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ROLES AND INTERACTIONS OF GENERAL AND SPECIAL EDUCATION TEACHERS
IN SECONDARY CO-TAUGHT TEAMS

by

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B.S., University of Connecticut, 1999
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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the College of Education
at the University of Central Florida
Orlando, Florida

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2010

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ABSTRACT

This study focused on identifying the components that contribute to instructional delivery in co-taught secondary classrooms in hopes of enhancing the understanding in the field of co-teaching in various secondary content areas. Employing a non-experimental mixed method research design, the study integrated qualitative and quantitative methods to gain insight into general education teachers' roles in solo-taught and co-taught classrooms and special educators' roles in co-taught classrooms. Instrumentation included the use of the Teacher Roles Observation Schedule (TROS), the Colorado Assessment of Co-Teaching (CO-ACT), interview questions, and field notes. The quantitative portion of the study consisted of event recordings of teacher interactions (TROS), co-teacher perception rating scale scores (CO-ACT), and class seating charts to monitor the occurrence of one-on-one interactions with students in both settings. The qualitative portion of the research study consisted of the researcher gathering ongoing field notes and teacher interviews. The researcher sought to identify the interaction behaviors of secondary co-teaching teams. The most and least successful co-teaching teams were identified based on the findings. The findings indicate teacher preparation programs need to prepare all teachers to first consider the diverse learning needs of all students and second, to effectively collaborate in inclusive settings. Special education preparation programs need to include more secondary content teaching courses. Likewise, general education preparation programs need to prepare future secondary general educators to differentiate instruction to meet the needs of students with disabilities. In addition to improvements in teacher preparation programs, school leaders need to provide ongoing support for co-teachers via planning time and professional development, so they can maximize the collaborative potential embedded within the co-teaching model.

I dedicate this dissertation to my first teachers. I am eternally grateful that God blessed me with Frederick Douglas Moorehead and Elease Adams Moorehead as parents. You have taught me so much, kept me grounded, and have supported me in every way possible. I appreciate all that you have done for me and I love you.

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CHAPTER ONE: INTRODUCTION

Access to education is a right for all American citizens. American history illustrates that such was not always the case for students with disabilities, and that the right to education was the result of a long journey of legal battles and triumphs in civil equality (Sorrells, Reith, & Sindelar, 2004; Yell, Rodgers, & Lodge Rogers, 1998). One monumental court case that opened the door for students with disabilities is the 1954 landmark decision of *Brown vs. the Board of Education* “separate but equal” doctrine. Segregation in public schools was prohibited by the passage of *Brown vs. BOE*, but this case was based on race. This ruling also established the right for all students to obtain an equal education-- regardless of gender, race, or ability (Sorrells, Reith, & Sindelar, 2004), thus, paving the way for individuals with disabilities by setting a precedent for the inclusion of students based upon “separate is not equal.” This legislative impact has resulted in significant changes in the field of special education, particularly with regard to the policies and practices; and now, more recently, instruction for students with disabilities.

Background

The history of Special Education and inclusive practices began long before the coining of the now common term. History documents the harsh realities that led to the current and improved state of the education of individuals with disabilities (Giordano, 2007; Kode & Howard, 2002; Osgood, 2008; Winzer, 1993). Following the passage of *Brown vs. BOE*, a succession of associated federal laws from the mid 1970s to 2004 have provided the basic foundation for the education of students with disabilities. In 1975, the Education for All Handicapped Children (EAHCA) mandated appropriate educational services for individuals with disabilities and provided safeguards for students and their families (Public Law 94-142, 1975).

The original law and subsequent reauthorizations all placed emphasis on the inclusion of students with disabilities in the Least Restrictive Environment (LRE):

To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from general education environment occurs only when the nature or severity of the disability of a child is such that education in general classes with the use of supplementary aids and services cannot be achieved satisfactorily (IDEA, Title 1 (B) Sec. 612 (a)(5)(A), 2004).

In efforts to provide the LRE for students with disabilities, public schools have gradually included students with disabilities in the general education settings (Rea, McLaughlin, Walther-Thomas, 2002). In fact, the number of students included in general schools drastically increased in 1977, after P.L. 94-142.

The EAHCA in 1990, was amended and the name changed to the Individuals with Disabilities Education Act (IDEA). In 2004, the act was renamed the Individuals with Disabilities Improvement Act (IDEIA). Inasmuch as legislation ensures that the individual needs of each student are met through a Free and Appropriate Public Education (FAPE), no law requires equal access or desegregation of schools for students with disabilities. The term *free* is easily interpreted but *appropriate* is a term that often sparks great debate regarding the placement of students with disabilities (Yell & Drasgow, 2000). Parallel to legislative attention in special education, similar reauthorizations were occurring in general education. The Educate America Act (Goals 2000) and the Improving America's Schools Act, introduced in the mid 1990s, eventually mandated the accountability-based reform efforts of academic standards-based

education within public education, including special education (Skrtic, Harris, & Shriner, 2005). In 2001, President George W. Bush signed a radical reform of the Elementary and Secondary Education Act (ESEA), the No Child Left Behind Act (NCLB) (USDOE, 2002). The NCLB Act made the commitment that our nation's children would meet proficiency standards, set by individual states, by the 2013-2014 school year. In addition to the commitment to proficiency for all students, NCLB mandated school districts to report adequate yearly progress (AYP), improve academic content standards, and required all students to be held to the same standards and assessments (Elliot, 2007; Lewis, 2004; NCLB, 2001).

Only thirty years ago, approximately 20% of children with disabilities were included in general schools. Due to the integration of the laws, a major shift in special education in schools and classrooms has occurred. Currently, approximately 96% of all students with disabilities are in general schools. Special education is no longer an isolated learning environment characterized by low academic achievement, watered down curriculum, and social isolation for students and their teachers. In contrast, special education has emerged as a cohesive structure of academic services and social supports constructed to help students succeed in the least restrictive environment (The American Youth Forum, 2002).

The American Youth Policy Forum (2002) reported over 11% of students in public schools receive special education services. Approximately 50% of students receiving special education services are classified as having mild to moderate disabilities such as specific learning disabilities, and approximately one-fifth consists of children with speech/language impairments. Placements vary depending on the type and severity of disability. Students with mild to moderate disabilities typically receive at least 80% of their instruction in general education classrooms (Annual Report to Congress, 2006; The American Youth Policy Forum, 2002). The changes in

the service delivery models and the requirements of NCLB have increased the need for highly qualified teachers who are prepared to meet the academic needs of all students, including students with disabilities.

The No Child Left Behind Act of 2001 sought to increase student academic achievement through mandates designed to improve teacher quality and increase the number of highly qualified teachers in the classroom (Congressional Record, 2001). According to NCLB, a highly qualified teacher must hold a bachelor's degree and meet state licensure requirements. Highly qualified special educators who provide academic support and consultation are required to have state licensure in special education and a bachelor's degree. However, special education teachers who deliver the instruction of core subject areas must also demonstrate competence in the content areas that they teach, (Byrnes, 2008) a mandate of EAHCA and IDEIA.

Inclusive Service Delivery: Co-Teaching

Today the combined principles of the Individuals with Disabilities Education Act (IDEA) and NCLB require that all teachers be highly qualified. Highly qualified teachers, under IDEA, provide evidenced based instruction for students with disabilities, with the intent to improve student achievement (Turnbull, 2005). The parallel requirements of NCLB and IDEA set the stage for collaboration between special and general education teachers in a more inclusive setting (Villa, Thousand, Nevin, & Liston, 2005). Special education teachers may provide services for students with disabilities through (a) direct or indirect consultation with the general educator, (b) pullout or resource class instruction, (c) self-contained class instruction, or (d) co-teaching (Zigmond, 2003).

One model used to address the stringent requirements of highly qualified at the secondary level is co-teaching (Magiera, Smith, Zigmond, & Gebauer, 2005; Sileo & van Garderen, 2010; Villa, Thousand, Nevin, & Liston, 2005). This model of co-taught instruction emerged due to the increase of students with disabilities being placed in content subject classrooms and to ensure students receive instruction from highly qualified content specialist as mandated by NCLB and IDEA. Many schools adopt co-teaching as a solution to the separation of the content specialist and learning strategies specialists (Zigmond, 2006). Content area teachers are often not trained to design individualized instruction for students with disabilities. In contrast, special education teachers are equipped with strategies and techniques to design instruction for students with disabilities, yet often have limited content expertise in some secondary areas. When general education teachers and the special education teachers collaborate, academic outcomes for all students improve (Cawley, 1994; Goddard, Goddard, & Tschannen-Moran, 2007; Walter-Thomas, Korinek, & McLaughlin, 1999).

Although a limited amount of research has focused on co-teaching exists at the secondary level, secondary schools are increasingly turning to co-teaching models due to the transition to inclusive classrooms (Dieker, 2001; Dieker & Murawski, 2003; Kim, Woodruff, Klein, & Vaughn, 2006; Magiera & Zigmond, 2005; Mastropieri & Scruggs, 2001; Mastropieri, Scruggs, Graetz, Norland, Gardizi, & McDuffie, 2005; Rice & Zigmond, 2000). Co-teaching is a model for inclusive instruction that provides a learning environment with a highly qualified content and special education teacher. While teachers commonly work in isolation and maintain their individual classroom responsibilities without extensive support or communication with other teachers, co-teaching encourages collaboration through co-planning, co-instruction, and co-assessment among teachers (Friend & Cook, 2006; Hindin, Morocco, Mott, & Aguilar; 2007;

Murawski & Dieker, 2004). Hindin and colleagues define collaboration as planning, enacting, and reflecting upon one's teaching together. Teacher collaboration provides opportunities for teachers to learn from one another in a safe context. Collaboration facilitates a process to blend highly qualified skills through the exchange of pedagogical content knowledge and instructional strategies among teachers.

According to Friend and Cook (2009), co-teaching is one of the most widely used instructional models that incorporate the collaboration between general and special education teachers. Cook and Friend (1995) defined co-teaching as two professionals delivering instruction together to an inclusive body of students in a single physical space. "Co-teaching...encompasses collaboratively assessing student strengths and weaknesses, determining appropriate educational goals and outcome indicators, designing intervention strategies and planning for their implementation, evaluating student progress toward the established goals, and evaluating the effectiveness of the co-teaching process (Cook & Friend, p. 2)." This process typically encompasses six types of co-teaching (a) one teach, one assist; (b) one teach, one observe; (c) station teaching; (d) parallel teaching; (e) alternative teaching; and (f) team teaching. Each model offers benefits to the learning environment (Cook & Friend, 2004; Friend, 2005).

Statement of the Problem

The principles of the IDEA 2004 and ESEA require that all students, including students with disabilities, receive content instruction from highly qualified content area educators that provide evidence-based instruction. For students with disabilities, IDEA mandates that instruction must take place in the LRE with accommodations specified by the Individualized Education Plan (IEP) (Turnbull, 2005; Zigmond, 2003). The co-teaching model is one inclusive

teaching strategy at the secondary level that enables special and general education teachers to meet the highly qualified standards by combining their expertise and still meeting students individual needs in the LRE (Sileo & van Garderen, 2010; Villa, Thousand, & Nevin, 2008).

The co-teaching model ensures students with IEPs receive the necessary modifications, accommodations and specific learning strategies for academic success (Friend, 2007). Despite the noted benefits of co-teaching, the actual role of the secondary special educator who is not highly qualified in content has struggled to find a clear definition. Consequently, both general and special education teachers have struggled to successfully implement a co-teaching model at the secondary level (Morocco & Aguilar, 2002; Weiss & Brigham, 2000; Weiss & Lloyd, 2002).

Purpose of the Study

The purpose of this study is to contribute to the co-teaching literature by identifying the interaction behaviors of co-teaching pairs. Previous literature has defined the critical components of successful implementation of co-teaching. Successful co-teaching components include: (a) preplanning; (b) pre evaluation of philosophical, theoretical, procedural, instructional, and evaluative processes (c) secured planning time; (d) positive learning environment; (e) administrative support; and (f) role clarity (Bauwens & Hourcade, 1991; Dieker, 2001; Gately & Gatley, 2001; Keefe et al., 2004; Murawski, 2005; Spencer, 2005). However, an understanding of the interactions of co-teaching pairs may lead to improved instruction and increased academic achievement.

Application to Practice

This study identified the interaction behaviors of secondary co-teaching pairs and the teachers' perceptions of the co-teaching model. The researcher used an observation instrument

to monitor the level and frequency of teacher interactions between teachers and amongst students (with and without disabilities) during co-taught instruction. In addition, teachers were asked to complete the Colorado Assessment of Co-Teaching (CO-ACT) to determine their perceptions of co-teaching. After interaction data were gathered and analyzed, co-teaching teams were asked to reflect upon their interaction data during a final interview with the participants as a tool for member checking. The researcher hypothesized that the participants would reflect on the level and frequency of interactions to further discuss and define their roles in the co-taught environment. Interaction data, interviews and the researcher's daily field notes were then triangulated to identify emerging themes from the observation of the teams.

Research Questions

The following research questions guided the collection of both qualitative and quantitative data.

1. What are the ratings of the co-teachers participating in this study on their implementation of co-teaching practices as measured by the Colorado Assessment of Co-Teaching (CO-ACT)?
2. What are the general education secondary teacher interaction behaviors when teaching in a secondary class?
 - a. Among general education students?
 - b. Among special education students?
3. What are the general education secondary teacher interaction behaviors when co-teaching in a secondary content class?
 - a. With the special educator?

- b. Among general education students?
 - c. Among special education students?
4. What are the special education teacher interaction behaviors when co-teaching in a secondary class?
- a. With the content teacher?
 - b. Among general education students?
 - c. Among special education students?

Definition of Terms

Co-teaching: Cook and Friend (1995), defined co-teaching as two professionals delivering instruction together to an inclusive body of students in a single physical space. Co-teaching includes co-planning, co-instructing, and co-assessing.

Inclusion: Providing general education curriculum to students with disabilities in general education classrooms with the appropriate accommodations and modifications (Roach, 1995).

Interaction Behavior: type and purpose of any exchange a teacher may have with students/other adults. The five types of interactions are: No interaction, Interaction with other adults, Interaction with student(s)/Instructional, Interaction with student(s)/Managerial, and Interaction with student for personal purpose (Waxman, Want, Lindvall, & Anderson, 1988).

Learning Disability (LD): A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia... a specific learning disability does not include learning

problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage (34 Code of Federal Regulations § 330.7(c) (10)).

Research Design

This study employed a non-experimental mixed method research design, with the primary focus on qualitative data. The study integrated both qualitative and quantitative methods to gain insight into the roles of special and general education teachers' in co-taught classrooms. In addition, the study data allowed the researcher to observe differences in the teacher interaction patterns among students with and without disabilities in a co-taught versus a non-caught classroom.

Instrumentation

Three instruments were used during data collection: (a) interview protocols for the teachers; (b) Teacher Roles Observation Schedule to monitor interaction behaviors of teachers (TROS); and (c) the Colorado Assessment of Co-teaching (Co-ACT) (Adams, Cessna, & Friend, 1993) to measure the effectiveness of co-teaching teams. The researcher collected anecdotal notes during each classroom observation.

Interviews

Pre interviews were conducted prior to observations of classroom interactions and post interviews occurred once TROS data were analyzed. The pre-interview data collected included demographic data and teacher attitudes and beliefs about co-teaching. The interview included questions that were developed from the current literature to explore how the participants viewed

their roles in relation to co-planning for instruction, co-delivery of instruction, co-assessment of student learning along with their levels of confidence and comfort as it relates to co-teaching and teaching in inclusive classrooms. Finally, the post-interview included a summary of interactions scores gathered for each teacher as it related to the research questions. Each teacher was asked to reflect upon his/her interaction data as well as to again answer questions about their co-teaching.

