreed and disagreed). Thus, we see that SWOD were able to agree that they enjoyed having two teachers. This is also corroborated by the student responses to the Second Open-Response Query, where students told what they perceived as benefits of being in a co-taught science class. The theme to emerge with the highest number of responses from SWD and SWOD was help and extra support (see Table 20). In total, there were 41 responses categorized under this theme 19 from students with disabilities and 22 from students without disabilities. One SWD stated, “There is always a teacher available to help you with questions.” One SWOD stated, “One teacher does not have to deal with all the student questions (especially during labs).” From these student responses we see having an additional support is beneficial.

The second and third statements of statistical significance were “It is NOT hard to have two teachers at the same time” and “Having two teachers does NOT make me confused” (both reverse worded statements). For the statement, “It is NOT hard to have two teachers at the same time,” 79.4% of SWD disagreed (strongly disagreed and disagreed) and 20.6% of SWD agreed (strongly agreed and agreed), while 93.0% of SWOD disagreed (strongly disagreed and disagreed) and only 7.0% SWOD agreed (strongly agreed and agreed). For the second statement, “Having two teachers does NOT make me confused,” 60% of SWD disagreed (strongly disagreed and disagreed) and 40% of SWD agreed (strongly agreed and agreed), while on the other hand 80.7% of SWOD disagreed (strongly disagreed and disagreed) and 19.3% of SWOD agreed (strongly agreed and agreed).

The data showed that SWD are encountering some challenges with understanding in a classroom with two teachers, while SWOD are unencumbered. Two teachers being in a classroom have an excellent opportunity to support understanding, especially for SWD from which current results show there may be a need. It is possible, as Morocco and Aguilar (2002) found, to have co-teachers implementing techniques that facilitate student understanding. In their research, the GET presented the content, while the special education co-teacher engaged students in questioning to incorporate their existing knowledge and expanded on the information presented by the GET to make the information more accessible to all students. The researchers attributed co-teachers’ ability to help students understand difficult concepts to the special education co-teachers’ knowledge and understanding of the content, as well as techniques explain content in

meaningful ways that connected to students. Additionally, researchers attributed it to the general education co-teachers' openness to the partnership. In the current study, the 40% of students with disabilities who agreed to being confused sometimes by having two teachers and the 20% who agreed that is hard having two teachers would benefit from a teaching model that allows both teachers to use their expertise to better facilitate student understanding of the content presented.

The fourth statement of statistical significance was, "I enjoy having two teachers in this class." For this statement, 69.2% of SWD agreed (strongly agreed and agreed) and 30.8% of SWD disagreed (strongly disagreed and disagreed), while 84.2% of SWOD agreed (strongly agreed and agreed) and 15.8% of SWOD disagreed (strongly disagreed and disagreed). Here more SWD enjoyed having two teachers slightly more than SWOD. This makes sense given the main purpose of pairing the co-teachers are for the benefit of the students with disabilities. Students' valuing the two co-teachers is important because if they did not it could possibly shift the educational atmosphere to a less positive one and impact instruction.

Another statement, while not statistically significant, was of interest. For the statement, "One teacher is NOT mostly in charge of our behavior, and the other teacher is NOT mostly in charge of teaching" (reverse worded statement), SWD were split 50/50 on this statement (strongly agree and agree) and (strongly disagreed and disagreed). Students without disabilities more clearly agreed 73.2% (strongly agreed and agreed), while 26.8% disagreed (strongly disagreed and disagreed). Students with and without disabilities both did not find that either teacher was more in charge of behavior or teaching. This

statement was developed because some co-teaching researchers found special education co-teachers, while in the observation or assistant role, attended to students' behavior while general education co-teachers led instruction. However, in this study the students did not indicate these were the roles as indicated by their results for this statement.

This finding is contrary to Harbort et al. (2007) which found the special education teacher (30% intervals) was often responsible for behavior management at a higher rate of their general education counterpart (22% intervals). In fact, when students responded to the Second Open-Response Query about SWD and SWOD perceived benefits of co-teaching, behavior was the third theme to emerge with a total of 18 responses by SWD and SWOD. These comments demonstrated how having co-teachers improved their own behavior and behaviors of other students. One SWD stated, "The class runs smoother with both teachers." Another SWD stated, "I probably behave better when there is a co-teacher in the class." Students without disabilities responses were similar. One SWOD stated, "All the students behave more." Another SWOD stated, "I am able to pay more attention."

Practical Implications

Co-teaching is one way many students with disabilities receive access to the general education curriculum. The pairing of a general education co-teacher and special education co-teacher was to be complementary considering what each teacher's educational background and training has prepared them to provide in the classroom. From this study it is evident that content knowledge, shared responsibility, and the co-teaching model used in the co-taught classroom are important yet not fully realized in the

co-taught setting. In order for the co-taught potential to be realized the training both co-teachers received at the higher education level, as well as at the school district level should be considered. In other words, the general education co-teacher needs to feel skilled with making meaningful modifications and accommodations to the science curriculum and the special education co-teacher needs to feel comfortable sharing content knowledge. In order for these two concepts to become a reality, several solutions should be explored.

Training for co-teachers. Given that co-teaching is how students with disabilities are educated in the classroom and there is no indication of it leaving anytime soon, university training programs should prepare both general and special education teachers to co-teach. It is not enough for GET and SET to have their individual educational preparation. Further, at the school district level, co-teachers should have ongoing professional development about co-teaching. Teachers need to be trained in what has proven effective.

In one exemplary case study of co-teaching, where 100% of the students with and without disabilities passed the high-stakes testing, van Hover, Hicks, and Sayeski (2012) shared factors that appeared to make a difference in the co-teachers effectiveness. The co-teachers in the case study said a mandatory weeklong intensive collaborative teaching training required by the administration at the beginning help to set the stage for their work together for the year. Co-teachers found this training helped them to establish roles and responsibilities, strengthen their communication, and even evaluate the curriculum plan for the year.

Both co-teachers in the aforementioned case study cited feeling unprepared at the university level for their co-teaching partnerships. Thus, the researchers suggested teacher education programs consider dual degrees in a content area and special education, methods courses at the university level that are co-taught by a general and special education teacher, or even field experiences that highlight collaborative partnerships (van Hover et al., 2012).

Central office and administration support. On top of requiring a co-teacher be trained like the one cited by van Hover et al. (2012), there are other ways central offices and/or administration can support co-teaching. First, as established by Scruggs et al. (2007), and seen in the van Hover et al.'s (2012) case study, co-teachers need administrative support to have time to plan together and choice about with whom they will co-teach. Not only did the co-teachers get to choose their co-teaching partner, they were given time to plan together. Thus, the co-teachers in the case study were able to navigate content area knowledge issues using their planning time to mitigate its impact. Another way central office/administration can support co-teachers is by having a school-wide data analysis system that is disaggregated data by race, gender, ethnicity, special education, and second language learners like the one used in the case study. This evaluative lens asserts a level of accountability to co-teachers' to reach all students.

Future Research

In the current study, all students' perception of their co-teachers' roles and responsibilities were examined. The information gathered may be used to inform future co-teaching research for students with and without disabilities. The scope of this study

was to examine the perception of the students with and without disabilities in the secondary science co-taught classroom. However, to increase the validity of the research using a research design such as the one used in King-Sears et al. (2014), future research can use different sources (including observations of co-teachers and acquiring interview information from co-teachers). Using a research design like this increases the opportunity to triangulate results and information. For example, having research that combines classroom observations of co-teachers' practices, student survey, and interview data as well as teacher survey and interview data may provide useful information to inform how co-teachers are perceived by students and each other. Future studies could replicate or extend King-Sears et al. (2014) to determine whether similar or different results are found. Another idea for extension is to extend the work of Murawski and Swanson (2001) which goes beyond looking at students' perspectives and looks at student learning outcomes.