Teacher Roles Observation Schedule

The Teacher Observation Schedule (TROS) (Waxman, Wang, Lindvall, & Anderson, 1988) was used to identify the interaction behaviors of the general education teachers in inclusive non co-taught and inclusive co-taught classrooms. The time sampling observation instrument distinguished between teacher interactions with other adults and with students. The interactions with students separated into three categories: instructional, managerial and personal.

Colorado Assessment of Co-Teaching

The Colorado Assessment of Co-Teaching (CO-ACT) (Adams, Cessna, & Friend, 1993) was the third instrument used in the study to measure the critical components of effective general-special education co-teaching. The assessment provides qualitative data. The CO-ACT is a five-point Likert-style inventory designed to identify exemplary co-teaching teams. Co-teaching teams evaluated on 38 items and three factors: (a) Personal Prerequisites (15 items), (b) The Professional Relationship (9 items), and (c) Classroom Dynamics (14 items). Teachers rated each item according to the importance in co-teaching and for the presence in their own co-teaching.

Data Collection Procedures

Data were collected through interviews, observations, and document reviews. The research team collected teacher interaction data during class observations. Pre and post interviews were conducted and audio taped in order to gather information directly from the participants. The audiotapes were transcribed. To maintain participant confidentiality and to comply with IRB approval, all interviews were coded with an interview number. In addition, teacher interaction checklists and perception data were coded to protect the identity of the participants. The multiple data sources were triangulated and used as supportive evidence for the validity of the research findings (Gall, Borg, & Gall, 1996).

Research Timeline

The study occurred in the third quarter of the spring semester over a total of ten weeks. Week one was used to introduce the study, conduct interviews, and complete the CO-ACT. The research team collected observational data during weeks two through ten. Post interviews occurred during week eleven. The research team used a rotating weekly schedule to collect data from each co-taught classroom and each non co-taught classroom. The schedule was developed to enable the research team to observe each class bi-weekly on alternating days of the week. During the final week, participants were asked to complete the CO-ACT as a post assessment to determine if their perceptions of their co-teaching implementation had changed over the course of the study.

Data Analysis

Following data collection, the data underwent in-depth qualitative and quantitative analysis. The researcher reviewed and transcribed the audiotapes from the interviews in order to

extract common themes. Patterns and themes within the qualitative data were sorted and coded to address the research questions (Glesne, 2006). The major themes that emerged from the data are discussed in the study's findings section. The quantitative data from TROS and CO-ACT were analyzed using descriptive statistics. Data from each instrument were triangulated to determine overall themes from the data.

Mixed method design offers benefits of both qualitative and quantitative methods research. Each method in isolation has specific limitations. Qualitative research perceives the researcher as the instrument in the study (Rossman & Rallis, 2003). The specific data collection procedures and the interrater reliability assisted in controlling for researcher error. The research assistant collected and coded 25% of the data. Based on Fleiss (1981) interrater reliability was established at 80% or greater in which 75% or greater is considered excellent agreement.

Limitations

The study was limited by intervening factors not related to co-teaching (a) generalizability, (b) participant selection, (c) observer effects, (d) construct effects, and (e) research design.

Caution should be taken when generalizing the findings of the study due to the fact that all participants were from the same school district in the Central Florida area and the study only included five co-teaching teams.

The Participants were selected on a voluntary basis. The researcher could not control for teacher demographics such as, teacher experience or co-teaching experience. Although participant selection was voluntary, participants were recruited through the recommendations of school administrators. The recommendations were made without specific selection criteria on the

part of the administrators. Building administrators identified the teams as successful co-teachers. Administrators' opinions on good co-teaching teams may be bias. Administrators identify successful teachers for various reasons (Fullan, 2003). Building administrators classify "good" teachers as individuals who handle classroom behaviors with minimal administrative support, pleasant personalities, good classroom atmosphere, and good student outcomes.

The observer effects limited the study due to researcher biases. The interrater reliability helped control for researcher subjectivity. The construct effects also caused a limitation in the study. Each teacher and co-teaching team had varying operational definitions of co-teaching.

Conclusion

Public schools are increasingly becoming fully inclusive as a result of the current federal legislation to provide all students with opportunities to learn in the least restrictive environment. Although other inclusive models are used within the continuum of service delivery, co-teaching has received increased attention and interest from administrators, researchers and practitioners because of the benefits the model offers. Co-teaching, as an inclusive model, provides learning opportunities for students with two highly qualified teachers, which subsequently meets the requirements of IDEA. The following chapters provide a review of the literature as it pertains to the study and the proposed research methodology.

CHAPTER TWO: LITERATURE REVIEW

The purpose of this chapter is to provide a review of the literature pertinent to the research study. Six main topics will be discussed in this chapter: (a) the legislation leading to the inclusion of students with disabilities; (b) the continuum of services provided to students with disabilities in special education; (c) the highly qualified teacher provision under No Child Left Behind, as it pertains to serving children in inclusive environments; (d) the role of collaboration and inclusion in secondary settings; (e) the aspects of co-teaching, and (f) the roles and interaction behaviors of secondary co-teachers.

Background

In 1975, the Education for all Handicapped Children Act (P.L. 94-142), now known as the Individuals with Disabilities Education Act (IDEA) (P.L. 101-476), legislation was passed to ensure that individuals with disabilities were not excluded from schools and received a free, appropriate public education (FAPE). As an outcome of these laws, federal funding was provided to states to educate students with disabilities with a stipulation that students be included in the least restrictive environment (LRE) to the greatest extent possible. In addition, individualized education programs (IEPs) and procedural safeguards were established for students with disabilities under IDEA. In an attempt to move from exclusion to inclusion of students with disabilities in the general education setting, IDEA essentially made education a right for all students.

Legislation Prior to 1980s

Prior to 1975, the education of students with disabilities was viewed as a privilege (Mastropieri & Scruggs, 2001; Sorrells, Reith, & Sindelar, 2004; Individuals with Disabilities

Education Improvement Act, 2004). In the decades that followed, the passage of P.L. 94-142 for children with disabilities and their families has provided more opportunities for access to a wider range of educational placements. The 1970s marked the widespread use of self-contained special education classrooms. After the passing of IDEA in 1975, students were no longer regulated only to classes with lower standards and in settings with students with disabilities. The Regular Education Initiative (Wills, 1986) of the 1980s began a movement to interpret the LRE as the general education classroom, often described as mainstreaming (Wang & Baker, 1985). Overall the 1980s marked an increase in access to the general education classroom towards the true intention of the LRE and led to the systemic change into the 1990s to the present (Hallahan & Kaufman, 2000; Jorgensen & Hoffmann, 2003; Turnbull, 2005).

Legislation 1990s to Present

Due to increased pressure from federal legislation the 1990 and 2000s, marked an even further increase in students with disabilities gaining access to general education settings. The push towards increased access in the LRE continued for students with disabilities with the 2001 reauthorization of the Elementary and Secondary Education Act, No Child Left Behind Act (NCLB). This act ensured equal access to the general education curriculum; focusing on accountability through testing, school choice, annual yearly progress (AYP), and the requirements to have highly qualified teachers in every classroom (McLeskey & Ross, 2004). The passage of the NCLB Act also called for the use of scientific research, known as evidence-based practices, to help obtain accountability requirements and develop instruction. In addition to using evidenced based practices, NCLB mandates that public schools close the achievement gap in education based on race, ethnicity, language, and disability. Congress included all students to

ensure that students with disabilities would benefit from improved instruction and additional attention on academic achievement (Yell, Rogers, & Lodge Rodgers, 1998). Although legislation continues to change and evolve, one fundamental piece of the original law passed in 1975, a continuum of services, has stood the test of time. This continuum focuses first and foremost on students with disabilities being in the general education setting with the right to place students in the most suitable environment to meet their academic needs (Stainback & Stainback, 1996).

Continuum of Services

Reynolds (1977) states, the continuum of services consists of seven levels: (a) general education classroom, (b) general education classroom with consultative services, (c) general education classroom with instruction and services, (d) general education classroom with resource room services, (e) full-time special education classroom, (f) special school, and (g) special facilities, nonpublic school (day or residential). Mastropieri and Scruggs (2000) further attests the “continuum of services ranges from full-time placement in the general education classroom to full-time placement in a nonpublic school facility, on a day or residential basis, based on student need”(p. 18).

Legislation clearly supports the specific needs of the individual student as the primary determinant for academic placement. Currently, about 96% of students with disabilities are educated in public schools. Students with mild to moderate disabilities receive at least 80% of their instruction in general education classrooms (Annual Report to Congress, 2006; The American Youth Policy Forum, 2002). Within the continuum of service delivery models, special educators at all levels take on a variety of roles. Special education teachers may provide services to students with disabilities through (a) direct or indirect consultation with the general educator,

(b) pullout or resource class instruction, (c) self-contained class instruction, or (d) co-teach with a general educator (Zigmond, 2003; Mastropieri & Scruggs, 2000). Although there is a range of service delivery models for special education teachers to employ, legislation has focused attention on teachers being highly qualified in a specific content area. Consequently, secondary special education teachers must adapt to service delivery models that meet the highly qualified requirements.

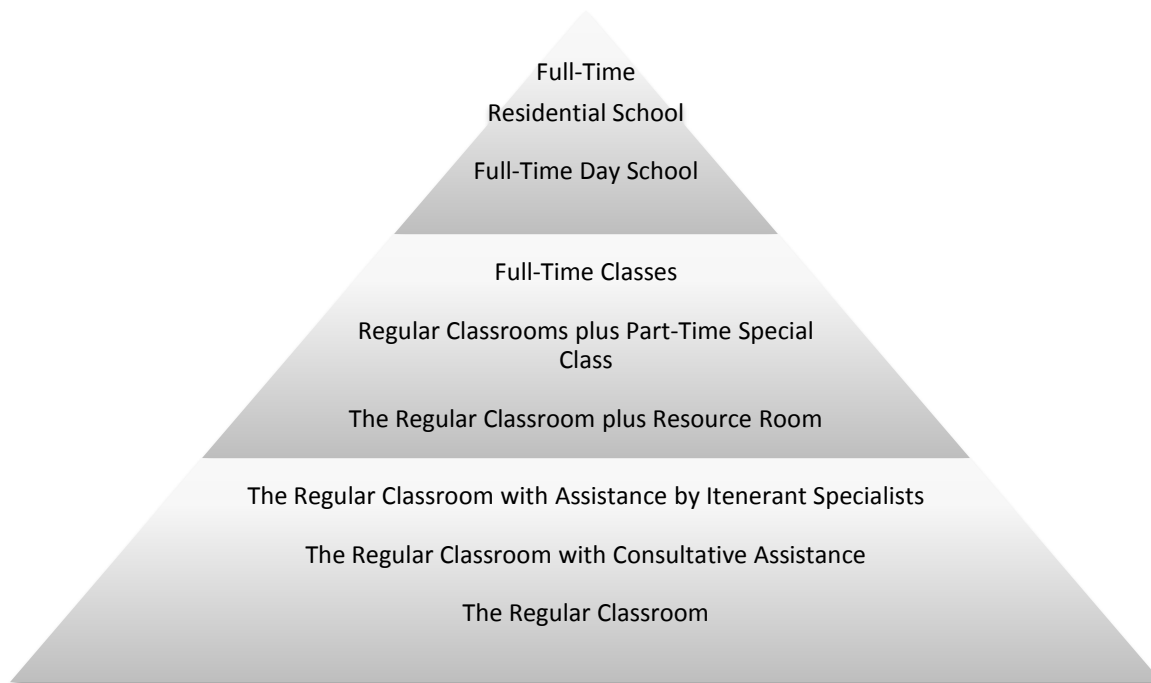


Figure 1. Sample of Continuum of Services, from Least Restrictive to Most Restrictive – Adapted from Mastropieri and Scruggs (2000) and Reynolds (1977)

Highly Qualified Teachers under NCLB

No Child Left Behind's mandates increased attention in the areas of student achievement, inclusion and highly qualified teacher (HQT) competency. An HQT, according to NCLB (2001),

is an educator with a bachelor's degree, a full state certification, who has demonstrated competency in the academic subject, which he or she is instructor of record. Special education teachers providing core academic instruction must be certified in both special education and the content area that he or she instructs to be considered highly qualified at the secondary level. Although NCLB requires a highly qualified teaching force, which would theoretically improve student achievement through the introduction of improved instruction, teachers are not entering the field with the necessary skills. McLeskey and Billingsley (2008) reported that 82-99% of special education teachers at the secondary level did not meet the highly qualified standards. Hence, present in-service special education teacher preparation programs for secondary teachers need to adjust to these new standards to ensure that students with disabilities at the secondary level receive the general content knowledge accompanied with the necessary accommodations.

In efforts to provide students with disabilities HQTs, many public schools have transitioned to inclusive classrooms. Inclusive classrooms are ones that include students with and without disabilities in the general education setting mirroring the intentions of LRE (Turner, 2003). At the secondary level, the revisions for highly qualified through NCLB and IDEA have pushed the field to return to the original intentions of the law, providing instruction for students in the LRE. One unique outcome of revisiting the LRE at the secondary level has been a push for general and special education teachers to work together in this inclusive environment (McLeskey & Waldron, 2002).

The national student achievement data echoes the need for highly qualified teachers to provide improved instruction at the secondary level. The Special Education Longitudinal Study (SEELS) wave 3 study outcomes show poor achievement scores of middle school students with learning disabilities in passage comprehension. Only 2.5% of the 561 students with learning

disabilities assessed had a score of 75% or higher in passage comprehension and approximately 70% of the students with learning disabilities scored within the 0-25% range on the assessment. Dropout rates of students with high incidence disabilities are alarmingly high. The Office of Special Education's Annual Report (2006) outlined the 2001 through 2002 school year completion rates for students with disabilities. Approximately, 59% of students with Other Health Impairments and 57% of students with Specific Learning disabilities graduated with standard diplomas. Although the national graduation rates have increased over the last 15 years, students with disabilities continue to lag behind their general education peers (Kortering & Christenson, 2009). These outcomes have provided the impetus for students with disabilities to not only have access but also success in the general education setting.

General and Special Education Teachers

In accordance with IDEA and NCLB, students with disabilities are placed in general education classrooms to benefit from instruction delivered by content experts. Partnerships between educators are necessary when delivering instructional services to students with disabilities in general education settings (Friend & Cook, 2007; Murawski, 2009; Weiss & Lloyd, 2003). Miller and colleagues (2000) assert, "general educators must increase their willingness to open traditionally private classrooms to special educators" (p. 35). Murawski (2009) states that, "it is imperative that educators are (a) open to the notion of fully integrating students with disabilities into the general education classes, (b) willing to collaborate with their colleagues to do so, and (c) aware of the characteristics, components, and strategies necessary to make inclusion successful for all" (p. 4). This level of collaboration is commonly used in elementary schools and is challenging to establish at the secondary level. Mastropieri and

colleagues (2006) state “as students move from elementary to secondary schools, the demands on their ability to learn academic subject matter increase dramatically” (p. 130).

Researchers identified education at the secondary level as a critical component in closing the gap between students with and without disabilities (Mastropieri et al, 2006; Trimble, 1998). Secondary content is dense and utilizes challenging terminology. Students rely on pre-existing basic skills in reading, writing, and mathematics to succeed (Mastropieri, Scruggs, & Graetz, 2005; Ness, 2007; Shumaker & Deshler, 1995). A large percentage of secondary students experience difficulty while reading passages found in content area textbooks (Carnine & Carnine, 2004). Students with disabilities have increased challenges and require additional support to succeed in general education content area classes (Zigmond, 2006) by teachers not prepared to deliver that support. Schumaker and colleagues (2002) examined a variety of components related to curriculum, instruction, and assessment in the general education setting for students with disabilities in a study of nine secondary schools. The researchers reported the textbooks used in secondary core content classes were 5-7 years above the reading levels of students with disabilities enrolled in the classes. The challenges for students with disabilities uncovered in this study are common in core academic classes when support is unavailable.

Students with disabilities require specific supports in secondary inclusive settings. Deshler and colleagues (2001) suggested several strategies to improve the instructional practice of teachers for students with disabilities including (a) involving students in the learning process, (b) showing them how to process information, (c) using specifically structured materials to teach difficult information and (d) providing students with helpful feedback and further instruction as needed; yet general education teachers rarely receive this instruction. Despite research that can

support students with disabilities in inclusive settings, without teachers prepared for this new aspect of diversity in today's classroom learning gains may still not occur.

Inclusion

Inclusive classroom practices could offer students with disabilities the opportunity to access the general curricula taught by content area experts in addition to specialized supports and services as required by law. The National Center on Education Restructuring and Inclusion (NCERI) states that inclusion is:

Providing to all students, including those with significant disabilities, equitable opportunities to receive effective educational services, with the needed supplementary aids and support services, in age appropriate classrooms in their neighborhood schools, in order to prepare students for productive lives as full members of society (1995, p. 99)

In an inclusive model, the majority of students with disabilities are included in the general education classroom setting.

The Council for Exceptional Children defines inclusion as a term that describes the ideology that every child, to the greatest extent possible, should be educated in the general education setting amongst their age appropriate peers. "Inclusive education seeks to meet individual needs as well as to provide universal education for all students" (Mauraski, 2009, p. 11). Universal Design for Learning (UDL) is increasingly being used in schools because of its inclusive nature. UDL calls for multiple means of representation, engagement, action and expression. Subsequently, schools that use UDL, particularly secondary schools, have increased opportunities for all students to engage in the general education curriculum (Dolan & Hall, 2001). High levels of engagement and expression at the secondary level are imperative for the

academic and social success of students with disabilities (Deshler, Schumaker, Lenz, Bulgren, Hock, Knight, & Ehren, 2001).

Despite the vast benefits for inclusive education that are documented in the literature, there are limited examples at the secondary level as opposed to elementary education (Villa, Thousand, Nevin, & Liston, 2005). Secondary schools are moving toward an inclusive model where collaboration between general and special educators is utilized as a key support system (Murawski, 2009) to address HQ. Inclusion at the secondary level is accompanied with challenges to implementation. Challenges such as scheduling and time constraints, inconsistency within the collaborative structure, and the accountability demands of teachers on high-stakes tests have contributed to the barriers plaguing secondary inclusion (Dieker, 2001; Dieker & Murawski, 2003; Walther-Thomas, 1997; Zigmond & Baker, 1996).

Scheduling and time constraints are challenges to successful implementation of inclusive classroom practices at the secondary level. Scheduling students is a daunting task that calls on a collaborative effort from administrators, guidance counselors, teachers, and other specialized staff. The goal of inclusion is to schedule students with disabilities into general education classes using “natural proportions.” Careful planning and considerations of students’ needs should be made when scheduling students with disabilities (Dieker, 2007; Walther-Thomas, 1997). Limited time is a prevalent issue in inclusive secondary settings. Special education teachers are confronted with balancing time to manage large caseloads, plan with general education teachers, and assist with scheduling students (Dieker & Murawski, 2003; Zigmond & Baker, 1996). With school wide, proactive planning to meet the needs of a diverse set of learners who may have a broad spectrum of needs, inclusion at the secondary level is more successful (Dieker & Murawski, 2003; Zigmond & Baker, 1996). In such schools, inclusion is a never-

ending, constantly changing, dynamic process that ensures that students with learning, behavioral, or sensory disabilities are successful alongside their non-disabled peers (Dieker, Berg, & Jeanpierre, 2008; Villa, Thousand, Nevin & Liston, 2005).

Inconsistency is also a barrier to successful implementation of inclusive classroom practices at the secondary level. Dieker (2001) addresses the issue of inconsistency of inclusive practices that are present from school to school in *What are the characteristics of 'effective' middle and high school co-taught teams for students with disabilities?* Dieker suggests five steps to combat the inconsistency issues of inclusive practices in secondary settings: (a) start small with committed staff across all grade levels; (b) include children and their families in the process; (c) prepare a comprehensive plan for change for the school and district; (d) prepare students, families, and staff; and (e) continuously evaluate the plan.

Inclusive practices work best when the entire school community works together. Students, school staff, parents, administrative support, and teachers all have an impact on the success of inclusion. Teachers, more than any other school community member, have an integral role in integrating inclusive practices into the school and their classrooms. Although, administrative support is also a vital component to successful inclusion, teachers' attitudes and beliefs about inclusion have received increased attention from researchers and advocates for inclusion (Buckley, 2005; Dieker, 2001; Karge, McClure, & Patton, 1995; Magiera & Zigmond, 2005; Mastropieri et al., 2005; Scruggs, Mastropieri, & McDuffie, 2007; Trent, Driver, Wood, Parrott, Martin, & Smith, 2003; Villa, Thousand, Nevin, & Liston, 2005; Walther-Thomas, 1997; Weiss & Brigham, 2000; Wiess & Lloyd, 2002).

Teacher Attitudes about Inclusion

Prior research has concluded that teachers' attitudes and beliefs impact the effectiveness of inclusion. For instance, Scruggs and Mastropieri (1996) reviewed 28 surveys of teachers' attitudes towards the inclusion of students with disabilities in their classrooms. Quantitative synthesis procedures were used to combine the findings across similar survey questions from different participants. The authors reported minimal changes in teacher attitudes toward inclusion from surveys conducted between 1958 and 1995 (Scruggs & Mastropieri, 1996). Although teachers were not in favor of full inclusion of students with severe disabilities in the general education classroom, the majority was supportive of some degree of inclusion. Most teachers were supportive of providing accommodations to students with disabilities but believed that the proper resources were not available to provide all of the necessary accommodations.

Meeting the needs of students with mild to moderate disabilities at the secondary level is not limited to just addressing academic needs. Students often require interpersonal/ relationship skills to ensure success within the general education setting. Secondary education is complex and demands higher levels of understanding, reasoning and organization. In addition to the increased academic levels, students' with disabilities are also required to take high-stakes tests. General education teachers have increased pressure to be consistent with district pacing guides that are often at a fast pace (Magiera et al., 2005). In order to meet students' needs in a fast-paced classroom, collaboration can be an asset as a tool for support between general and special education (Friend & Cook, 2007; Hughes & Murawski, 2001; Murawski, 2009; Weiss & Lloyd, 2003).

Collaboration

Hughes and Murawski (2001) defined collaboration as “a style for interaction, which includes dialogue, planning, shared and creative decision making, and follow-up between at least two co-equal professionals with diverse expertise, in which the goal of interaction is to provide appropriate services for students, including high achieving and gifted students” (p. 196).

Partnerships between the general and special educators are necessary when delivering instructional services to students with disabilities in general education settings (Friend & Cook, 2007; Murawski, 2009; Weiss & Lloyd, 2003). Friend (2000) states:

Virtually every treatise on inclusion practices, whether conceptual, anecdotal, qualitative, or quantitative, concludes that inclusion’s success in large part relies on collaboration among staff members and with parents and others, and that failures can typically be traced to shortcomings in the collaborative dimension of the services to students (p. 130).

Inclusion requires collaboration. Collaboration is a foundation for co-teaching. Hindin, Morocco, Mott, and Aguilar (2007) defined collaboration as planning, enacting, and reflecting upon one’s teaching. Teacher collaboration provides opportunities for teachers to learn from one another in a safe context. Collaboration facilitates the exchange of pedagogical content knowledge and instructional strategies between teachers. All students benefit when teachers work together. Lesson planning between the general and special educators is especially beneficial because of the combination of expertise (Cawely, 1994). If teachers can find time to plan and work directly together in the classroom at the secondary levels, the potential exists for greater student learning gains.

Co-teaching

General and special education teachers working together in a direct fashion is typically referred to as co-teaching (Bauwens, Hourcade & Friend, 1989). According to Friend and Cook (2009), co-teaching is one of the most used instructional models that incorporates the collaboration of general education and special education teachers. Although limited research focused on co-teaching at the secondary level exists, schools are increasingly turning to co-teaching models due to the transition to inclusive classrooms (Dieker, 2001) and to meet the highly qualified requirements (Brownell, Hirsch, & Soe, 2004; Darling-Hammond & Berry, 2006). Administrators and school officials often consider the use of co-teaching as a means of teacher collaboration and support. The co-teaching model incorporates the collaboration of the general education and special education teachers. The collaboration embedded in the co-teaching model has the potential to remedy the achievement gap by providing two highly qualified teachers to provide instruction in an inclusive setting (Trent et al., 2003)

Philosophy

Co-taught instruction is viewed as a plausible solution for schools to equip classrooms with the appropriate pedagogical knowledge, highly qualified instruction, from two experts. This model ensures students with instruction from a highly qualified content expert and a highly qualified special educator with one delivering the content and the other adapting or modifying the instruction and academic climate (Brownell et al., 2004). Co-teaching models used in secondary content classes help provide all students with the appropriate instruction and learning strategies necessary for academic success with two experts collaborating and delivering instruction (Peters & Johnson, 2006; Dieker, Berg, & Jeanpierre, 2008).

The definition of co-teaching according to Bauwens, Hourcade, and Friend (1989) is “an educational approach in which two teachers work in a coactive and coordinated fashion to jointly teach academically and behaviorally heterogeneous groups of students in an integrated setting” (p. 18). Cook and Friend (1995) coined the most recent and commonly used definition of co-teaching in 1995 as two professionals delivering instruction together to an inclusive body of students in a single physical space.

Co-teaching...encompasses collaboratively assessing student strengths and weaknesses, determining appropriate educational goals and outcome indicators, designing intervention strategies and planning for their implementation, evaluating student progress toward the established goals, and evaluating the effectiveness of the co-teaching process (Cook & Friend, p. 2).

The emerging picture of co-teaching is far more complex than the implied idyllic classroom practice, although logic suggests that co-teaching should result in a sophisticated teaching and learning environment in which diverse student needs can be met (Friend, 2008).

Practical Implications of Co-Teaching

The intention of co-teaching is to have two experts, a general and special educator, provide specialized instruction that will lead to both quantitative and qualitative differences in instructional delivery and student outcomes as compared to the results in a class taught by a single teacher (Friend, 2008; Friend, Reising, & Cook, 1993). The model blends the expertise of the two professionals (Friend, 2008). Although the model is ideal for inclusive schools to meet the needs of all students, there are inherent challenges within the model. Time for teachers is an issue in general (Buckley, 2005; Dieker, 2001; Magiera et al., 2005; Murawski, 2009; Trent et al.

2003, Weiss & Lloyd, 2002) but trying to get teachers ready for collaborative structures is an added challenge in inclusive secondary settings (Jitendra, Edwards, Choutka, & Treadway, 2002; Murawski, 2009; Murawski & Swanson, 2001; Scruggs, Mastropieri, & McDuffie, 2007; Trent et al., 2003; Weiss & Brigham, 2000). It is necessary for co-teaching teams to have a consistent structure to plan and differentiate the instruction for the diverse needs of students with and without disabilities. Co-planning ensures that lessons include individualized instruction, appropriate strategies, and other pedagogical techniques to guarantee that the general education curriculum is accessible to all students (Dieker & Murawski, 2003; Murawski, 2009). Bauwens, Cook, Friend, Hourcade and Walther-Thomas as well as experts in the field of co-teaching (Buckley, 2005; Dieker, 2001; Karge, McClure, & Patton, 1995; Magiera & Zigmond, 2005; Mastropieri et al., 2005; Murawski & Swanson, 2001; Scruggs, Mastropieri & McDuffie, 2007; Trent et al., 2003; Villa, Thousand, Nevin, & Liston, 2005; Walther-Thomas, 1997; Weiss & Brigham, 2000; Wiess & Lloyd, 2002) stress the importance of role parity of educators in co-taught classrooms to ensure success of the instructional model. Consistent planning and communication of co-teachers lead to clearly identified roles and expectations within the co-teaching environment. (Dieker & Murawski, 2003).

There are several variations of co-teaching, most include a general and special educator, co-planning, co-instructing, co-assessing, a heterogeneous group in a single shared physical space (Friend & Cook, 2007; Murawski, 2003; Murawski & Dieker, 2004; Murawski & Swanson, 2001) There are six types of co-teaching (a) one teach, one observe, (b) one teach, one lead; (c) station teaching; (d) parallel teaching; (e) alternative teaching; and (f) team teaching. Each model offers benefits to the learning environment (Dieker, 2007; Friend & Cook, 2004).

Friend and Cook (2004) suggest that co-teaching approaches should be selected based on four factors: (a) student characteristics and needs, (b) teacher characteristics and needs, (c) curriculum, including content and instructional strategies, and (d) pragmatic considerations. Six different models of co-teaching exist to meet the academic needs of students and teaching styles. The six models of co-teaching are: (1) One Teach, One Observe; (2) One Teach, One Drift; (3) Parallel Teaching; (4) Station Teaching; (5) Alternative Teaching; and (6) Team Teaching. Each of the models is listed in hierarchical level as it pertains to planning and experience needed to successfully implement.

Co-teaching Models

First, the One Teach, One Observe model requires minimal planning for successful collaboration. One teacher leads the overall class activities (instruction and discipline). One teacher systematically observes the class for predetermined important information on the class and specific students. Teachers analyze the data collected after the class. This method requires the least amount of planning for teachers although if used for prolonged periods, the teacher observing may be viewed as an aid or paraprofessional (Friend & Cook, 2004).

Second, the One Teach, One Drift model (also referred to as one lead and one support) is the most frequently used co-teaching approach (Cook & Friend, 1995; DeBoer & Fister, 1998; Weis & Lloyd, 2002; Welch, 2000). Similar to the previous model, limited planning time is necessary and one teacher, usually the general educator, primarily takes the overall instructional and disciplinary role in the class. In contrast to the previous model, the second teacher circulates throughout the classroom providing unobtrusive assistance (redirecting and clarifying instruction) to individual students and small groups (Cook & Friend, 1995, Cook & Friend

2004). Teachers in the assisting role are cautioned by researcher not to take on the role of the paraprofessional. To eliminate this role ambiguity, support teachers are encouraged to use highly specialized (Heward, 2003) well-defined (Dieker, 2002) individualized supports to students as needed.

The third co-teaching model, Parallel Teaching, requires joint planning time by both teachers, reduces the student to teacher ratio, and encourages increased student participation and attention (Friend & Cook, 2006). In parallel teaching, the class is divided into two heterogeneous groups and each teacher simultaneously delivers the same instruction to one group (Friend, Reising, & Cook, 1993; Welch, 2000). This approach engenders elevated noise levels whereby special physical arrangements of furniture should be considered (Friend & Cook, 2006). However in this model joint planning time is less as each teacher plans for his or her parallel station.