Additionally, only science was used as content area in this current study. Because different content areas such as Mathematics, English, and Social Studies require students with and without disabilities to learn different information, SWD and SWOD in co-taught settings for these subjects may have different responses. Thus, the co-taught settings may require different levels of understanding information. Therefore, future research may also explore responses from students co-taught in different content areas at the secondary level.

Another consideration for future research may include further exploration of which co-teaching model is used most often and the implications of use for students with

and without disabilities. In the current study, students with and without disabilities did not agree on the co-teaching model used most often. However, why the secondary science students with and without disabilities were so far apart on co-teaching model used in the classroom was not specifically answered by this research. However, examining other content areas can help determine whether the model choice is specific to science compared to how students in other content classes perceive the co-teaching model used most. This is important information, as the co-teaching model contributes directly to the roles co-teachers use. For example, One Teach, One Observe or One Teach, One Drifts locks the special education co-teachers into a more supportive role in which students view them as paraprofessionals.

One area future research may consider is how co-teaching impacts academic outcomes for students with and without disabilities. In this study, some students with disabilities reported that they experienced some confusion with having two teachers. Whether this confusion was due to co-teachers' lack of planning time or instructional choices for pedagogy was not explored in this study, but bears further examination in both research and practice. For example, co-planning could be further explored with a study that examined the perceptions of students with and without disabilities with co-teachers who co-plan and co-teachers who do not co-plan. Further, co-teaching research has not reached consensus on whether having two teachers improves the academic outcomes for students with and without disabilities (Van Garderen, Stormont, & Goel, 2012). Therefore, exploring student understanding and the associated outcomes for both

students with and without disabilities is a step for determining more definitive impacts of co-teaching as service delivery model.

Limitations

As with any educational research, it is important to acknowledge the limitations. First, the survey instrument relied on self-reported information, which could not be verified. With self-report responses, there are not interviews or observations to verify the credibility responses. To offset this limitation, CTSQ directions included emphasis on students providing their honest responses, their co-teachers were not present in the setting when students completed the CTSQ, and students were assured their responses would remain confidential and not be shared except when combined with all other students' responses in an anonymous manner.

A second limitation is the 50% response rate. While a 50% response rate is common in peer-reviewed educational journals (Creswell, 2008), it still means that 50% of those intended to be surveyed did not respond. A third limitation is that the sample was taken from only two schools in one school district, which impacts the generalizability of these results. Students from other schools in other parts of the U.S. may respond differently.

A fourth limitation was that the students in 9th through 11th grade science classes were randomly selected for participation in this research. Students in co-taught classes for other subjects (e.g., algebra, world history) may respond differently, and students in other grades may respond differently.

A fifth limitation was that other Likert-type scales could have been used. In this research, a 4-point Likert scale (*strongly disagree, disagree, agree, and strongly agree*) was intentionally selected so that students had to make a decision that excluded what could be perceived as a non-response if a neutral option was included. Bartram (2007) claims that when the neutral option is eliminated, it makes analyses more difficult because of bipolar or contrast factors. However, this scale was intentionally selected so participants made decisions about their level of agreeing or not agreeing, versus a neutral choice, when responding to statements on the CTSQ.

Summary

In the current study, the data showed things that are happening that in co-taught secondary science classroom that area going well from students' perspectives, as well as opportunities for growth. Given that between 1995 to 2009, there were only seven studies about students' perceptions of co-teaching, the current study adds to the body of research about how secondary students with and without disabilities perceive instruction and co-teachers' roles in science classes. This current study reports what about 100 high school students with and without disabilities perceived about their experiences from co-teachers in science classes. Analyses indicated that students valued co-teachers as individuals (GET and SET) and what they bring to the co-taught setting. However, from the perspective of the students, what remains is to help general education co-teachers and special education co-teachers working together as intended to support the educational needs of all students.

Appendix A

George Mason University Institutional Review Board Permission



Office of Research Integrity and Assurance

Research Hall, 4400 University Drive, MS 6D5, Fairfax, Virginia 22030
Phone: 703-993-5445; Fax: 703-993-9590

DATE: April 29, 2014

TO: Dr. Margaret King-Sears
FROM: George Mason University IRB

Project Title: [522371-1] A Comparison of Perceptions from High School Students with and without Disabilities about their Science Co-teaching Experiences

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE: April 29, 2014

REVIEW CATEGORY: Exemption category #2

Thank you for your submission of New Project materials for this project. The Office of Research Integrity & Assurance (ORIA) has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

Please remember that all research must be conducted as described in the submitted materials.

Please note that any revision to previously approved materials must be submitted to the ORIA prior to initiation. Please use the appropriate revision forms for this procedure.

If you have any questions, please contact Karen Motsinger at 703-993-4208 or kmotsing@gmu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within George Mason University IRB's records.

Parent Informed Consent Cover Letter/Parent Informed Consent

Dear Parent/Guardian:

Your child has been selected to participate in research to find out what students with two teachers in the same classroom at the same time (co-teaching) think about their learning experiences. Your child received two copies of this Parent Informed Consent in their science class. **Please follow the 3 steps below after reading the Parent Informed Consent:**

- ◊ **Check 1 box at the end of the form**
- ◊ **Make sure you have written your child's name and printed and signed your name**
- ◊ **Keep 1 copy for your records return the other by _____ to room _____ [science class] with your child**

INFORMED CONSENT FORM for Parents or Guardians of Students in Co-Taught Settings

RESEARCH PROCEDURES

This research is being conducted to find out what students who receive instruction from two teachers in the same classroom at the same time (co-teaching) think about their learning experiences. If you agree for your child to participate, he/she will be asked to complete a survey about his/her perception of co-teaching experiences. It will take him/her about no more than 20 minutes to complete the survey.

RISKS

There are no foreseeable risks for participating in this research.

BENEFITS

There are no benefits to your child as a participant other than to further research in how co-teaching is perceived by students.

CONFIDENTIALITY

The data in this study will be confidential. Only the researchers (Shantha Smith and Dr. King-Sears) will have access to personally identifiable information. The names/student identification numbers will be deleted and replaced with a number as soon as possible. When the information from students is analyzed, no students' names are used. When your child completes the survey, neither co-teacher will be in the room.

PARTICIPATION

Your child's participation is voluntary, and your child may withdraw from the study at any time and for any reason. If your child decides not to participate or if your child withdraws from the study, there is no penalty or loss of benefits to which your youngster is otherwise entitled. There are no costs to you or any other party. If your child returns this parent informed consent, he/she may enter a raffle for a \$20 Starbucks gift or BestBuy gift card (winner's choice). There will be one drawing per class. This drawing will take place immediately following the student survey administration.

IRB: For Official Use Only



Project Number: 522371-1

Page 1 of 2

ALTERNATIVES TO PARTICIPATION

If your child decides not to participate, he/she will continue with classroom assignments in the classroom at the time when other students are completing the survey.

CONTACT

This research is being conducted by Shantha Smith, Doctoral Candidate at George Mason University under the advisement of Dr. Margaret (Peggy) King-Sears from the Division of Special Education and disAbility Research in the College of Education and Human Development at George Mason University. I can be contacted at 301-922-5663 or ssmith@masonlive.gmu.edu. Dr. King-Sears can be reached at mkingsea@gmu.edu for questions or to report a research-related problem. You may also contact the George Mason University Office of Research Integrity & Assurance at 703-993-4121 if you have questions or comments regarding your child's rights as a participant in the research. This research has been reviewed according to George Mason University procedures governing your child's participation in this research.