Fourth, Station Teaching requires joint planning time by both teachers. Station Teaching enables the teachers to divide the content and reduces student to teacher ratio through the use of small group instruction. The content is delivered in stations or centers within the classroom. The number of stations may vary depending on the structure of the lesson. Each teacher leads a station and a third station can be used for independent student work (Cook & Friend, 1995; Welch, 2000). Independent student workstations should include explicit instructions accompanied by teacher monitoring to ensure that learning objectives are met (Cook & Friend, 2004).

Fifth, Alternative Teaching allows one teacher to lead the instruction while the second teacher re-teaches, pre-teaches, or provides enrichment to a smaller group (Dieker, 2002). Welch (2000) refers to the alternative teaching approach as *Enrichment Groups or Review/Remediation*

Groups. The small group instruction in alternative teaching can be used with all students, which reduces the stigma commonly associated with the same students requiring remedial assistance (Cook & Friend, 2004).

The sixth, and final co-teaching model is Team Teaching. Team Teaching is commonly referred to as “tag team teaching” and is considered the most complex but satisfying by teachers (Friend & Cook, 2004). Teachers have equal instructional responsibilities during lessons; therefore adequate planning time, similar teaching philosophies, and equal levels of comfort with the content are essential for the success of team teaching (Dieker, 2002; Weiss & Lloyd, 2002).

Research on Co-teaching to Date

The following section provides a summary of current research studies in co-teaching. Many co-teaching studies have primarily gathered data about teacher, administrator, parent, and/or student perceptions. Some studies indicate positive outcomes in terms of student academic achievement and behavior, co-teaching benefits, characteristics for successful implementation of co-teaching, co-teaching roles and implications for future research. Table 1 illustrates the key finding from several co-teaching studies (Buckley, 2005; Dieker, 2001; Karge, McClure, & Patton, 1995; Magiera & Zigmond, 2005; Mastropieri et al., 2005; Murawski & Swanson, 2001; Scruggs, Mastropieri, & McDuffie, 2007; Trent et al., 2003; Villa, Thousand, Nevin, & Liston, 2005; Walther-Thomas, 1997; Weiss & Brigham, 2000; Wiess & Lloyd, 2002). A summary of key studies also is provided in the text in chronological order showing the progression of co-teaching research over time.

In 1995, Karge, McClure, and Patton surveyed 124 resource teachers from 69 middle and junior high schools with a response rate of 80% (n=98) about their preference for delivering

services to students with disabilities. Seventy-one percent (n=64) of the teachers surveyed preferred a combination of consultation, collaboration and pullout services, 22% (n=20) preferred consultation/collaboration model, and 4% (n=4) preferred pullout as a service delivery model. The teachers used a variety of instructional methods. Approximately 70% used direct instruction, 63% made curriculum modifications, 60% pulled students out of the general education classroom for individualized instruction, and 53% co-taught with a general educator. The majority of the teachers viewed a collaborative teaching model as positive and utilized planning time during the school day. On average, each teacher had 50 minutes per day to plan, collaborate, consult, attend IEP meetings and meet with parents. The teachers' personalities and attitudes were viewed as key factors to successful collaboration.

Walther-Thomas (1997) conducted a 3-year study of elementary and middle school inclusion and co-teaching practices. Study participants included 119 teachers (general and special educators) and 24 administrators. Participants were selected by recommendations by the district-level administrators. All participants were actively using inclusive service delivery models and co-teaching as a daily practice. The majority of the teachers in the study had approximately a year and a half of co-teaching experience at the start of the study. The study had 3 data sources, classroom observations, semi-structured interviews, and document reviews. The study revealed benefits and problems of inclusive service delivery models. Walther-Thomas identified four major benefits for students with disabilities in inclusive co-teaching environments: (a) improved self-confidence and self-esteem, (b) improved academic performance, (c) improved social skills performance, and (d) improved peer relationships. Similarly, students without disabilities experienced benefits from co-taught classrooms: (a) improved academic performance, (b) increased teacher time and attention, (c) increased study

skills and instructional strategies, (d) increased attention to social skills development, and (e) improved classroom community. Co-teachers in the study reported increased professional satisfaction, professional growth and personal support as a result of utilizing co-teaching as an inclusive service delivery model. The major problem that emerged from the study focused on administrative issues and the lack of professional development as it relates to development of co-teaching skills.

Additionally, Dieker (2001) conducted a 16-week study of secondary co-teachers. Nine co-teaching teams were observed and interviewed throughout the study. Dieker interviewed 6 students from each co-teaching team to determine what they perceived made the teams effective. Field notes were also taken throughout the study. Dieker identified the following key characteristics to co-teaching: (a) common planning time, (b) positive classroom atmosphere, (c) planning and goal setting for behavioral and academic needs, (d) role clarity for teachers, (e) a continuum of services, and (f) an evaluation plan.

The following year, Weiss and Lloyd (2002) examined co-teaching roles in secondary classes. The researchers conducted interviews, completed 54 observations of teachers in special education and co-taught classes, and conducted document reviews of teacher reflection journals. The co-teaching roles observed covered a wide range of co-teaching behaviors. The teams were observed providing support (one teach, one support), teaching the same content to two different groups (parallel teaching), teaching different parts of the content to smaller groups (alternative teaching), and team teaching (Cook & Friend, 1996; Weiss & Lloyd, 2002). Special educators were the sole instructor for the special education classes. The instruction delivered by the special educator was introduced at a modified lower level and pace. In contrast, the instruction in the co-taught classes maintained a fast pace and modifications varied in each class. The teachers

indicated that planning time and scheduling decisions heavily impacted their roles and delivery of instruction in each setting (Weiss & Lloyd, 2002).

Similar to Weiss and Lloyd (2002), Morocco and Aguilar (2002) researched teacher roles and identified various roles assumed by both general and special educators during a school-wide investigation of the co-teaching model in an urban middle school. Consistent with other studies discussed, Morocco and Aguilar (2002) found that the general educator conducted the majority of the instruction while the special educator supported the instruction (i.e. clarifying, giving praise, providing individualized instruction, and managing behaviors). The co-teachers in the study incorporated a full range of instructional roles, demonstrated equal status, and a commitment to the education of all students (Morocco & Aguilar, 2002).

In 2003, Trent, Driver, Wood, Parrott, Martin, and Smith conducted a two-month co-teaching study to examine the benefits for teachers and students, to determine the development of co-teaching, and identify external factors related to the implementation. The researchers interviewed an elementary teacher for students with learning disabilities, an elementary general educator and one building principal. In addition to the nine 90-minute open-ended semi-structured interviews, the researchers reviewed archival material (i.e. lesson plans, student work, strategy charts displayed in the classrooms, parent letters, and forms and memos related to the implementation of co-teaching from the district's central office), and conducted five 90-minute observations of co-teaching. The study findings revealed increased student achievement. Student behavior and overall academic performance increased. Fifty-eight percent of the students (with and without disabilities) in the co-taught classes over a two-year period attained honor status as opposed to the 30% to 40% of students on the honor roll in previous years. The researchers concluded that co-teaching is potentially an efficacious approach for serving students with

disabilities in inclusive settings that facilitates increased communication amongst general and special educators. Orientation, planning, and evaluation were identified as three stages to the successful implementation of co-teaching.

In 2005, Magiera and Zigmond examined the instructional experiences of students with disabilities in four middle schools in Western New York. The researchers collected systematic time sample data during the 84 observations of 11 co-taught classes. Each class ranged from 18 to 27 students. The study focused primarily on the 18 students with disabilities (15 Learning Disabilities, 3 Other Health Impaired) who were included in the 11 co-taught classes observed. One significant finding of the study revealed general education teachers spent less time with students with disabilities when the special educator was present. The study also revealed, students with disabilities received more individualized instruction when the special educator was present.

Magiera, Smith, Zigmond, and Gebauer (2005) further explored co-teaching pairs to enhance the limited research base on co-teaching and the roles demonstrated by co-teaching pairs at the secondary level. The researchers conducted 49 observations of 10 pairs of secondary mathematics co-teachers for 40-50 minute increments. The observers documented the roles of the special and general education teachers every 5 minutes for the entire class period. Although Cook and Friend (1996) describe one teach, one support as most commonly used and appropriate model for beginning co-teachers, the co-teaching teams observed had been teaching for 3 to 5 years together and rarely deviated from *one* teach, one support model.

In 33 of the 49 observations made by Magiera and colleagues (2005), observers coded both teachers “monitoring” student work. The teachers used class time to monitor independent student work with minimal feedback from the co-teaching team. In 33 observations, the

mathematics teacher lead the instruction as the special educator took on the support role of drifting around the class to each student. In 24 of the 49 observations, the team utilized the *one teach, one observe* model described by Friend and Cook (2007). Less than 20% (9 of the 49) of the observations were coded as *team teaching*. The special educator was observed leading instruction in three observations for less than 20 minutes. The co-teachers' seldom use of small group instruction was noted, it was observed twice across the entire study.

Magiera and colleagues (2005) noted that the co-teaching practices were constrained due to the consistent use of whole class instruction. One special educator interviewed, reported that her classroom roles were limited as a result of the general educators dependence on whole class instruction. Most of the 10 secondary classrooms utilized the same traditional format, despite the presence of an additional certified teacher. As a result, special educators had limited opportunities to assist with lessons and offer individualized instruction to students with disabilities.

Mastropieri, Scruggs, Graetz, Norland, Gardizi, and McDuffie (2005) conducted a long-term study on co-teaching in science and social studies classes. The research team collected data through classroom observations, videotapes of classes, field notes, interviews with students and teachers, and document reviews from participating classes. Although barriers to successful implementation existed, the researchers reported teacher collaboration in the form of co-teaching was highly effective and promoted success for students with disabilities in some cases. Special education teachers in the study were observed in the role of an instructional assistant when they lacked the content knowledge of the class, particularly in the secondary mathematics classes. Academic content knowledge, high-stakes tests, and teacher compatibility were identified as critical mediating variables to co-teaching.

In a study of secondary general and special educators, Villa and colleagues (2005) interviewed 20 co-teachers. The interviews were based on the interviewees' successful inclusive practices. Six themes emerged from the teacher interviews: "(a) administrative support, (b) ongoing professional development (c) collaboration, (d) communication, (e) instructional responsiveness, and (f) expanded authentic assessment approaches" (p. 44). The teachers in the study reported authentic assessment, and differentiated and peer-mediated instruction as important instructional practices.

Buckley (2005) conducted a research study of six middle school co-teaching teams. The study explored teachers' role perceptions, how IEP information was shared, and how IEP information was used to provide accommodations for students with disabilities. Observations of the co-teaching classrooms, teacher interviews and document reviews of student IEPs were included in the data collection procedures. One of the study findings suggest sharing IEPs with general educators did not yield desired results for necessary curriculum modifications and accommodations. Another finding from Buckley's study indicated that successful collaborative teaching necessitates positive teacher relationships, common teaching philosophies, shared responsibilities, administrative support and effective conflict resolution skills. The general and special educators in the study had conflicting views of each other's roles. General educators perceived special educators as easy graders, subsequently causing more harm to students by not holding them accountable. General educators, in the eyes of their special education counterparts, were viewed as the instructional and philosophical classroom leaders. Special and general educators shared role parity confusion. Special educators did not feel that their role as a lead teacher was welcomed in the general education setting by the general educator.

Harbort and colleagues (2007) conducted a study that examined the roles of secondary teachers in co-taught classes. The three-week study utilized momentary time sampling observational data to identify the interaction behaviors exhibited by each teacher over a 90-minute class. The results were consistent with Magiera and colleagues (2005). The general educators maintained the lead role for delivery of instruction (30% of the observations intervals) while the special educators supported the instruction (less than 1% of the observations intervals). In contrast, the special educators were observed interacting with students with disabilities during more intervals than the general educators (20% and 9% respectively). Harbort and colleagues concluded that the teachers' expertise, especially the special educators, were not used to their greatest potential in the co-teaching classes.

Researchers have also utilized current studies to conduct meta-analyses of the co-teaching research (Murawski & Swanson, 2001; Scruggs, Mastropieri, & McDuffie, 2007; Weiss & Brigham, 2000). In 2000, Weiss and Brigham conducted a meta-analysis of 23 qualitative and quantitative co-teaching studies including both elementary and secondary settings. Weiss and Brigham identified teacher personality, role parity, adequate planning time, mutual respect, common teaching philosophies, voluntary participation, consistent classrooms procedures, and administrative support as key findings to developing and maintaining an effective co-teaching relationship. Throughout the review of studies, the researchers reported that special educators typically assumed the role of an instructional assistant who modified instruction, monitored student work, and managed behaviors. The general educators commonly assumed the lead for content instruction. The researchers concluded that the efficacy research on co-teaching was insufficient.

In another meta-analysis, Murawski and Swanson (2001) sought to determine the efficacy of co-teaching as an instructional strategy. Of the 89 articles selected for the meta-analysis, six provided experimental data. The results from the six articles yielded an effect size of .40. Dependent measures included student grades and achievement scores, social outcomes, attitudes, referrals and absences. The researchers concluded that additional research should be conducted to establish co-teaching as an effective service delivery model.

Scruggs, Mastropieri, and McDuffie (2007), summarized 32 qualitative studies of co-teaching and found that co-teaching was viewed as a beneficial teaching model for all students. In addition, general and special educators reported positive perceptions of co-teaching, yet noted the need for a wide variety of supports in order for the service to be effective. The researchers also concluded that special educators in co-taught teams are primarily participating and viewed at the level of a teaching assistant or paraprofessional despite the fact that each teacher offers different and valuable qualities to the partnership. The one lead, one support co-teaching model was reported as the most widely used approach. As a result, individualized instruction for students with disabilities is limited.

The current research studies on co-teaching have uncovered common themes that contribute to the successes and challenges of the collaborative teaching model. The perceptions of teachers and students commonly have been reported as positive. Researchers have explored and have indicated the need to continue to investigate teachers' roles, the effects on student achievement, overall student benefits, and the efficacy of co-teaching.

Table 1. Co-teaching Research

Researcher	Qualitative	Quantitative	Meta-Analysis	Subjects	Setting	Key findings
Scruggs, Mastropieri, and McDuffie (2007)	X		X	32 qualitative studies (454 co-teachers, 42, administrators, 142 students, 26 parents, and 5 support staff)	Co-teaching in inclusive classrooms in primary through high school	Co-teaching is beneficial for all students. One-teach, one-assist dominates co-teaching instruction with the special educator as the instructional assistant. Planning time and teacher compatibility contribute to successful implementation of co-teaching.
Harbort, Gunter, Hull, Brown, Venn, Wiley, and Wiley (2007)		X		2 Co-teaching Teams (2 special educators and 2 general educators)	High School Science classrooms	Co-teaching teams utilized whole group instruction with the one-teach, one-assist model during the majority of instruction, therefore differentiated instruction was limited. Special educators interacted with students with disabilities more than the general educators. The expertise of the teachers were not used to their greatest potential.

Researcher	Qualitative	Quantitative	Meta-Analysis	Subjects	Setting	Key findings
Magiera, Smith, Zigmond, and Gebauer (2005)	X			10 Co-teaching teams (10 special educators and 10 general educators)	Secondary Mathematics classrooms	Co-teaching teams predominately utilized one-lead, one support as an instructional model. Special educators had limited opportunities to individualize instruction.
Mastropieri, Scruggs, Graetz, Norland, Gardizi, and McDuffie (2005)	X			4th and 7th grade Science classes; 8th grade Civics; 10th grade World History; High School Chemistry classes	Elementary, Middle, and High School inclusive classrooms.	Special educators are viewed as instructional assistants when they lack specific content knowledge.
Villa, Thousand, Nevin, and Liston (2005)	X			20 general and special education co-teachers	Secondary	Successful inclusion requires (a) administrative support, (b) ongoing professional development (c) collaboration, (d) communication, (e) instructional responsiveness, and (f) expanded authentic assessment approaches

Researcher	Qualitative	Quantitative	Meta-Analysis	Subjects	Setting	Key findings
Buckely (2005)	X			6 co-teaching teams	Middle School Social Studies	General educators need more than IEPs to adequately support students. Special educators viewed general educators as instructional and philosophical classrooms leaders. General educators viewed special educators as lenient, overprotective, easy graders that provide accommodations and modifications.
Magiera and Zigmond (2005)	X			5th-8th grade classrooms	Middle School	Students with disabilities receive more instructional interactions in co-taught classes than general education classrooms. General educators interacted less with students with disabilities in co-taught classes.
Trent, Driver, Wood, Parrott, Martin, and Smith (2003)	X			School principal, and special and general educators	Elementary School	Students benefit from co-taught environments. Students with disabilities are able to generalize skills and experience academic and behavioral improvements. IEP goals are easily met and assessed.

Researcher	Qualitative	Quantitative	Meta-Analysis	Subjects	Setting	Key findings
Morocco and Aguilar (2002)	X			11 teachers (3 special educators, 2 mathematics teachers, 2 geography teachers, 1 science teacher, and 2 language arts teachers)	Middle School	General educators lead the majority of instruction. The special educator provides support by clarifying information, giving praise, individualizing instruction, and managing behaviors. Both teachers utilized a full range of instruction roles.
Wiess and Lloyd (2002)	X			10 secondary teacher (5 middle school teachers and 5 high school teachers)	Middle and High School	Special educators are often limited to instructional assistant due to lack of time to modify instruction.
Dieker (2001)	X			9 co-teaching teams (9 general educators, 7 special educators) and 54 students (6 students from each co-teaching team were interviewed)	Middle and High School	Key characteristics to effective co-teaching include secured common planning time, positive classroom atmosphere, planning and goal setting for behavioral and academic needs, role clarity for both teachers, a continuum of services and an evaluation plan.

Researcher	Qualitative	Quantitative	Meta-Analysis	Subjects	Setting	Key findings
Murawski and Swanson (2001)		X	X	89 articles	Kindergarten through 6th grade and High School	Six of the 89 articles met the criteria for the analysis, which yielded an effect size of .40. Dependent measures included academic achievement, social outcomes, attitudes, absences, and referrals. Further research is needed to establish co-teaching efficacy.
Weiss and Brigham (2000)	X	X	X	23 qualitative and quantitative studies of co-teaching	Elementary and secondary	Special educators typically monitored student progress, modified instruction, and managed behavior. General educators typically lead instruction of content. Efficacy research on co-teaching is insufficient.
Walther-Thomas (1997)	X			119 general and special education teachers and 24 administrators	Elementary and Middle Schools	Four major benefits for students with disabilities in inclusive co-teaching environments: (a) improved self-confidence and self-esteem, (b) improved academic performance, (c) improved social skills performance, and (d) improved peer relationships.

Researcher	Qualitative	Quantitative	Meta-Analysis	Subjects	Setting	Key findings
Karge, McClure, and Patton (1995)		X		124 resource room teachers	Middle School	The teachers reported approximately 40% of their time was used to collaborate with others. The majority of teachers viewed co-teaching as positive. Teacher attitudes and personalities are key factors in successful teacher collaboration.

Outcomes

Co-teaching research suggests that specific considerations should be taken to ensure successful outcomes. Time for teachers is an issue in general (Buckley, 2005; Dieker, 2001; Magiera et al., 2005; Murawski, 2009; Trent et al., 2003, Weiss & Lloyd, 2002) but trying to get teachers ready for co-teaching structures is an added challenge in inclusive secondary settings (Jitendra, Edwards, Choutka, & Treadway, 2002; Murawski, 2009; Murawski & Swanson, 2001; Scruggs, Mastropieri, & McDuffie, 2007; Trent et al., 2003; Weiss & Brigham, 2000). It is necessary for co-teaching teams to have a consistent structure to plan and differentiate the instruction for the diverse needs of students with and without disabilities. Co-planning ensures that lessons include individualized instruction, appropriate strategies, and other pedagogical techniques to guarantee that the general education curriculum is accessible to all students (Dieker & Murawski, 2003; Harbort et al., 2007; Magiera et al., 2005; Murawski, 2009).

Generally, the special educator provides additional support to students, monitors the implementation of specific modifications and accommodations in students' IEPs, provides supplements to enhance the content knowledge, behavioral management support, and expertise in the learning needs common to individuals with disabilities. In contrast, the general educator is an expert in his/her content area, is aware of the scope and sequence of the curriculum, has an objective view on academic and social development, and is also prepared to manage large group instruction (Dieker & Murawski, 2003; Weiss & Brigham, 2000).

Role parity amongst co-teachers is essential to effective co-teaching practices. Students are less inclined to ask the special educator for assistance within a class if he or she is viewed as an assistant and not an equal teacher in the class. Magiera and colleagues (2005) suggested that

the goal in the co-taught secondary class is not to make the special educator a quasi specialist in the content area. In contrast, it is to increase the amount of small group and specialized instruction to meet the needs of students with disabilities and share the responsibility of delivering instruction. Talk time in co-taught classes should be equally divided between the general and special educator. Each teacher should share and collaborate on lesson planning, instruction, and assessment (Murawski & Dieker, 2004). General educators, who commonly take the instructional lead in co-taught classrooms, contribute 70%- 80% of the talk time, leaving the special educator with limited verbal interactions with students (Friend, 2009).

Friend (2008) asserts that general and special educators should provide specific attributes to the co-teaching partnership. The general educator should contribute in four primary areas according to Friend (2008): “(a) an in-depth knowledge of the curriculum and how it should be taught, (b) the ability to manage a large group of students through the various activities that occur in their classes (classroom management), (c) an understanding of typical learning and behavior patterns of students, and (d) a focus on the pacing of instruction so that the rigor expected can be accomplished” (p. 10). Similarly, the special educator should offer four pivotal areas of expertise: “(a) an in-depth knowledge and skills for the process of learning as exemplified by their ability to provide accommodations, modifications, strategies, remediation, and tools to facilitate student learning; (b) an understanding of each student’s individual needs including those related to learning, behavior, family, and other areas; (c) the ability to attend to required paperwork including individualized education programs (IEPs); and (d) a focus on mastery learning” (p. 10).

Interactions

Although there is a paucity of research literature on the efficacy of co-teaching, there is even less on the roles or interaction behaviors of co-teachers. The research findings suggest that teacher interactions during co-taught instruction are limited to the role variation within the one teach, one support co-teaching model. Although co-teaching provides two qualified teachers in an academic setting, teams frequently utilize whole group instruction, which limits the opportunities for both teachers to have increased levels of interaction with students (Magiera et al., 2005; Mastropieri et al., 2005; Scruggs, Mastropieri, & McDuffie, 2007). Figure 2 illustrates the levels of interaction that co-teachers have with students and the content knowledge. Specific teacher roles and interaction behaviors identified in the literature range from observations to direct instruction. Within the range of interaction behaviors, teachers assume various roles: elaborating and clarifying content, creating a positive learning environment, actively engaging students, evaluating student progress, and providing individualized instruction and modifying class assignments (Buckley, 2005; Dieker, 2001; Karge, McClure, & Patton, 1995; Magiera & Zigmond, 2005; Mastropieri et al., 2005; Murawski & Swanson, 2001; Scruggs, Mastropieri & McDuffie, 2007; Trent et al., 2003; Villa et al., 2005; Walther-Thomas, 1997; Weiss & Brigham, 2000; Wiess & Lloyd, 2002).

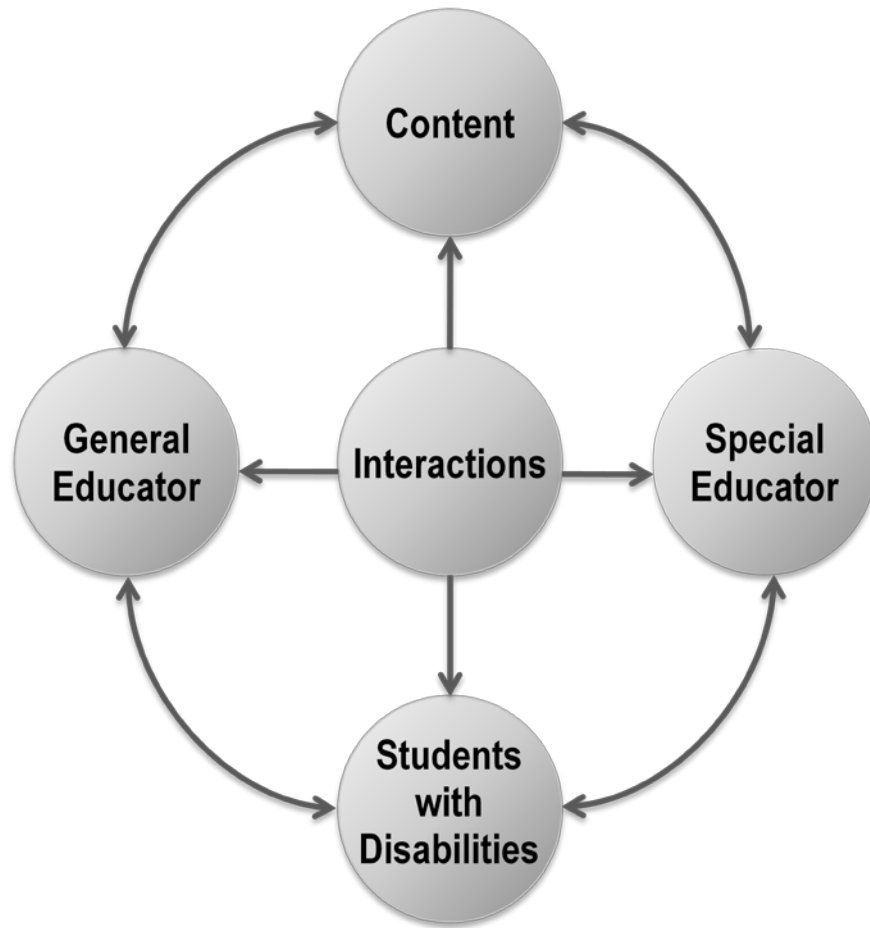


Figure 2. Levels of Interaction

General and special educators are increasingly being paired together to deliver instruction and interact with each other, the content, and students in inclusive settings (Dieker, 2001; Dieker & Murawski, 2003; Kim et al., 2006; Magiera & Zigmond, 2005; Mastropieri & Scruggs, 2001; Mastropieri et al., 2005; Rice & Zigmond, 2000). Instructional improvements, positive student outcomes and increased interactions (teacher to student and teacher to teacher) are expected to occur through collaboration and co-teaching. General educators have more opportunities to instruct students with disabilities with the support of a special educator. Subsequently, special educators benefit from the general educator, as there are more opportunities for the special

educator to become familiar with delivering content knowledge. This study will explore the levels and frequency of general and special educators interaction behaviors in inclusive settings.

CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this study was to contribute to the co-teaching literature by identifying the interaction behaviors of secondary co-teaching pairs. This chapter provides a thorough description of the research design employed in the implementation of the study. The chapter begins with a presentation of the research questions, descriptions of the settings and the participants, and concludes with the data collection and analysis procedures.

Research Questions

This researcher sought to answer the following questions focused on the interaction behaviors of general and special educators in co-taught secondary environments. The following research questions framed this non-experimental mixed methods research study.

1. What are the ratings of co-teachers participating in this study on their implementation of co-teaching practices as measured by the Colorado Assessment of Co-Teaching (CO-ACT)?
2. What are the general education secondary teacher interaction behaviors when teaching in a secondary class?
 - a. Among general education students?
 - b. Among special education students?
3. What are the general education secondary teacher interaction behaviors when co-teaching in a secondary class?
 - a. With the special educator?
 - b. Among general education students?

- c. Among special education students?
- 4. What are the special education teacher interaction behaviors when co-teaching in a secondary class?
 - a. With the content teacher?
 - b. Among general education students?
 - c. Among special education students?

Table 2 provides a list of each research question along with the data source for each question. The table also provides the type of data gathered as well as how these data sources were analyzed.

Table 2. Summary of Research Questions

Research Question	Data Source	Type of Data	Data Analysis
1. What are the ratings of co-teachers participating in this study on their implementation of co-teaching practices as measured by the Colorado Assessment of Co-Teaching (CO-ACT)?	Colorado Assessment of Co-Teaching, Interviews	Quantitative	Descriptive statistics
2. What are the general education secondary teacher interaction behaviors when teaching in a secondary class? a. Among general education students? b. Among special education students?	The Teacher Roles Observation Schedule, Field Notes, and Interviews	Quantitative, Qualitative	Descriptive statistics, Theme Analysis
3. What are the general education secondary teacher interaction behaviors when co-teaching in a secondary class? a. With the special educator? b. Among general education students? c. Among special education students?	The Teacher Roles Observation Schedule, Field Notes, and Interviews	Quantitative, Qualitative	Descriptive statistics, Theme Analysis
4. What are the special education secondary teacher interaction behaviors when co-teaching in a secondary class? a. With the content teacher? b. Among general education students? c. Among special education students?	The Teacher Roles Observation Schedule, Field Notes, and Interviews	Quantitative, Qualitative	Descriptive statistics, Theme Analysis

Setting and Population

State

The research was conducted in Central Florida. The state of Florida employs approximately 170,000 teachers and of that number, approximately 64,334 are secondary teachers and 25,551 are special education teachers. The most recent demographic data reports

73% of Florida's teachers are White, approximately 14% Black, 11% Hispanic, 1% Asian, and less than 1% American Indian.

District

The district in which this study was conducted is the eleventh largest district in the United States and the fourth largest school district in Florida and employs approximately 10,785 teachers. Approximately 4,348 of the teachers in this district are elementary teachers, 4,174 are secondary teachers, and 1,385 special education teachers. Approximately 70% of the district's teachers are White and 30% minority.

The settings for this study were the classrooms of secondary teachers who co-teach in a large urban high school and middle school in the central Florida area. The co-teachers were recruited with the support of the school administration. The population included co-teachers who provided instruction to students with high incidence disabilities in inclusive co-taught classrooms.

Schools

The first school in the study was a Florida "A" rated high school, which has been accredited by the Southern Association of Colleges and Schools. The school did not make annual yearly progress (AYP) in reading for the 2008-2009 school year. Over 3,000 students were enrolled in the school during the study. The student demographics mirrored that of the teacher population with approximately 63% White, 20% Hispanic, 14.3% Black and 2% Asian. The school employed 203 teachers and 66 personnel staff members, including administrators, clerical, custodial and support staff. The high school worked closely with an area community

college and offers dual enrollment classes in American Government, Economics, Algebra II, Trigonometry and Psychology.

The second school in the study was a Florida Five Star “A” rated middle school, which served students in kindergarten through eighth grade. The school made AYP for 2008-2009. Over 900 students were enrolled in the school during the research study. Though predominately a neighborhood school, a small percentage of the students were bused from the downtown area. The student demographics were 59% White, 25% Black, 11% Hispanic, 1% Asian and 4% other.

The third school in the study was also a Five Star “A” rated middle school, which served students in the sixth through eighth grade. The school made AYP for 2008-2009. Over 1300 students were enrolled in the school during the research study. The student demographics were 55% White, 10% Black, 31% Hispanic, 3% Asian and 1% Native American.