Parent Informed Consent

CONSENT

I have read this form and AGREE for my child to participate in this study.

I have read this form and DO NOT AGREE to my child participating in this study.

Print Student Name

Print Parent or Guardian Name

Parent or Guardian Signature

Date



Project Number: 522371-1

IRB: For Official Use Only

Page 2 of 2

Student Informed Assent

Student Informed Assent:

(This section will be read aloud to the class by the survey administrator)

RESEARCH PROCEDURES

Students who complete this survey will be telling the researcher what they think about being taught by co-teachers. If you [the student] have questions about this student survey, raise your [the student] hand for the survey administrator to answer questions or read some of the survey to you. This student survey can be completed in about 15 minutes.

RISKS

The researcher does not think there are any risks, or the possibility of anything bad happening to students who decide to complete this survey.

BENEFITS

The researcher also does not think there are any extra benefits other than to further research in how co-teaching is perceived by students.

CONFIDENTIALITY

The data in this study will be confidential. Only the researchers (Sharifia Smith and Dr. King-Sears) will know the names/student identification number of the students. The names/student identification numbers will be deleted and replaced with a number as soon as possible. When the information from students is analyzed, no students' names are used. Student names/ student identification numbers will not be used when the data is analyzed.

PARTICIPATION

Any student who completes this survey is doing so voluntarily (willingly). If you begin the survey and then decide not to complete it, that is OK. There is no penalty or negative consequence for not completing this survey. It also does not cost students any money or anything else to complete this survey. Students who returned the Parent Informed Consent form are entered into a raffle for a \$20 Starbucks gift or BestBuy gift card (winner's choice). The raffle will take place immediately following the completion of the survey.

CONTACT

This research is being conducted by Sharifia Smith, a Doctoral Candidate under the advisement of Dr. King-Sears in the College of Education and Human Development at George Mason University. Mrs. Smith can be reached at 301-922-5663 or ssmiu@gmu.edu for questions or to report a research-related problem. Dr. King-Sears may be reached at nkingsea@gmu.edu. You may contact the George Mason University Office of Research Integrity & Assurance at 703-993-4121 if you have questions or comments regarding your rights as a participant in the research. This research has been reviewed according to George Mason University procedures governing your participation in this research.

If you agree to participate, click next.

Appendix B

Included Studies

Researcher	Year	SPED participants / co-teaching experience	Article Title	Subject	Participants	Research Design
Embury and Kroeger	2012	Not broken down by disability Co-teaching implemented one year prior	Let's ask the kids: Consumer Construction of co-teaching	Reading Language Arts	7 students grade 7- (3) 8- (4)	Qualitative Semi-structured interviews
Leafstedt, Richards, LaMonte, and Cassidy	2007	10 SLD Co-teaching for 2 years prior at this school	Perspectives on Co-teaching: Views from HSS with Learning Disabilities		10 students grade 9-12 5 male 5 female 3 Caucasian, 1 Filipino, 4 Latino, 1 African American	Qualitative interviews: Focus groups
Gerber and Popp	1999	SWD 70 GEN ED: 53 85% LD. Co-teaching: At least 2 year co-teaching Avg. 3.89 co-teaching experience in the school	Consumer Perspectives on the collaborative teaching model	n/a	4 ES (SWD 30 students, GEN ED 20 students) 4 MS (SWD 20 student, 40 GEN ED students) 2 HS (SWD 20 students, 13 GEN ED) Total: 123 Parents: GEN ED 37 SWD 32	Qualitative: separate focus groups: Four groups at each school
Hang and Rabren	2008	1st year of co-teaching Co-teachers (Gen Ed: 31,	An Examination of co-teaching: Perspectives	English / Lang. Arts, Math, Science, and	31 general education teachers 14 SPED	observations Quantitative: Pre-Post after 1 year of co-

Researcher	Year	SPED participants / co-teaching experience	Article Title	Subject	Participants	Research Design
		SPED 14) Total: 45 SWD: 58 SLD: 24 OHI: 14 SLI: 7 DD: 2 ED: 1 HI: 3 MR6 orthopedic impairment: 1	and Efficacy Indicators	social studies	teachers grades 1-10 (82% of the teachers in the system) Total: 45 36 black 22 Caucasian SWD: 58	teaching Perspective questionnaires (teachers perspectives and student perspectives) record analysis
Wilson and Michaels	2006	Not broken down by disability District in 5th year of co-teaching	General and Special Education Students' perception of co-teaching: Implications for secondary-level literacy Instruction	English	N=346 Gen Ed students 219 SPED students 127 M= 182 F=157 Grade 7 (64) Grade 8 (88) Grade 9 (40) Grade 10 (77) Grade 11 (77)	Qualitative and quantitative
Bessette	2007	ES: 8 mild to moderate learning disabilities MS: 14 mild to moderate learning disabilities 1 down syndrome ES: Longest time spent co-teaching for any participant was 2 years MS: Longest time spent co-teaching	Using students' drawing to elicit general and special educators' perceptions of co-teaching	Gen Ed teachers taught: English/Lang. Arts, Social Studies, Science, and Mathematics	ES: 45 students Grade 3-5 Age 8-11 MS: 34 students Grade 6-8 Age 12-15 GE teachers: 12 SPED teachers: 6	Qualitative: With 4 data sources (a) elementary students' drawings, (b) MS students drawings, (c) ES general and SPED co-teacher interviews, and (d) middle grades general and SPED co-teacher interviews

Researcher	Year	SPED participants / co-teaching experience	Article Title	Subject	Participants	Research Design
		for any participant was 1.5 years				
Damore and Murray	2008	119 teachers (1/4 SPED teachers)	Urban ES teachers' perspectives regarding collaborative teaching practices		20 schools, 9 districts 119 ES teachers (1/4 special education teachers)	Questionnaire
Austin	2001	46 special educators, 40 high-incidence disabilities (SLD) 4 ED and 2 severe and multiple disabilities	Teachers' Beliefs About Co-teaching	Most co-teachers surveyed co-taught in Social Studies, the Sciences, English/ Language arts, and Math classes at the high school level	139 teachers from 9 school districts in New Jersey K-12 46 SPED teachers Majority at the high school level SPED teachers 73.8%, GETs 70.2% For Part 2 of questionnaire on co-teacher perceptions N=92	Questionnaire (The Perceptions of Co-Teaching Survey (PCTS) Part I: Demographic information Part II: 4 categories relevant to teacher perceptions of collaboration Co-teacher perceptions of current experience Recommended Collaborative Practices Teacher Preparation for Collaborative Teaching School based supports that facilitate Collaborative Teaching Semi-structured interview: Perception of Co-teaching

Researcher	Year	SPED participants / co-teaching experience	Article Title	Subject	Participants	Research Design
						script developed using the interview format with Probing Questions model with input from numerous of other researchers Key feature: Written in sets, and each set was developed to examine a particular issue of relevance to collaborative teaching experience. First question typically a "yes" or "no." subsequent set subsets of probing questions to for deeper explanation
Fennick and Liddy	2001	73 SPED Teachers	Responsibilities and Preparation for collaborative Teaching: Co-teacher's Perspectives	Three subject areas most frequently English/ Language Arts co-taught (83, Reading by 81 respondents and Math by 61 respondents	168 Respondents Gen Ed Teachers n=95 (56.5%) SPED Teachers n=73 (43.5%) More than half 53% or 39 of the SPED teachers taught at the high school	Questionnaire 61.69% response rate

Researcher	Year	SPED participants / co-teaching experience	Article Title	Subject	Participants	Research Design
					level, but more than half of the Gen Ed teachers 62.1% taught at the ES level	
Pugach and Wesson	1995	1st time co-teaching/13 students with disabilities	Teachers' and Students' views of General Education	Both teach Reading and Math. However one voluntarily teaches science and the other social studies	55 5th graders 13 LD	qualitative interviews

Appendix C

Content Validity Email for Professional Experts

Hello!

I am a doctoral candidate at George Mason University completing my dissertation research. With the support of my advisor, Dr. Margaret E. King-Sears, I plan to gather information from students with and without disabilities in high school co-taught classes about their perceptions of their co-teaching experience. If at anytime you have additional questions about this questionnaire, please contact me at (301) 922-5663 or shantha.smith@masonlive.gmu.edu. Dr. Margaret "Peggy" King-Sears can be reached at mkingsea@gmu.edu.

I am seeking your input for establishing the content validity on a Co-Teaching Survey for Students. You were recommended because of your experiences and expertise in co-teaching. It will take about 15-20 minutes for you to provide feedback. As an incentive for completing and returning your feedback **within ONE WEEK** before **Thanksgiving Day, November 28, 2013**, I will send you a **\$25 gift card!**

Please make sure I get to send a gift card to you!

Here is the link:

<https://www.surveymonkey.com/s/CTcontentvalidity>

Content Validity Email for Student Experts

Hello!

I am a doctoral candidate at George Mason University completing my dissertation research. With the support of my advisor, Dr. Margaret E. King-Sears, I plan to gather information from students with and without disabilities in high school co-taught classes about their perceptions of their co-teaching experience. If at anytime you have additional questions about this questionnaire, please contact me at (301) 922-5663 or shantha.smith@masonlive.gmu.edu. Dr. Margaret "Peggy" King-Sears can be reached at mkingsea@gmu.edu.

I am seeking your input for establishing the content validity on a Co-Teaching Survey for Students. You were recommended because of your experiences and expertise in co-teaching. It will take about 15-20 minutes for you to provide feedback. As an incentive for completing and returning your feedback **within ONE WEEK** before **Thanksgiving Day, November 28, 2013**, I will send you a **\$10 Starbucks gift card!**

Please make sure I get to send a gift card to you!

Here is the link:

<https://www.surveymonkey.com/s/CTvaliditystudent>

Content Validity Email for Field Experts

Hello!

I am a doctoral candidate at George Mason University completing my dissertation research. With the support of my advisor, Dr. Margaret E. King-Sears, I plan to gather information from students with and without disabilities in secondary co-taught classes about their perceptions of their co-teaching experience. If at anytime you have additional questions about this questionnaire, please contact me at (301) 922-5663 or shantha.smith@masonlive.gmu.edu. Dr. Margaret "Peggy" King-Sears can be reached at mkingsea@gmu.edu.

I am seeking your input for establishing the content validity on a Co-Teaching Survey for Students. You were recommended because of your experiences and expertise in co-teaching. It will take about 15-20 minutes for you to provide feedback. As an incentive for completing and returning your feedback within ONE WEEK before Thanksgiving Day, November 28, 2013, I will send you a \$25 gift card!

Please make sure I get to send a gift card to you!

Here is the link:

<https://www.surveymonkey.com/s/CTcontentvalidity>

Warm Regards,

Shantha Smith
George Mason University
Doctoral Candidate

Appendix D

Field Experts Information

Field Experts Information

Gender:

- 9 female
- 1 male
- 2 missing response

Ethnicity:

- 6 Black or African American
- 5 White/Caucasian
- 2 missing response

Education:

- 2 Master's Degree
- 2 In a Doctoral Program
- 3 Ph.D. or Ed. D
- 4 high school
 - o 2 10th grade
 - o 2 12th grade
- 1 missing response

Teaching Certifications:

- K-12 Speech Language Pathology
- K- 12 Physical Education and Health, K-12 Special Education
- Special Education
- K-12 Special Education
- German, Learning Disabilities, Emotional/Behavioral Disabilities, Mental Retardation Mild/Moderate Disabilities
- Chemistry, Biology, ESOL
- Social Studies (secondary)

Student Field Experts

2 students with disabilities

2 students without disabilities

Co-taught Class Information:

School Year 2012-2013

- 0 Classes
 - 1 student
- 1 Class
 - 2 student
- 2 Classes
 - 1 student

Subject Areas:

- English
- US VA History
Data Analysis

School Year 2013-2014

- 0 Classes
 - 1 student
- 1 Class
 - 2 students
- 2 Classes
 - 1 student

Subject Areas:

- AP Government
- English
- Instructional Studies
- Principle of Physics
- Algebra II

Appendix E

Content Validity General Feedback from Experts and Student

Respondent Teacher (T) or Student (S)	Respondent General Comments	Doctoral Candidates' and Chairs' Responses
1. T	"In this section, students will have spaces to write in who is Teacher A and who is Teacher B. The students will then be asked to select Teacher A (General Education Teacher), Teacher B (Special Education Teacher), or Both." It may be unlikely, but what if the students don't know which teacher is the special education teacher and which teacher in the general education teacher? Would they just ask the supervisor? It may be worth it when the survey is administered to have that part filled in with teacher names if possible.	We have already planned for the situation that the respondent is referring to. The survey administrator/ researcher will give students the directions. The survey administrator will write Teacher A, Teacher B, Both on the board. Additionally, there will be two practice items where students practice responding to Teacher A, Teacher B, or Both.
2. T	The directions are also kind of confusing. As a student, I am rating how important I think these things are or are the answers supposed to be general education, special education, or both?	We think this respondent was confusing the process for content validity of the survey versus student's completion of the survey. Directions on this document are for the content validity only. The actual survey administered to the students will have completely different instructions.
3. T	Is there any way to save one page and continue to the next? I have gone back and forth and lost my answers when I click previous. I would hate for that to happen to students who are taking a survey for you.	In Survey Monkey, you are not able to save answers. The only option to fix this would be to mark each item as not optional. This way, if an item is incomplete the student would know an answer was missing. However, per the George Mason Institutional Review board (IRB), students must be able to leave the page without responding to an item. Students must not be forced to choose an answer if they do not desire to do so.