Classrooms

The setting for the study included 5 teacher teams, with each team consisting of a co-teaching model. A total of 10 secondary classes were included. Table 3 illustrates the total number of students, class demographics, the content area, and the grade level of each class.

Table 3. Classroom Demographics

Classroom	Total Students	Boys	Girls	Students with IEPs	Asian	African American	Hispanic/Latino	Caucasian	Subject Area	Grade Level
T1S	17	12	5	2	1	1	4	11	Language Arts	7
T1C	15	10	5	12	0	2	4	9	Language Arts	7
T2S	23	12	11	1	0	2	3	8	Mathematics	7
T2C	18	8	10	7	0	5	3	10	Mathematics	7
T3S	19	13	5	2	0	3	2	14	Science	7
T3C	19	11	8	9	0	6	6	7	Science	7
T4S	25	8	17	2	0	4	6	15	Science	9
T4C	24	14	10	7	0	3	7	14	Science	9
T5S	21	7	13	3	0	3	5	13	Language Arts	9
T5C	23	12	11	14	0	2	6	15	Language Arts	9

T1S- Team One Solo-Taught, T1C- Team One, T2S- Team Two Solo-Taught, T2C- Team Two Co-Taught, T3S-Team Three Solo-Taught, T3C- Team Three Co-Taught, T4S- Team Four Solo-Taught, T4C- Team Four Co-Taught, T5S- Team Five Solo-Taught, T5C- Team Five Co-Taught.

Study Participants

Teachers were recruited to participate on a voluntary basis. The study participants were selected upon the following qualifications: (a) highly qualified secondary general education teachers delivering instruction in an inclusive co-taught environment, and in an inclusive non co-taught environment; (b) highly qualified special education teacher delivering instruction in an inclusive co-taught environment; and (c) co-teaching teams identified by building administrators as successful.

Sampling

Convenience sampling was used to identify participants for the study. Five co-teaching teams were recruited to participate in the study. The classes used in the study were inclusive secondary classes. The classes were either taught by a general education content teacher without a special educator, and/or co-taught classes taught by the general and special education teachers.

Three co-teacher pairs, Teams One, Two, and Three were middle school teachers. Teams Four and Five were high school teachers. Each team was comprised of one special educator and one general education content teacher. Table 4 illustrates the demographics of each participant.

Table 4. Teacher Demographics

Team	Teacher position	Certification	Degree	Ethnicity	Gender	Years of teaching experience	Years with co-teacher	Content area	Grade level
1	GE	Temporary Secondary English	MA	C	F	2	2	LA	7
1	SE	Exceptional Student Ed. k-12	BA	H	F	10	2	LA	7
2	GE	Secondary Mathematics	BA	C	F	14	2	Math	7
2	SE	Exceptional Student Ed. k-12	BA	C	F	2	2	Math	7
3	GE	Secondary Science	MA	C	M	15	2	Science	9
3	SE	Exceptional Student Ed. k-12	BA	C	M	5	2	Science	9
4	GE	Secondary Science	MA	C	M	21	.5	Science	9
4	SE	Exceptional Student Ed. k-12, Secondary Science	MA	C	F	13	.5	Science	9
5	GE	Secondary English	MA	A	F	10	1	LA	9
5	SE	Exceptional Student Ed k-12	MA	C	F	12	1	LA	9

Key: C=Caucasian, H=Hispanic, A=African-American, F=Female, M=Male, GE=General Educator, SE=Special Educator, MA=Master's Degree, BA=Bachelor's Degree, LA=Language Arts

The high school teams were novice co-teachers. The middle school teams had 2 years of co-teaching experience. Table 5 illustrates the types of co-teaching preparation the participants had prior to the study.

Table 5. Co-teaching Preparation

	T1GE	T1SE	T2GE	T2SE	T3GE	T3SE	T4GE	T4SE	T5GE	T5SE
Undergraduate Coursework										
Graduate Level Coursework								X		
Student Teaching										
District In-Service	X	X	X	X		X	X			
Building Level In-Service	X	X	X	X		X	X	X	X	X
Other								X		

Research Design

This study employed a non-experimental mixed method research design. The study integrated qualitative and quantitative methods to gain insight into the general education teachers' roles in solo-taught and co-taught classrooms and special educators' roles in co-taught classrooms. The quantitative portion of the study consisted of event recording of teacher interactions and co-teacher perception rating scale scores. The qualitative portion of the research study consisted of the researcher gathering ongoing anecdotal notes and teacher interviews. The anecdotal notes allowed the researcher to document aspects of teacher planning and interactions not otherwise captured in coded data. The interviews provided insight into teachers' attitudes and perceptions of co-teaching, and the teachers' prior experiences in co-teaching. Interviews were conducted at the beginning of the study followed by self-evaluations for co-teachers to rate their co-teaching practices. Additional questions were asked at the end of the study related to any

changes in perceptions or teacher behavior. Questions were derived from researcher field notes and teacher interaction data. The exit interview also served as a tool for member checking related to emerging research themes (Crestwell, 1998; Lincoln & Guba, 1985). The researchers observed the teachers over a 10-week period, the district's third marking period, using a time sampling evaluation tool to monitor the level of teacher interactions during instruction. After the observations and final interviews, the data were triangulated and statistically analyzed. The triangulation strategy enabled the researcher to enhance the validity of the findings (Glesne, 2006; Mathison, 1988)

Research Timeline

The timeline for the study was consistent across all teams. During week one of the ten-week study, the research team conducted interviews with each teacher. During the interviews, demographic data were collected. In addition to the demographic data, the research team collected data on the level of participation in co-teaching professional development, personal beliefs about co-teaching, and beliefs about teaching in inclusive classrooms. Second, the teachers completed the Colorado Assessment of Co-teaching (CO-ACT) (Adams, Cessna, & Friend, 1993). The CO-ACT was used to determine the teachers' perceptions of their co-teaching implementation.

The study lasted ten weeks. Week one was used to introduce the study, conduct interviews, and complete the CO-ACT. The research team collected observational data during weeks two through nine. The research team used a rotating weekly schedule to collect data from each classroom. The schedule was developed to enable the research team to observe each class bi-weekly on alternating days of the week. Teams were not observed when a substitute teacher

was present. Convenient alternate observation dates were scheduled to accommodate up to two teacher absences and other schedule interruption per team when necessary. Tables 6 and 7 outline the observation schedule and the research timetable.

Table 6. Observation Schedule

Week	Monday	Tuesday	Thursday	Friday
2	School 1	School 2	School 3	School 1
3	School 2	School 3	School 1	School 2
4	School 3	School 1	School 2	School 3
5	School 1	School 2	School 3	School 1
6	School 2	School 3	School 1	School 2
7	School 3	School 1	School 2	School 3
8	School 1	School 2	School 3	School 1
9	School 2	School 3	School 1	School 2
10	School 3	School 1	School 2	School 3

School 1- Team One, School 2- Teams Two and Three, School 3- Teams Four and Five

Table 7. Research Timetable

Week 1	Researcher Explanation of study, conduct interviews, provide the CO-ACT	Participating Co-teaching pairs IRB consent, interview, complete the CO-ACT
Week 2-9	Observe teams, transcribing and coding data	Daily teaching tasks (no additional required tasks for the study)
Week 10	Post Interview and member checking	Post interview

Instrumentation

Three instruments were used during data collection: (a) interview protocols for the teachers; (b) Teacher Roles Observation Schedule (TROS) (Waxman, Wang, Lindvall, &

Anderson, 1988) to monitor interaction behaviors of teachers, and (c) the Colorado Assessment of Co-teaching (CO-ACT) (Adams, Cessna, & Friend, 1993) to measure the effectiveness of the co-teaching teams. In addition to formal instruments, the researcher tallied the amount of one-on-one student interactions made by the teachers. The researcher also collected informal field notes during each session consisting of any unique or interesting activities that occurred during the classroom observation, any thoughts about the emerging role of the special educator in content courses and any unique co-teaching examples that could further contribute to the findings of the study (e.g., co-teacher absent half the class, etc).

Interview

The questions in the pre-interview were intended to collect demographic data and teacher attitudes and beliefs about co-teaching. The demographic information included the participants' ethnicity, years of teaching experience, years of co-teaching experience, degrees earned, grade levels taught, and the teachers' current teaching positions. The interview also included questions that were developed from the current literature to explore how the participants viewed their co-planning time, co-instruction, co-assessment, and their levels of confidence and comfort as it relates to co-teaching and teaching in inclusive classrooms. The post interview included a summary of interactions data in which teams were asked to reflect upon as well as to ask again the same questions in the pre-interview to see if anything might have changed in their perceptions over the 9 weeks.

Teacher Roles Observation Schedule

The Teacher Observation Schedule (TROS) (Waxman, Wang, Lindvall, & Anderson, 1988) was used in the study to identify the interaction behaviors of the teachers in inclusive non

co-taught and inclusive co-taught classrooms. The time sampling observation instrument distinguished between teacher interactions with other adults and with students. The interactions with students are separated into three categories: instructional, managerial and personal.

The TROS was developed by Waxman, Wang, Lindvall, and Anderson (1988). The instrument was designed to systematically observe teacher behaviors during instruction. In 1992 Huang and Waxman found the TROS to be reliable and valid in a study of 62 middle school mathematics teachers. Hines (1995) reported the instrument to have an overall observer reliability of .85 for the 25 items coded in the original study by Huang and Waxman (1992). The individual reliability percentages for each component of the instrument were: .84 for nature of the interactions, .81 for the purpose, .99 for the setting, and .96 for the subject.

Colorado Assessment of Co-Teaching

Adams, Cessna, and Friend (1993) designed the Colorado Assessment of Co-Teaching (CO-ACT) to measure the critical components of effective general-special education co-teaching. The assessment provides qualitative data. The reliability and validity of the CO-ACT was established in a long-term research project with the Colorado State Department of Education by Adams and colleagues (1993). The study sought to identify the necessary components of effective co-teaching and to develop a tool to measure effective co-taught relationships. Focus groups were initially conducted with experienced co-teachers to identify factors that contributed to effective co-teaching. After a pilot questionnaire was developed, analysis of the pilot questionnaire for content validity indicated 40 items that significantly discriminated between exemplary and non-exemplary co-teaching teams. Items were eliminated from the questionnaire, which were not seen to significantly discriminate between teams. Once developed, the

instrument was used in a known-groups study and it reliably distinguished between co-teachers who were rated by their supervisors (usually their principal) as very effective and those rated as ineffective. Through this process the CO-ACT was found reliable and valid. The instrument since has been used to evaluate co-teachers within professional development and as a one-time assessment of co-teaching implementation.

The CO-ACT is a five-point Likert-style inventory designed to identify exemplary co-teaching teams. Co-teaching teams are evaluated on 38 items and three factors: (a) Personal Prerequisites (15 items), (b) The Professional Relationship (9 items), and (c) Classroom Dynamics (14 items). Teachers rate each item according to the importance in co-teaching and for the presence in their own co-teaching. Importance and presence of each item is rated on a five-point likert scale. Teachers respond to a five-point likert scale that ranges from strongly disagree (1) to strongly agree (5).

Data Collection Procedures

Data were collected through interviews, classroom observations, and questionnaires. The interviews were conducted and audio taped in order to gather information directly from the participants. The audiotapes were transcribed. In order to maintain participant confidentiality and to comply with IRB approval, all interviews were coded with an interview number and audiotapes were destroyed following transcription. In addition, teacher interaction checklists and perception data were coded to protect the identity of the participants.

The following procedures were employed over the course of the ten-week research study:

1. Identified and secured study participants
2. Researcher provided study consent forms to participants.

3. The researcher and research assistant completed a review of the interview and TROS protocols.
4. Teacher interviews were conducted.
5. Student seating charts developed to identify when teachers interacted with students with and without disabilities.
6. Teachers completed the CO-ACT.
7. Data from the CO-ACT were tabulated for each teacher.
8. Teacher pre interviews were transcribed and coded for themes and patterns.
9. Research team conducted classroom observations to collect teacher interaction behavior data in co-taught and solo-taught classes (weeks 2-9).
10. Data from the TROS were tabulated for each teacher. TROS scores were compiled and utilized to triangulate the data from the CO-ACT, teacher interviews, and field notes.
11. Quantitative data were entered into SPSS for descriptive and comparative analyses.
12. Qualitative data were entered into ATLAS.ti to facilitate analysis.
13. Research team conducted post interviews (week 10).
14. Data from the CO-ACT, TROS, teacher interviews, and student interaction data were triangulated.

Data Analysis

Following data collection, the data underwent in-depth qualitative and quantitative analyses. The researcher reviewed and transcribed the audiotapes from the interviews in order to extract common themes. Patterns and themes within the qualitative data were sorted and coded to address the research questions (Glesne, 2006). The major themes that emerged from the data are

presented in the study's findings section. The quantitative data from the TROS were analyzed using descriptive statistics. Data from each instrument were triangulated.

The observations were coded with the use of the TROS. The TROS included five categories: (a) No Interaction, (b) Interaction with Other Adults, (c) Interaction with Student(s)/Instructional, (d) Interaction with Student(s)/Managerial, and (e) Interaction with Student(s)/Personal.

Validity and Reliability

The study utilized three formal instruments: (a) interviews, (b) TROS (Huang & Waxman, 1992), and (c) CO-ACT (Adams, Cessna, & Friend, 1993) and informal researcher collected anecdotal notes. The data collected from the three study instruments were triangulated to ensure validity of the findings (Glesne, 2006; Mathison, 1988). The post-interviews were also used as a way to member check with the participants about the observation data and research field notes. The developers of the TROS and the CO-ACT have demonstrated the reliability of the respective instruments, as previously mentioned. The research team used the TROS protocol when conducting observations.

The reliability of the study was established through the assistance of a research assistant. The research assistant observed, collected, and coded 25% of the data to ensure interrater reliability. Interrater reliability based on Fleiss (1981) was established at 80% or greater in which 75% or greater is considered excellent agreement. Reliability measures were established for at least 25% of all the data collected from each of the research instruments utilizing point-by-point agreement (Kazdin, 1982).

Interview data were recorded and transcribed. The transcriptions were used for qualitative analysis. A research assistant coded 25% of the data to ensure reliability. Data from the TROS were entered into SPSS for analysis. A research assistant ensured interrater reliability of 25% of the data entries that were randomly selected.

Member checking was used during the post interviews to validate the qualitative data. Member checking is viewed as a critical technique for establishing credibility. The technique offers the following positive elements to data collection: (a) provides an opportunity to understand and assess what the participant intended to do through his or her actions, (b) gives participants an opportunity to correct errors and challenge what are perceived as wrong interpretations, (c) provides the opportunity to volunteer additional information, (d) provides an opportunity to summarize preliminary findings, and (e) provides participants the opportunity to assess and confirm the adequacy of data and preliminary results (Crestwell, 1998; Lincoln & Guba, 1985).

Ethical Considerations

The following ethical considerations were included:

1. All data collected were anonymous.
2. Participation in this study was voluntary. All respondents were informed of their right to withdraw from the study at any time without penalty.
3. The purpose of the study was clearly stated on the informed consent form and the cover-letter.

4. Permission to conduct this study was approved by the dissertation chairperson, other committee members, and the Institutional Review Board of the University of Central Florida.
5. Permission to use the research instruments was granted by the developers.