Respondent Teacher (T) or Student (S)	Respondent General Comments	Doctoral Candidates' and Chairs' Responses
4. T	The way the questions are set up, it sounds like a "who is a better teacher" - at least from my kid perspective.	Students can choose one teacher or the other teacher or both teachers. If there were only two possible responses, then we agree it might sound like "who is better?" But we intentionally included "Both" as a possible response, anticipating students would find "Both" and appropriate response versus one or the other teacher.
5. T	What if they are truly team co-teaching, then the answer would be that the responses would be equal for each teacher, and you do not have that as an option. They have to choose one co-teacher over another, as a forced choice.	See comment on number 4.
6. T	I see what you are trying to get at. I see the supportive and complementary co-teaching roles reflected in the questions. I just am very uncomfortable with the comparison nature of this and the absence of room for team co-teaching.	See comment on number 4.
7. T	I like that you are allowing for students to explain who works most with them, as well as addressing the critical issues of identifying who does the preponderance of the co-planning, co-instructing, and co-assessing.	This comment does not require a response.
8. T	<ul style="list-style-type: none"> • These questions are phrased such that students may feel as if they must choose the "good" teacher-pleasing answers. • The "why" response (qualitative) is what is really important for these questions. How are you getting to that? 	<ul style="list-style-type: none"> • Students can choose one teacher or the other teacher or both teachers. If there were only two possible responses, then we agree it might sound like "who is better?" But we intentionally included "Both" as a possible response, anticipating students would find "Both" and appropriate response versus one or the other teacher. • We feel it would be overly cumbersome to have students respond in writing (or typing) to a "Why?" query after each statement in this survey. We do agree the qualitative data is important, but the survey was not designed for acquiring that, nor was the research designed for that. However,

Respondent Teacher (T) or Student (S)	Respondent General Comments	Doctoral Candidates' and Chairs' Responses
		we have gleaned two statements from each section and will insert a writing space for students to answer "Why?" Good idea!
9. S	I don't really understand the questions, it would be easier if you asked like the same questions but made my options Teacher A Teacher B Both of I don't. Then you can see if kids with accommodation are being explained everything they are supposed to know and what teachers are doing what they need to do to help the student.	It sounds like the student is saying that they would like to see Teacher A, Teacher B, or Both as a survey option. We think this respondent was confusing the process for content validity of the survey versus student's completion of the survey. Directions on this document are for the content validity only. The actual survey administered to the students will have completely different instructions and the students will be able to choose Teacher A, Teacher B, or Both.
10. S	All of the things I marked critical kind of tie in together they talk about how kids feel about having to teachers does it improve their learning and behavior styles does it actually help them learn anything which I think is a great things to figure out to see if the second teacher even helps kids	This comment refers to the 15 Agreement Statements and does not require a response.

Appendix F

Content Validity Feedback from Experts and Students: Questionnaire Section 2 ***bolded responses are from students**

Survey Question	Respondent Comments Importance	Respondent Comments Clarity	My Response/Reaction	CV Rating Avg. from Experts: Professional (P)/Students (S) Importance
8.1/ 9.1 When I need help, the teacher I ask is...		How can you rewrite these, so that there could be multiple responses, for example, for 9.1., how might this be worded so a student could say that s/he asked both equally	The survey is written so students will be answering the questions for Teacher A, Teacher B, or Both	3.50 (P) 4.00 (S)
8.2/ 9.2 The teacher who grades my work the most is...	I have the same issue with 8.2 that asks about grading. How do students know who is grading their work? I guess if they can recognize handwriting that is one thing but otherwise, grading is done outside class and therefore cannot be observed by students.		Students may know who is grading papers based on repeated exposure to teachers' handwriting. Additionally, when interacting with students, teachers may comment on answers students have written on their graded assignment. From these comments students can infer that teacher commenting is the one who graded their assignment.	3.50 (P) 3.75 (S)

Survey Question	Respondent Comments Importance	Respondent Comments Clarity	My Response/Reaction	CV Rating Avg. from Experts: Professional (P)/Students (S) Importance
8.3/ 9.3 The teacher who seems to be in charge of the lessons the most is...				3.63 (P) 3.50 (S)
8.4/ 9.4 The teacher who walks around and helps students the most is....				3.43 (P) 3.75 (S)
8.5/9.5 The teacher who organizes the materials for instruction is...	<p>I think while it is important to get information about grading and planning of instruction, I am not sure the students really have the information to answer which teacher is doing it. For example, 8.5 and 8.6 ask about which teacher organizes and plans but how would the students know that? Because that is done outside of the classroom, I don't know that asking students who seems to do it will get you valid information about what is actually going on.</p> <p>Will students actually be able to answer 8.5 and 8.6</p>	I don't think a student could really answer this question accurately.	The premise of this research is that students are an integral part of the co-setting. Students are first-hand observers and are intuitively knowledgeable of what is taking place in the co-taught classroom.	3.00 (P) 3.00 (S)
8.6/9.6 The teacher who seems to plan most instruction for this class is...	<ul style="list-style-type: none"> I think while it is important to get information about grading and planning of instruction, I am not sure the students really have the information to answer which teacher is doing it. For example, 8.5 and 8.6 ask about which teacher organizes and plans but how would the students know that? Because that is done outside of the classroom, I don't know that asking students who seems to do it will get you valid information about what is actually going on. 		The premise of this research is that students are an integral part of the co-setting. Students are first-hand observers and are intuitively knowledgeable of what is taking place in the co-taught classroom	3.38 (P) 3.25 (S)

Survey Question	Respondent Comments Importance	Respondent Comments Clarity	My Response/Reaction	CV Rating Avg. from Experts: Professional (P)/Students (S) Importance
	<ul style="list-style-type: none"> Will students actually be able to answer 8.5 and 8.6 			
8.7/9.7 The teacher who explains things most of the time is...				3.75 (P) 3.25 (S)
8.8/9.8 I learn best from...	The other question I wonder about is 8.8. I feel like there should be a free response beneath it to describe why students perceive they learn best from a particular teacher. Otherwise, that is purely an opinion question.	9.8 also sounds like the kind of instruction (e.g., cooperative groups, visual supports) OR a person. I would not know what you are looking for, if I were a student	This statement will be re-formatted in the survey so it is a stand alone statement. A comment box will be added so the student can explain their answer.	3.50 (P) 5.00 (S)
8.9/9.9 The teacher who explains things in different ways is...		Different how? Intriguing and creative or boring and dull?	This statement will be reworded as: "The teacher who can explain things in more than one way is..."	3.86 (P) 4.50 (S)
8.10/9.10 The teacher who explains things to me when I make a mistake is...				3.50 (P) 4.50 (S)

Appendix G

Content Validity Feedback from Experts and Students: Survey Section 3

Survey Question	Respondent Comments Importance	Respondent Comments Clarity	My Response/Reaction	CV Rating Avg. from Experts (P)/ Students (S) Importance
10.1/11.1 When the two teachers are teaching, I think they divide the teaching in half so that one teacher is not doing more work than the other.				3.50 (P) 2.50 (S) Avg: 3.0
10.2/11.2 The two teachers seem comfortable sharing responsibilities when they are teaching together.				4.13 (P) 4.00 (S) Avg: 4.1
10.3/11.3 I think both teachers are equal teachers in the classroom.				4.13 (P) 2.50 (S) Avg: 3.3
10.4/11.4 I believe both teachers enjoy teaching this class.				4.25 (P) 3.00 (S) Avg: 3.6
10.5/11.5 I learn more when I am in this class with two teachers.	Some questions repeat each other (example: 10.5 and 10.7)	11.5 and 11.7 seem like the same questions.	The difference between 11.5 and 11.7 is subtle. 11.5 suggest comparison to other classes, whereas 11.7 is a general statement about learning with two teachers.	4.25 (P) 5.00 (S) Avg: 4.6