CHAPTER FOUR: RESULTS

Purpose

The purpose of this study was to contribute to the co-teaching literature by identifying the interaction behaviors of secondary co-teaching pairs. Interactions were analyzed between the general and special education teachers as well as the interaction levels of each teacher between students with and without identified disabilities in the general education setting. The researcher also analyzed the interaction behaviors of the general education teacher with students with and without identified disabilities in a solo-taught inclusive setting. This chapter provides a brief summary of the research design, observation schedule, inter-observer reliability, and concludes with the results. The results are presented across teams to address each research question followed by a discussion of the four types of data within a team through triangulation of the data.

Research Design

This study employed a non-experimental mixed method research design. The study integrated qualitative and quantitative methods to gain insight into the general education teachers' roles in solo-taught and co-taught classrooms and the special educators' roles in co-taught classrooms. The quantitative portion of the study consisted of event recording of teacher interactions and co-teachers' perception rating scale scores. The qualitative portion of the research study consisted of the researcher gathering ongoing anecdotal notes and teacher interviews.

The researchers observed the teachers over a 10-week period using the TROS, a time sampling evaluation tool to monitor the level of teacher interactions, during instruction. Class seating charts also were used to monitor the occurrence of one-on-one interactions with students

in both settings. After the observations and final interviews, the data were triangulated and statistically analyzed utilizing SPSS and Atlas.ti. The triangulation strategy was employed as a means of enhancing the validity of the findings (Glesne, 2006; Mathison, 1988).

Observation Schedule

The 10 participants were observed 7-10 times each throughout the 10-week study. The researcher made a total of 80 observations, 40 observations of the general educator in the solo-taught class setting and 40 observations of each team of teachers in the co-taught class setting. The average length of the classes observed was 50 minutes. Interaction data were collected during 10 randomly selected 30-second intervals.

Inter-Observer Reliability

The coded data were entered into SPSS and checked for reliable data entry by an inter-rater for 25% of the observations. The analyses of the TROS data included descriptive statistics. Appendices G, H and I give detailed analysis of the individual observations from the TROS that occurred over the 10 weeks of the study.

To ensure reliability of scoring, point-by-point inter-observer reliability for the TROS was established by having another researcher code 25% of the observations comparing the independent coding to the primary researcher. The researcher randomly selected 25% of the observation dates for the inter-observer reliability. In total 20 observation dates were selected for inter-observer reliability, resulting in 4 observations per team. Inter-observer reliability for the entire study was established at 86%, exceeding the target of 80%.

The following section provides the data collected to answer each research question.

Question 1

What are the ratings of co-teachers participating in this study on their implementation of co-teaching practices as measured by the Colorado Assessment of Co-Teaching (CO-ACT)?

Each participant completed the CO-ACT during week 1. The instrument was designed to help teachers “understand the critical components of successful general-special education co-teaching” (Adams et al., 1993) by rating the Importance and Presence of five categories on a Likert scale ranging from 1-5. The five categories included: Factor I, Personal Prerequisites; Factor II, The Professional Relationship; Factor III, Classroom Dynamics; Factor IV, Contextual Factors; Factor V, Foundation of Co-Teaching.

Table 8. CO-ACT Scores

			F I	F II	F III	Total	F IV	F V
Average Scores for Exemplary Teams- Importance/ Presence			66/68	37/39	61/63	164/169	NA	NA
Team 1	General Educator	Language Arts	73/71	45/45	68/67	186/183	9/10	10/10
Team 1	Special Educator	Language Arts	73/72	45/41	68/68	186/181	10/10	10/10
Team 2	General Educator	Mathematics	72/73	45/38	70/58	187/169	10/9	10/10
Team 2	Special Educator	Mathematics	62/61	41/41	57/57	160/159	7/5	8/8
Team 3	General Educator	Science	75/57	45/42	67/47	187/146	9/5	10/10
Team 3	Special Educator	Science	72/48	45/28	65/49	182/125	10/5	10/8
Team 4	General Educator	Science	75/75	45/45	70/70	190/190	10/10	10/10
Team 4	Special Educator	Science	73/68	45/40	70/68	188/176	10/5	10/10
Team 5	General Educator	Language Arts	75/64	38/38	74/74	187/179	10/10	10/10
Team 5	Special Educator	Language Arts	75/74	45/45	66/66	186/185	10/10	10/10

F I- CO-ACT Factor I, Personal Prerequisites; F II- CO-ACT Factor II, The Professional Relationship; F III- CO-ACT Factor III, Classroom Dynamics; F IV- CO-ACT Factor IV, Contextual Factors; F V- CO-ACT Factor V, Foundation of Co-teaching

Factor I: Personal Prerequisites

The average exemplary score identified by Adams and colleagues (1993) was 66 for Importance and 68 for Presence. Six of the ten teachers exceeded the average exemplary team scores for Importance (66) and Presence (68). The special educator on Team Two scored below the average for both Importance and Presence of Personal Prerequisites. Both members of Team Three scored above average on the Importance of Personal Prerequisites and scored below on

Presence within their co-teaching team. The general educator on Team Five scored above average on the Importance but below on the Presence of Factor I. Teams One, Four, and Five exceeded the exemplary average for both Importance and Presence.

Factor II: The Professional Relationship

The average exemplary score identified by Adams and colleagues (1993) was 37 for Importance and 39 for Presence. Eight of the ten teachers exceeded the average exemplary team scores for Importance (37) and Presence (39). The general educators from Teams Two and Five were the exceptions with scores one point below the average exemplary team score for Presence of the Professional Relationship.

Factor III: Classroom Dynamics

The average exemplary score identified by Adams and colleagues (1993) was 61 for Importance and 63 for Presence. Similar to the results of Factor I, six of the ten teachers exceeded the average exemplary team scores for Importance (61) and Presence (63). Three of the four teachers who were the exceptions scored above average on the Importance of Classroom Dynamics but below on the Presence in their classes. The special educator from Team Two scored lower than the exemplary average for the Importance and Presence of Factor III.

Factor IV: Contextual Factors

The developers of the CO-ACT did not report the average exemplary team scores. Factor IV includes two critical items about the Importance and Presence of shared planning time. All of the teachers' scores (7-10) on Factor IV identified the Importance of the two factors. However,

scores from four teams indicated a lack a of shared planning time (Team Three, and the special educators from Teams Two and Four).

Factor V: Foundation of Co-teaching

The developers of the CO-ACT did not report the average exemplary team scores. Factor V includes two critical items about the Importance and Presence of trust and respect of professionalism within the co-teaching teams. All of the teachers' scores (8-10) indicated that trust and respect of professionalism were important and present within their co-teaching teams.

Research questions 2-4 sought to identify the interaction behaviors of the general and special education teacher in the secondary co-taught class and the general educators interaction behaviors in the solo-taught inclusive class. The TROS along with a seating chart for each class were used to collect interaction data. Field notes were taken during each observation to identify additional details about the nature of the interactions.

Question 2

What are the general education secondary teacher interaction behaviors when teaching in a secondary class?

- a. Among general education students?
- b. Among special education students?

The TROS and a seating chart of each class indicating where students with and without disabilities were seated were used to collect interaction data. The general education teachers' one-on-one interactions were tallied along with the 10 randomly selected 30-second class observations. On average, 21 students were present in the solo-taught class during each observation. Of that, a range of 1 to 3 students were identified with a disability. Table 9 provides

the mean one-on-one interactions the general education teacher made with general education and special education students during the solo-taught inclusive classes in the study.

The general educator from Team One had the highest one-on-one interactions with all students (92 one-on-one interactions). The two students with identified disabilities present in the solo-taught class received 17% of the one-on-one interactions. Each student with identified disabilities received an average of 8 one-on-one interactions from the general educator while the 15 general education students (83% of one-to-one interactions), received on average 5 one-to-one interactions from the general educator.

The general educator from Team Two had the lowest one-on-one interactions with all students (17 one-on-one interactions). One student with a disability was present in the solo-taught class, and he received 11.8% of the one-on-one interactions. The student with the identified disability received an average of 2 one-on-one interactions from the general educator while the 22 general education students (88.23% of one-to-one interactions), received on average less than 2 one-to-one interactions from the general educator per class.

The general educator from Team Three ranked the second highest in one-on-one interactions with all students (53 one-on-one interactions). The two students with disabilities present in the solo-taught class received 20.75% of the one-on-one interactions. The students with the identified disabilities received an average of 5.5 one-on-one interactions from the general educator per class, while the 17 general education students (88.23% of one-to-one interactions) received on average less than 3 one-to-one interactions from the general educator per class.

The general educator from Team Four ranked third for one-on-one interactions with all students (41 one-on-one interactions). The two students with disabilities present in the solo-

taught class received 39.02% of the one-on-one interactions. Each student with an identified disability received an average of 8 one-on-one interactions from the general educator per class, while the 23 general education students (63.41% of one-to-one interactions), received on average less than 2 one-to-one interactions from the general educator per class.

The general educator from Team Five ranked fourth for one-on-one interactions with all students (32 one-on-one interactions). Three students with disabilities were present in the solo-taught class, which received 46.87% of the one-on-one interactions. The students with the identified disabilities, received an average of 5 one-on-one interactions from the general educator per class, while the 20 general education students (53.12% of one-to-one interactions), received on average 1 or less one-to-one interactions from the general educator per class.

Table 9. General Education Teachers Mean One-On-One Interactions in the Solo-Taught Class

Students	Mean one-on-one Interactions	Mean students present	Mean interaction per student
Gen Ed	35.2	19.4	1.8
Spec Ed	12	2	6

Gen Ed- General Educations Student, Spec Ed- Students with Identified Disabilities

Of the 235 one-on-one interactions, the General educator interacted 75% of the time with general education students and 25% (176 and 60 interactions respectively) were with students with identified disabilities. Whole class instruction was the setting for 52.40% of the interactions. Less than 10 percent of the interactions were at students' desks or small groups (5.43% and 4.79%). Interactions at the teachers' desk accounted for 18.21% of the interactions while 11.18% were coded as traveling (within the classroom) and 7.99% were identified as other. Table 10 shows the means for each category of activity (No Interaction, Interaction with adult,

Interaction with student(s) /instructional, Interaction with student(s) /managerial, and Interaction with student(s) / personal) observed in the solo-taught inclusive general education classes.

Appendix G gives a detailed account of the observations from the TROS over the ten-week study for all general educators’ interactions in the solo-taught class.

Table 10. General Education Teachers Interactions in Solo-Taught Class

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	25.40	.00	30.40	14.00	8.00

No Interaction

Of the 40 class observations, general education teacher time was coded as “No Interaction” 32.78% (ranging from 17.91% to 45%) of the time. The field notes collected during observations indicated that the “No Interaction” time was generally during independent class work and when the teacher appeared to be conducting managerial tasks such as taking attendance. Teachers were visibly available to students during the “No Interaction” time. General educators from Teams Two, Three, and Four were coded as “no interaction” less than 35% of the instructional time. The general educator from Team One had the least amount of instruction time coded as “no interaction” (17.91%) and the general educator in Team Five had the highest percentage of instructional time coded as “no interaction” (45%).

Interaction with Adult

The general educator in Team Five had an additional adult present to interpret the class for a student who was identified as deaf and hard of hearing (DHH). The interpreter’s sole purpose was to interpret the discussions within the class, therefore, interactions with the general

educator during instruction were rare unless the interpreter served as the voice for the student she was providing support. Despite the presence of the additional adult in the classroom, general educators were not observed interacting with other adults in the solo-taught classes.

Interaction with Students/Instructional

“Interaction with Student(s)/ Instructional” was coded for the majority of the solo-taught classes at 40.80% (ranging from 25% to 60%) of the time. Team Three’s general educator was coded 60% of the time interacting with students for instructional purposes, followed by Team One (46.27%), Team Two (38.96%), Team Four (32%), and Team Five (25%). Explaining was the most frequently observed nature of interaction (39%) primarily focused on content and communicating the task’s procedures/directions (26.20% and 22.71%). General educators commented 23.36% of the class time, 13.11% questioning, 13.11% demonstrating, and 8.61% listening. Modeling and cueing or prompting students occurred with very low frequency (0.41% and 2.05% respectively).

Interaction with Students Managerial Purpose

Managerial interactions with students accounted for 16.75% (ranging from 3% to 25.37%) of class time. Team One’s general educator was coded using 25.37% of instructional time for managerial purposes followed by, Team Five (25%), Team Four (20%), Team Two (14.29%), and Team Three (3%). Managerial interactions were generally when teachers were reviewing the rules and or expectations of the class, and collecting or passing out papers and class materials to students. Teachers used 6.11% of instructional time to correct student behavior.

Interaction with Students Personal

Personal interactions with students, for all general educators in the solo-taught class, were slightly less than 10% of the class time (ranging from 3% to 16%). Of the 5 teams, Team Five had the highest percentage of personal interactions with students (16%) while Team Three had the lowest (3%). The field notes indicate the interactions were generally personal anecdotes shared by the teachers and personal inquiries directed to students (e.g. How was your weekend?). All of the teachers in the study were observed sharing personal information about their lives with students (e.g. vacation plans, family stories, job experiences, hobbies and interests).

Question 3

What are the general education secondary teacher interaction behaviors when co-teaching in a secondary class?

- a. Among general education students?
- b. Among special education students?
- c. With the special educator?

The TROS and a seating chart of each class indicating where students with and without identified disabilities were seated were used to collect interaction data. The general education teachers' one-on-one interactions were tallied along with the 10 randomly selected 30-second class observations. On average, half of the 20 students present during each co-taught class observation were students with disabilities. Table 11 provides the mean one-on-one interactions of the general and special educators with students with and without identified disabilities during the co-taught classes.

The teachers in Team One had the highest one-on-one interactions with all students (108 one-on-one interactions). The majority of the one-on-one interactions were with the 12 students with disabilities present in the co-taught class, which received 88.88% of the one-on-one interactions. Each student with identified disabilities received an average 8 one-on-one interactions from the co-teachers while the 3 general education students (11.11% of one-to-one interactions), received on average 4 one-to-one interactions from the teachers per class.

The teachers in Team Two ranked 4th for one-on-one interactions with all students (54 one-on-one interactions). The one-on-one interactions were nearly evenly distributed amongst the students with and without identified disabilities. The 7 students with identified disabilities received 44.44% of the one-on-one interactions while the general education students received 55.55% of the same interactions. On average all students, general and special education had less than 4 one-on-one interactions per class.

Team Three ranked 3rd for one-on-one interactions with all students (60 one-on-one interactions). Similar to Team Two, the one-on-one interactions were nearly evenly distributed amongst all students regardless of ability level. The 9 students with identified disabilities received 58.33% of the one-on-one interactions while the general education students received 41.66% of the same interactions. On average the co-teachers had less than 4 one-on-one interactions with identified students with disabilities and less than 3 with the general education students.

Team Four had the second highest one-on-one interactions with all students (80 one-on-one interactions). The majority of the one-on-one interactions were with the 7 students with identified disabilities present in the co-taught class, which received 72.5% of the one-on-one interactions. Each student with identified disabilities, received an average 8.28 one-on-one

interactions from the co-teachers while the 17 general education students (27.5% of one-to-one interactions), received on average less than 2 one-to-one interactions from the co-teachers per class.

Team Five had the lowest amount of one-on-one interactions with all students (45 one-on-one interactions). The majority of the one-on-one interactions were with the 14 students with identified disabilities present in the co-taught class, which received 84.44% of the one-on-one interactions. Each student with identified disabilities, received on average less than 3 one-on-one interactions from the co-teachers while the 9 general education students (15.55% of one-to-one interactions), received on average less than 1 one-to-one interaction from the teachers per class.