10.6/11.6 The two teachers use more ways to teach than when I am in other classes where there is only one teacher.		11.6 maybe specify that "more ways" means "varied" or "different" ways.	We believe that "more ways" is the most concise and easiest term to understand. "Varied" is a higher level vocabulary word and the word "different" is more subjective and open to interpretation.	4.38 (P) 3.75 (S) Avg: 4.0
10.7/11.7 I learn better with two teachers.				4.13 (P) 4.75 (S) Avg: 4.4
10.8/11.8 It is hard to have two teachers at the same time.				3.88 (P) 5.00 (S) Avg: 4.4
10.9/11.9 I wish all my classes had two teachers.				4.25 (P) 3.75 (S) Avg: 4.0
10.10/11.10 I would rather learn with only one teacher in the classroom.				3.63 (P) 4.75 (S) Avg: 4.2
10.11/11.11 Students seem to behave better when there are two teachers in this class.				4.00 (P) 4.50 (S) Avg: 4.3
10.12/11.12 Having two teachers makes me confused sometimes.				3.63 (P) 4.75 (S)
10.13/11.13 I enjoy having two teachers in this class.				3.63 (P) 4.00 (S)
10.14/11.14 One teacher is mostly in charge of our behavior, and the other teacher is mostly in charge of teaching.		If they say this is NOT true, how do you know if the experience is that the co-teachers are equally in charge? How can you restate this one?	We are seeking to know if the students experience that the teachers are equally in charge of behavior and teaching, which is why we're asking this. Students' responses indicate their level of agreement with the statement. Before analyzing students' responses are reverse coded. We think the reviewer may not have realized we were reverse wording some questions (e.g., so that students did not think it would be statement specific.	4.13 (P) 3.33 (S)

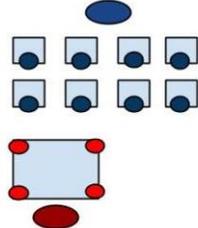
<p>10.15/11.15 One of my teachers explains things better than the other.</p>	<p>For #10, will you give the students an option to explain WHY they selected that response (i.e., why or how does one explain things better)?</p>	<p>11.15 is not really about co-teaching. I think you are trying to get at the complementary co-teaching role of restating to clarify. What do you get from this question? I am not sure.</p>	<p>We feel it would be overly cumbersome to have students respond in writing (or typing) to a “Why?” query after each statement in this survey. We do agree the qualitative data is important, but the survey was not designed for acquiring that, nor was the research designed for that. However, we have gleaned two statements from each section and will insert a writing space for students to answer “Why?” Good idea! In 11.15 we are seeking students’ perception of teacher roles.</p>	<p>4.00 (P) 3.67 (S)</p>
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Appendix H

Content Validity Feedback from Experts and Students: Survey Section 4

175

Statement/Picture	Respondent Comment	My Response/Reaction
There are different ways, or models, that two teachers work together in the classroom. Look at each of the five models shown in pictures below. Study each one, using the title, sentence, and picture. Then decide: Which model do your two teachers use the most?		
Model 1 One teach, One Observe/or Drift Model 2 is called Station teaching Model 3 is called Parallel teaching Model 4 is called Alternative teaching Model 5 is called Team teaching	The language and pictures are clear. However, I would suggest that this section be formatted so that each question had the picture of that kind of co-teaching right below it rather than how it is pictured on the previous page of this survey (all five statements and then all five pictures). For special education students especially, scrolling down and up to look at pictures and then answer questions could be confusing.	The pictures have been repositioned so they are in pairs. Repositioning the pictures may eliminate some of the scrolling. Given the technology being used, the optimum way to position these is not possible.
	I use our co-teaching vs. this model. In our model, 2, 3 and 4 as variations of parallel. There is no complementary co-teaching really presented here, so that is something I would say is a drawback.	This research is based on the models as described by Cook and Friend only.
Model 1 One teach, One Observe/or Drift	Model 1 (add "is called")	This has been corrected.

Statement/Picture	Respondent Comment	My Response/Reaction
	The first sentence, perhaps, could be re-formulated. I suggest it should say: "There are different ways, or models, two teachers working together in the classroom can use."	This has been corrected.
	Look at the write-up on Station Teaching. There are extra words "another group of students works students works" Needs fixing	This has been corrected.
	Perhaps drawn eyes on the circles to show that the back half of the class is looking at one teacher while the front half is looking at the other teacher. Otherwise, it could be interpreted as the sped teacher just standing in the back rather than actually teaching.	<p>Instead of "drawn eyes", I used a color coding of circles to match the teacher. (i.e., blue teacher with blue students, red teacher with red students)</p> <p>Alternative Teaching</p> <p>One teacher works with most of the students, and the the other teacher works with a smaller group of students. The teacher teaching the smaller group may be teaching something different.</p> 
	The blue students are not facing the blue teacher... could be confusing	To make pictures clearer, I used a color coding of circles to match the teacher. (i.e., blue teacher with blue students, red teacher with red students)
	I'm biased. The way I teach is that Parallel enables teachers to split the class in half and teach the same content the same way, the same content in a different way, or even different content. Not sure	This research is based on the co-teaching models as described by Cook and Friend the language used will be similar to their word choice.

Statement/Picture	Respondent Comment	My Response/Reaction
	if you need all that or not, but students shouldn't think the teachers MUST be teaching the same content. Main point is that the class is divided into 1/2. Also, one group might leave the room.	
	The language is a little confusing - "trading"	The language will be revised to be similar to that used by Cook and Friend.
	Not sure I like "trading of the teaching like a team does in a sport". Not clear to me. I describe it as when teachers work collaboratively in front of the class to role play, debate, explain, discuss, contradict, etc.	Same as above.

Appendix I

Content Validity Feedback from Experts and Students: Survey Section 5

***bolded responses are from students**

Open-Ended Responses	Respondent Comments	My Response/Reaction
19.1 What do you think is a benefit of having two teachers in this class?	<ul style="list-style-type: none"> • Consider asking the students "What is feedback you would give to your two teachers to make them even better co-teachers or partners?" • I suggest giving an alternative for a "drawback"... Perhaps something in these lines: "What is it that you don't like about having two teachers in a classroom?" 	<p>Revised question:</p> <p>Think about your experience so far this school year in this co-teaching class. Please write an answer to each of the following questions:</p> <p>The two main benefits I've experienced from having two co-teacher in this class are:</p>
19.2 What do you think is a drawback of having two teachers in this class?	<ul style="list-style-type: none"> • Then you see if it actually does anything for the student and if they actually benefits the student or it hurts them and makes things harder • Do you just want ONE benefit and drawback or open it up to more? • Do the students know what you mean by benefits and drawbacks? To whom is co-teaching a benefit/draw back, the teachers? ... the students? How can you have some words to clarify these questions? • I wonder about using the word "drawback." Do you think all students will understand what that means? Maybe use the word downside or disadvantage? 	<p>Revised question:</p> <p>Think about your experience so far this school year in this co-teaching class. Please write an answer to each of the following questions:</p> <p>If I could give two suggestions for how these two co-teachers could do something differently to improve my learning or their co-teaching in this class, my suggestions would be:</p>

Appendix J

Student Perceptions' of Co-Teaching Questionnaire (CTSQ)

Student Questionnaire

A Questionnaire to Ask Students What They Think About Co-Teaching

Section 1: Demographics About You

Your name will not be used in any reporting information

1. Your Name
2. What is your gender?
3. How old are you?
4. What is your ethnicity? (Please select all that apply.)
 - White
 - Black or African American
 - Hispanic
 - Asian
 - Native Hawaiian or other Pacific Islander
 - American Indian or Alaska Native
 - Prefer not to answer
5. What grade are you in?
 - Grade 7
 - Grade 8
 - Grade 9
 - Grade 10
 - Grade 11
 - Grade 12
6. Subject of co-teaching classroom:
 - Biology
 - Earth Science
 - Chemistry
 - Other please specify: _____

Teacher Information

Before you begin completing this questionnaire, each of your co-teachers will be named as Teacher A or Teacher B.

7. Name Teacher A and Teacher B

Teacher A's name (we will tell you who to call Teacher A):

Teacher B's name (we will tell you who to call Teacher B):

Section 2: Teacher A, Teacher B, or Both?

8. As you respond to each sentence or question, remember who is Teacher A and who is Teacher B.

Remind yourself that Teacher A is:

and Teacher B is:

9. The adult in the room can help you complete the two PRACTICE sentences.

	Teacher A	Teacher B	Both Teacher A and B
Practice 1: Which teacher is at school almost every day?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice 2: The teacher who assigns homework is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Teacher A, Teacher B, or Both?

	Teacher A	Teacher B	Both Teacher A and B
When I need help, the teacher I ask is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who grades my work the most is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who seems to be in charge of the lessons the most is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who walks around and helps students the most is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who organizes the materials for instruction is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who seems to plan most instruction for this class is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who explains things most of the time is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who can explain things in more than one way is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teacher who explains things to me when I make a mistake is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I need help, the teacher I ask is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Which Teacher Statements

	Teacher A	Teacher B	Both Teacher A and B
I learn best from...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain your answer choice.

Section 3: Tell how much you disagree or agree with each sentence. The adult in the room can help you complete the two PRACTICE sentences.

12. The adult in the room can help you complete the two PRACTICE sentences.

	Strongly Disagree☹	Disagree	Agree	Strongly Agree☺
PRACTICE 1: I do not like to eat cheeseburgers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PRACTICE 2: I do like to eat green peas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Tell how much you disagree or agree with each sentence.

	Strongly Disagree☹	Disagree	Agree	Strongly Agree☺
When the two teachers are teaching, I think they divide the teaching in half so that one teacher is not doing more work than the other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The two teachers seem comfortable sharing responsibilities when they are teaching together.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think both teachers are equal teachers in the classroom.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe both teachers enjoy teaching this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I learn more when I am in this class with two teachers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The two teachers use more ways to teach than when I	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

am in other classes where there is only one teacher.				
I learn better with two teachers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is hard to have two teachers at the same time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish all my classes had two teachers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather learn with only one teacher in the classroom.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students seem to behave better when there are two teachers in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having two teachers makes me confused sometimes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy having two teachers in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One teacher is mostly in charge of our behavior, and the other teacher is mostly in charge of teaching.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 4: Which Model is Used the Most?

* All model pictures are adapted from:

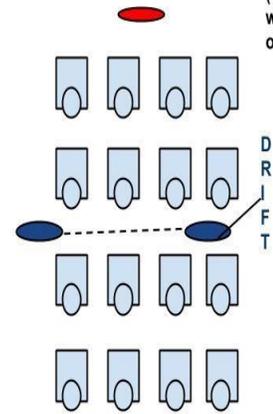
Friend, M. & Bursuck, W.D., (2009). Including Students with Special Needs: A Practical Guide for Classroom Teachers (5th ed., p. 92).

14. There are different ways, or models, that two teachers use when they work together in the classroom. Look at each of the five models shown here. Study each one, using the title, sentence, and picture. Then decide: Which model do your two teachers use the most?

- Model 1 is called One Teach, One Observe/ or Drift
- Model 2 is called Station Teaching
- Model 3 is called Parallel Teaching
- Model 4 is called Alternative Teaching
- Model 5 is called Team Teaching

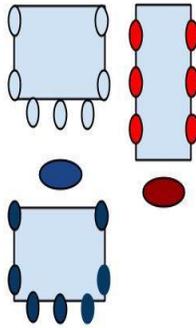
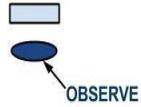
Model 1: One Teach, One Observe/ or Drift

In model 1, one teacher does most of the teaching and the other teacher walks around (drifts) to help other students or is on the side watching (observing, looking at) what is going on.

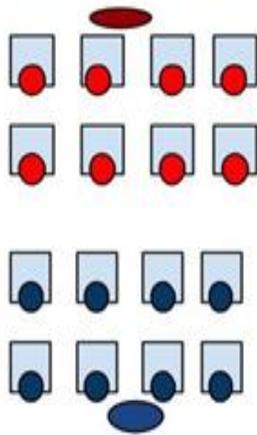


Model 2: Station Teaching

In model 2, each teacher works with a small group of students, and another group of students work on their own.

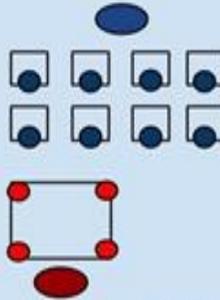


Model 3: Parallel Teaching



In model 3, each teacher has about half of the students to teach. Teachers are covering the same information, but they divide the class. They may also use different materials to teach the same topic.

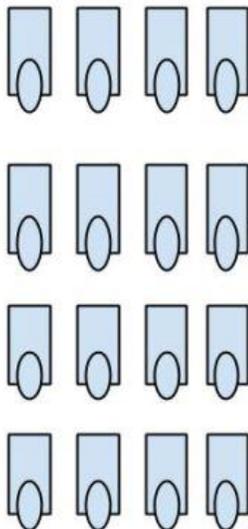
Model 4: Alternative Teaching



In model 4, one teacher works with most of the students, and the other teacher works with a smaller group of students. The teacher teaching the smaller group may be teaching something different.

Model 5: Team Teaching

Team Teaching



Both teachers are leading the large-group instruction. They may be presenting the same information together by lecturing, explaining, or even giving different views. Some may call it "tag team teaching."

Section 5: Open-Response Query

Think about your experience so far this school year in this co-teaching class. Please write an answer to each of the following questions. If you don't know, write "IDK" in the box.

15. The two main benefits I've experienced from having two co-teachers in this class are:

1.

2.

16. If I could give two suggestions for how these two co-teachers could do something differently to improve my learning or their co-teaching in this class, my suggestions would be:

1.

2.

Thank You

Thank you again for completing this questionnaire!

Appendix K

Principal Contact Email/Letter

Dear [Insert Principal's Name Here]:

[If the principal is known by the researcher, an acknowledgement statement will be written here that addresses how the principal is known to the researcher.]

My name is Shantha Smith, and I am a Doctoral Candidate at George Mason University in the College of Education and Human Development. I am writing to seek your help in accessing general education teachers who teach students with and without disabilities. I am acquiring information about students' perceptions of the co-taught classroom through a 15-minute online questionnaire.

I would like to talk to the general education teachers at your school about the facilitating the process of having students take the questionnaire. I will be calling you in the next few days to follow up. I appreciate your consideration of supporting me with pursuing this research.

Sincerely,

Shantha Smith, M.Ed.

Ph.D. Candidate

George Mason University

ssmiu@masonlive.gmu.edu or (301) 922-5663

Appendix L

Qualified Science Classroom Letter/Email

Dear General Education Teacher,

My name is Shantha Smith, and I am a Doctoral Candidate at George Mason University in the College of Education and Human Development. I am majoring in Special Education/Special Education Leadership. I am conducting a study to explore students' perception of the general education classroom. Here's what the study entails:

Targeting students with and without disabilities co-taught by fully certified special and science educators. If you and your co-teacher are each (a) fully certified in your area [science education or special education] and (b) currently co-teaching science to students with and without disabilities, your students are eligible to participate in this research.

Disseminating and collecting Parent Informed Consents.

Completing an online questionnaire (no more than 20 minutes) after students have acquired permission from their parents about their participation on the Parent Informed Consents.

Facilitating students' completion of the online questionnaire [possibly at another location in the school] will be done by the researcher(s) or a designated representative.

As a “THANK YOU” for your willingness to facilitate, you will be given an honorarium up to \$50! Included with this letter is an incentive brochure, which outlines what you and students may receive! I will be following up with you tomorrow. I appreciate your consideration of supporting me with pursuing this research.

Sincerely,

Shantha Smith, M.Ed.

Ph.D. Candidate

George Mason University

Appendix M

Co-Teacher(s) Facilitation Quick Guide At-A-Glance

1. **Decide:** Who will do what?
 - Are both co-teachers facilitating (yes or no)?
2. **Complete:** Co-Teachers' Eligibility Form
3. **Determine dates:**
 - Parent Informed Consent distribution date: (when?)
 - Parent Informed Consent to be returned/collected: (to who by when?)
 - Questionnaire Administration Date: (when and location with adequate technology?)
4. **Distribute:** Parent Informed Consent to students
 - Read Student Recruitment/Informed Consent Script for Co-Teachers Script and/or show video
5. **Maintain Student Roster:**
 - As students return Parent Informed Consent write the student name and check appropriate box (yes, no, not returned)
 - Give to researcher/questionnaire administrator on questionnaire administration day

Appendix N

Student Recruitment Brochure



**Research on Students' Perceptions
of Co-Teaching**



Looking for...
**TEACHERS TO REWARD
I NEED YOUR
HELP**

Doctoral Candidate:
Shantha Smith, Doctoral Student @
GMU
Email: ssmiu@masonlive.gmu.edu
Phone: (301) 922-5663

Shantha Smith, George Mason
University
ssmiu@masonlive.gmu.edu
2013-2014 research



Responsibilities and Incentives

TEACHERS' RESPONSIBILITIES* AND INCENTIVE

1. Distribute and collect Parent Informed Consent for randomly selected students in a class or entire classes of students
2. Plan date and time for students to complete survey, arrange for technology for students to take online survey in classroom or at the school
3. Give researcher(s) or survey administrator completed student roster

*Refer to Co-Teacher Quick Guide At-A-Glance

INCENTIVE:

UPON SUCCESSFUL COMPLETION OF THESE TASK AN HONORARIUM WILL BE GIVEN TO THE FACILITATOR(S).
\$50- 1 co-teacher as a facilitator completing responsibilities
\$25 2 co-teachers (co-teaching team) as facilitators completing responsibilities

Drawing held 1 week after all surveys in the research investigation have been completed and necessary information has been collected.

*When students complete the online survey (about 15 minutes), the survey administrator will be there to facilitate that. You will not be around!

STUDENTS' RESPONSIBILITIES AND INCENTIVE

1. Return Parent Informed Consent for students within 1 week of distribution
2. Complete survey

INCENTIVE:

UPON SUCCESSFUL RETURN OF THE PARENT INFORMED CONSENT STUDENTS WILL BE ENTERED INTO A RAFFLE TO WIN A \$20 STARBUCKS GIFT CARD/BESTBUY GIFT CARD (winner's choice).

Shantha Smith, George Mason University
ssmiu@masonlive.gmu.edu
2013-2014 research

Appendix O

Co-Teachers' Eligibility and Honorarium Form

Complete this form on this page and return it 1 of 3 ways:

1. The researcher will collect it directly
2. Return via email to ssmiu@masonlive.gmu.edu
3. The facilitator(s) may input the general education and/or special education can complete the form here: https://docs.google.com/forms/d/12qU6Qn2VyGPjmVX4o6k8-YN4jITPbCYui_qLZ86uJec/viewform

School:

Name of Science Course:

Grade level(s):

Facilitator: Individual Co-teacher (1 person responsible for facilitation) or Co-teaching Team (shared responsibility for facilitation)

(Regardless of facilitator(s), the researchers request the information of both teachers for eligibility confirmation and reporting purposes. *Honorarium will be given approximately 2 weeks after the last questionnaire is completed.)

Information	Teacher A Name (General Education)	Teacher B Name (Special Education)
Total # of years teaching		
Certification area (s)		
# of years participating in co-teaching model		
Please list any co-teaching training experiences (i.e., in-services, workshops, conferences, college course, etc.)		

Appendix P

Student Recruitment/Informed Consent Script for Co-Teachers

Students: We, (*insert names of co-teachers*), have been asked to participate in a research study conducted by a doctoral student at George Mason University, Shantha Smith. The research is about your experiences with having two teachers instruct in the same classroom. The researcher would like you to participate by completing one questionnaire about classroom instruction.

In order for you to participate, your parent (*or guardian, if appropriate*) must sign this letter (**facilitator holds up Parent Informed Consent**), which the researchers call a Parent Informed Consent, and indicate “I Agree” (**facilitator points to “I Agree” box**) and sign this form (**facilitator points to signature line**). If your parent does not want you to participate, ask your parent to check “I Do Not Agree,” (**facilitator points to “I Do Not Agree” box**) on the Parent Informed Consent. Either way, the Parent Informed Consent should be returned to name the location for that school, write it on board to stay up for several days by identify a date within one to two weeks of the day you are distributing the Parent Informed Consent. I am giving you two copies. One copy is for you to return to class and the other copy is for your parents to keep for their records.

Read to all students: If your parent has any questions for the researchers, Shantha Smith and her advisor at George Mason University, Dr. Margaret “Peggy” King-Sears’ name, email, and phone # are on the Parent Informed Consent. This is all the information I have about the research. We (the co-teachers) are interested in having you participate in the research. Before you can participate, your parents need to sign this form after they have indicated “I Agree” or “I Do Not Agree,” then you return the form to name the place and date.

Appendix Q

Questionnaire Administration Script

Upon Arrival at Research Site

Step 1: Stop by the main office and sign in. Defer to school protocol to move to classroom/questionnaire administration site.

Step 2: Greet co-teachers. Let the co-teachers know the questionnaire should take about 20 minutes to complete.

Collect/discuss the following with the co-teachers before questionnaire administration:

1. Discuss what to do with students after the completion of the questionnaire
2. Collect Student Roster (SEE BELOW) and Parent Informed Consents form co-teacher

<u>Student Identification Number</u>	<u>Informed Consent YES</u>	<u>Informed Consent NO</u>	<u>Informed Consent NOT RETURNED</u>	<u>SURVEY DAY ATTENDANCE</u>

Before Questionnaire Administration

Step 3: Introduce yourself to the students and explain you that your role is to make sure the questionnaire process is completed the same way at all schools. Take attendance by having students put a check in Questionnaire Day Attendance box that aligns with their student identification number/name then hand them the slip with the questionnaire link. Tell students to type in the link to get to the questionnaire and **STOP** to wait for further instructions. After taking attendance and passing out the questionnaire link slips, walk around and assist any student who may need support getting to the questionnaire link. **Next, say the following:** I am going to read the Student Informed Assent to you please listen carefully and follow along as I read: **(refer to Student Informed Assent p. 39)** Does anyone have any questions? Walk around and check every screen. If a student does not click next, they are finished at this point and will not take the questionnaire.

Question 7 and 8 on the questionnaire will ask you for Teacher A and Teacher B. I will write this information on the board so you can copy it in the questionnaire when it asks for it. This is to help keep like information together. This is VERY IMPORTANT for you to remember when responding!!!

If you agree to participate, click next.

After Questionnaire Administration

Step 4: Dismiss students to pre-determined location.

Step 5: Before leaving, add the number of students from the Parent Informed Consent “yes” column to the Parent Informed Consent “no” column. That total number is used for the student raffle. Ask the teacher to pick a number from one to that that total number from the two combined columns. The student name/identification number that is assigned that number will be the class raffle winner. Finally, the student gift card for returning the Parent Informed Consent and will be left with the co-teacher(s) to give to the student.

Step 6: Thank them and let them know that the researcher will be in touch about the honorarium for co-teachers.

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Biography

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