Table 11. General and Special Education Teachers Mean One-On-One Interactions in Co-Taught Class

Students	Mean one-on-one Interactions	Mean students present	Mean interaction per student
Gen Ed	19.2	9.6	2
Spec Ed	50.2	9.8	5.12

Gen Ed- General Educations Student, Spec Ed- Students with Identified Disabilities

Of the 347 one-on-one interactions, the co-teachers interacted 27.6% of the time with general education students and 72.3% were with students with identified disabilities (96 and 251 interactions respectively). Whole class instruction was the setting for 40.93% of the interactions made by the general educator, 26.33% at the teacher’s desk, and 13.17% traveling. The general educators had instructional interactions at students’ desks 9.96% of the time in the co-taught class. Less than 5% of the interactions were in small groups (4.98%). Interactions identified as other occurred 4.63%. Table 12 shows the means for each category of activity (No Interaction, Interaction with adult, Interaction with student(s) /instructional, Interaction with

student(s)/managerial, and Interaction with student(s) /personal) observed in the co-taught class by the general educator. Appendix H gives a detailed account of the observations from the TROS over the ten weeks of observation for all general educators' in the co-taught class.

Table 12. General Education Teachers Interactions in the Co-Taught Class

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	21.60	10.40	31.00	6.80	5.60

No Interaction

Of the 40 co-taught class observations, general educators were coded as “No Interaction” 28.65% (ranging from 11.54% to 47.92%) of the time. Team Four’s general educator was coded 47.92% of the observations as “no interaction” followed by Team Five (44.44%), Team Three (17.57%), Team One (14.04%), and Team Two (11.54%). The field notes collected during observations indicated that the “No Interaction” time generally occurred while the special educator was delivering instruction or interacting with the class, during independent class work, when the teacher was in his or her office or supply room, and when the teacher appeared to be conducting managerial tasks such as taking attendance.

Interaction with Adult

The general educator interacted with an adult 13.79% (ranging from 3.51% to 33.78%) of the instructional time. The interactions were generally with the special educator. Team Three’s general educator was coded interacting with an adult 33.78% of the observations, followed by Team Five (13.89%), Team Four (12.50%), and Teams One and Two were coded with adult interactions less than 4% each. The field notes indicate the primary focus for adult interactions

between the co-teachers focused on planning, restructuring the lesson to meet the students' needs, and occasionally some shared personal interactions with humor. Three of the five co-taught classes (Teams Two, Three, and Four) had an interpreter present for students with DHH services. As in the solo-taught class, the interpreter's sole purpose was to interpret the discussions within the class. Interactions with the general educator during instruction occurred for clarification and when the interpreter served as the voice for the students who benefited from the service provided.

Interaction with Students/Instructional

“Interaction with Student(s)/ Instructional” was coded for the majority of the taught classes at 41.11% (ranging from 27.08% to 73.08%) of the time. Team Two's general educator was coded 73.08% of the time interacting with students for instructional purposes, followed by Team One (40.35%), Team Three (36.49%), Team Five (30.56%), and Team Four (27.08%). Explaining was the most frequently observed nature of interaction (50.26%), followed by questioning (13.23), listening (11.64%), demonstrating (10.58%) and commenting (9.52%). Less than 5% of instructional time was used for modeling and cueing or prompting students. The purposes of the interactions were primarily focused on content, communicating the task's procedures/directions, and checking students' work (37.26%, 19.34%, and 3.68%).

Interaction with Students Managerial Purpose

Managerial interactions with students accounted for 9.02% (ranging from 6.25% to 12.28%) of class time. Team One's general educator had the highest percentage of managerial interactions at 12.28% followed by Team Two (10.26%), Team Three (9.46%), Team Five (8.33%), and Team Four (6.25%). Managerial interactions were generally when teachers were

reviewing the rules and or expectations of the class, and collecting or passing out papers and class materials to students. General educators in the co-taught class were coded correcting student behaviors 7.43% of the instructional time.

Interaction with Students Personal

Personal interactions with students accounted for 7.43% (ranging from 1.28% to 29.82%) of instructional time. Team One's general educator had the highest percentage of instructional time coded for personal interactions with students at 29.82%. The general educators from Teams Two, Three, and Five used less than 3% of instructional time for personal interactions while Team Four's general educator was coded 6.25%. The field notes indicate the interactions were generally personal anecdotes shared by the teachers and personal inquires directed to students (e.g. How was your weekend?). Teachers often related the personal interactions to topics related to class themes. All of the teachers in the study were observed sharing personal information about their lives with students (e.g. vacation plans, family stories, job experiences, academic experiences, hobbies and interests).

Question 4

What are the special education teacher interaction behaviors when co-teaching in a secondary class?

- a. With the content teacher?
- b. Among general education students?
- c. Among special education students?

The TROS and a seating chart of each class indicating where students with and without disabilities were seated were used to collect interaction data. The general education teachers'

one-on-one interactions were tallied along with the 10 randomly selected 30-second class observations. On average, half of the 20 students present during each co-taught class observation were students with identified disabilities. Table 13 provides the mean one-on-one interactions of the general and special educators with general education and special education students during the co-taught classes in the study.

Of the 347 one-on-one interactions, the co-teachers interacted 27.6% of the time with general education students and 72.3% (96 and 251 interactions respectively) were with students with identified disabilities. The whole class setting accounted for 31.85% of the interactions made by the special educator, 24.44% at students’ desks, 16.67% traveling, 11.48% at the teachers’ desk, and 5.93% in small groups. Interactions identified as other occurred 9.63%. Table 14 shows the means for each category of activity (No Interaction, Interaction with adult, Interaction with student(s) /instructional, Interaction with student(s) /managerial, and Interaction with student(s) / personal) observed in the co-taught class by the special educator. Appendix I gives a detailed account of the observations from the TROS over the ten-week study for all special educators’ in the co-taught class.

Table 13. Special Education Teachers Interactions in the Co-Taught Class

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	19.40	9.60	25.60	7.00	9.60

No Interaction

Of the 40 co-taught class observations, special educators were coded as “No Interaction” 26.75% (ranging from 14.04% to 36.62%) of the time. The special educators in Teams Three,

Five and Two had the highest percentage of “no interaction” coded (36.62%, 36.36%, and 34.15% respectively), followed by Teams Four (17.02%) and One (14.04%). The field notes collected during observations indicated that the “No Interaction” time generally occurred while the general educator was delivering instruction or interacting with the class, during independent class work, and when the special educator briefly exited the classroom to get supplies or to escort a student to another location (typically after a behavioral disturbance). Some of the special educators (2 of the 5) were also observed working at the computer during instructional time. During the exit interviews the special educator from Team Three explained that he used class time to respond to emails to other general educators that he co-taught with, plan for classes, and manage some other work related tasks when he determined that his assistance in the class was not needed. All special educators shared that they often check students’ grades during instructional time to assure that they are aware of students’ progress.

Interaction with Adult

Special educators interacted with an adult 14.59% (ranging from 3.51% to 29.58%) of the instructional time. The interactions were typically with the general educator. The special educator in Team Three had the highest percentage of adult interaction during instructional time at 29.58% followed by Team Five (15.15%), Team Four (12.77%), Team Two (7.32%), and Team One (3.51%). The field notes indicate the primary focus for adult interactions between the co-teachers focused on planning, restructuring the lesson to meet the students’ needs, and occasionally some shared personal interactions. Three of the five co-taught classes had an interpreter present for students with DHH services. As in the solo-taught class, the interpreter’s sole purpose was to interpret the discussions within the class. Interactions with the special

educator during instruction occurred for clarification and when the interpreter served as the voice for the students who benefited from the service provided.

Interaction with Students/Instructional

On average, special educators were coded as “Interaction with Student(s)/ Instructional” for the majority of the co-taught classes at 38.91% (ranging from 18.18% to 59.56%) of the observations. The special educators on Teams One and Four had the highest interactions with students in an instructional capacity (59.56% and 53.19% respectively) followed by Team Two (34.15%), Team Three (25.35%), and Team Five (18.18%). Explaining was the most frequently observed nature of interaction (43.39%), followed by commenting (16.40%), questioning (14.29), cueing or prompting (12.70%), and listening (8.47%). Demonstrating and modeling combined were less than 5% of the remaining teacher interactions. The purposes of the interactions were primarily focused on checking student work, communicating the task’s procedures/directions, and content (25.74%, 23.27%, and 20.30% respectively).

Interaction with Students Managerial Purpose

Managerial interactions with students accounted for 7.90% (ranging from 2.13% to 15.79%) of class time. Special educators on Teams Two, Three, and Four used less than 10% of the class time for managerial interactions with students (7.32%, 5.63%, and 2.13% respectively) followed by Team Five (12.12%) and Team One (15.79%). The interactions were generally when teachers were reviewing the rules and or expectations of the class, and collecting or passing out papers and class materials to students. Special educators on Teams One, Two and Three were not coded for correcting student behavior during observations. Team Four’s special

educator was coded as correcting behavior 3.03% of the class time. Team Five's special educator corrected student behavior 29.41% of the observations.

Interaction with Students Personal

Special educators' personal interactions with students accounted for 11.85% (ranging from 2.82% to 18.18%) of instructional time. Personal interactions with students by the special educators on Teams Five, Two, and Four accounted for less than 20% of class time (18.18%, 17.07%, and 14.89% respectively) followed by Team One (7.02%) and Team Three (2.82%). The field notes indicate the interactions were generally personal anecdotes shared by the teachers and personal inquires directed to students (e.g. How was your weekend?). All of the teachers in the study were observed sharing personal information about their lives with students (e.g. vacation plans, family stories, job experiences, academic experiences, hobbies and interests).

Types of Models

Teams One and Four primarily used team teaching during instruction and occasionally used one teach, one support. Although Team Five utilized the same co-teaching styles, the special educator's "support" in the one teach, one support primarily focused on correcting student behaviors to help improve instructional time. The special educator in Team Five did interact in an instructional capacity. Teams Two and Three's co-teaching practices mirrored each other utilizing one teach, one support and one teach, one observe.

Results by Team

All data collected (CO-ACT, TROS, seating chart, field notes, and pre/post interviews) were triangulated and analyzed for each team. The following section provides further insight on interaction behaviors of the co-teachers by teams and a summary of the data per team.

Team One

Table 14. Team One Total Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	9.33	1.33	29.33	11.00	9.33

Table 15. Team One Individual Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
T1G Solo	12.00	.00	31.00	17.00	7.00
T1G Co-taught	8.00	2.00	23.00	7.00	17.00
T1S Co-taught	8.00	2.00	34.00	9.00	4.00

T1G-Team One General Educator, T1S- Team One Special Educator

Tables 14 and 15 provide data of comparison for Team One. Team One taught seventh grade language arts classes. From the researcher's perspective, the general educator from Team One maintained consistent interaction behavior in both settings with all students. On average, students with disabilities had 8 one-on-one interactions in the solo-taught class and general education students had 5 per class from the general educator. When the special educator was present in the co-taught class, students with disabilities experienced the same level of one-on-one interactions while general education students had slightly less with 4 one-on-one interactions per

class from the co-teachers. The field notes indicate that teachers primarily responded to student signals and traveled around the class to check and monitor student work.

The co-teachers had a shared presence in the class, and the teachers were observed using Team Teaching for 90% of their instructional time. The general educator maintained high levels of instructional interactions with all students across both settings (46.27% instructional interaction in solo-taught and 40.35% in co-taught). Although the teachers shared instructional time, the special educator was coded with slightly more instructional time (59.65%) than the general educator (40.35%) during the co-taught class. This increase enhanced the instruction for all students in the co-taught class. The field notes indicate the special educator provided reviews of content, checked for understanding, and easily noticed when students needed additional support. The special educator was more familiar with the students' with disabilities learning needs because she provided academic support for them in the co-taught class and in an additional basic skills remediation course. Overall, the teacher interactions were impacted by the presence of the special educator in the co-taught classroom. The total mean instructional interactions of both teachers in the co-taught class more than doubled the instructional interactions in the solo-taught class. The total amount of no interactions and managerial interactions coded in the co-taught class nearly mirrored the interactions in the solo-taught class while the total personal interactions in the co-taught class tripled the amount coded in the solo-taught class.

The presence of shared instructional time and the positive attitudes of the co-teachers in Team One reflect their above average scores on the CO-ACT which indicate both teachers were aware and utilized the critical components necessary for successful co-teaching. The interviews also reflected the consistent beliefs and common concerns shared by the teachers. Both spoke positively about their current co-teaching relationship. Although the special educator actively

participated in the instructional time in the co-taught class and was coded 59.65% of the class time interacting with students in an instructional capacity, she shared concerns about the lack of preparation and professional development provided to assure the co-teaching model was effective and benefitted all students.

We haven't had professional developments to help us define our teaching roles...my strengths are in ESE and your (the general educator) strength is in the language arts area...I think I can enhance what you're (the general educator) doing to make it a little better for my students...

Following her statements of concern, she added comments about how she and her general education counterpart have made the relationship work.

We find time to plan...on the iPhone, email, anyway to make it work. I like the co-teaching model...there's much more teaching time, time dedicated to the children. It's not like that in all co-teaching classes but I am glad I had the opportunity to work with Ms. Adams (pseudonym) for the past school year and this year. She's young with new ideas. She doesn't have a lot of teaching experience but years of experience has it's merits but she is excited and willing to do whatever it takes for students to learn. She encourages me...I have never had an experience like this before.

During the exit interview, the special educator continued to share about the success of her co-teaching class and attributed it to her co-teacher's hard work. She was pleased to share that her co-teacher, during her first year of teaching, had the highest scores on the FCAT for all of her 6th-8th students with a 75% increase.

The general educator in Team One shared the same concerns about not having specific professional development opportunities to prepare her for the co-teaching model. Despite her

disappointment with the lack of preparation, she believes that having her special education counterpart as a co-teacher helped her to survive her first year of teaching. She welcomed her co-teacher into her classroom and freely shared instructional time with her colleague.

I personally cannot relate to them (students with disabilities), which is sometimes difficult. I don't know what's going on in their head. I don't know what the connections that aren't being made or that are being made. So sometimes, that is difficult for me...Ms. Walker (pseudonym) really helps out in that area...She'll (the special educator) give me this look like they're not getting it. And sometimes I'll say, "do you have anything else to say?" She'll come in and add what she has to say. We do that a lot, you know, "OK, they're not getting what I'm saying, maybe you should try it. Try this." Same thing with me, if she's covering something, left out a part, I'll jump in, "Don't forget this, this, and this." So it's very open, very relaxed as far as that goes, to which the students see too, and they're very relaxed and comfortable, usually, working together...we're both comfortable with the materials that we need to teach, I think that helps us a lot.

During the exit interview, the general educator in Team One reported that all of her students with disabilities were passing with the exception of one student who was out of school pending expulsion for conduct outside of her class.

From the researcher's perspective, the co-teaching model works for both of the teachers in Team One. The teachers experienced professional satisfaction in their collaborative work relationship. The co-teachers both expressed a desire for common planning time, additional support and opportunities to participate in professional developments to enhance their co-teaching. Although they desire to improve their co-teaching practice, they share this same desire for their individual professional growth outside of co-teaching. Each teacher was dedicated to

improving the quality of their teaching to benefit all students. I believe that this is part of the reason for their successful partnership, they are willing to make any situation work and utilized each other's strengths and talents to achieve success in a teaching model that they did not feel prepared to teach in due to the lack of preparation. Notably, the special educator reported she has not experienced this level of success and professional respect in other co-teaching partnerships in the past. She attributes the success to her current co-teaching partner.

Team Two

Table 16. Team Two Total Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	19.00	2.00	33.66	10.33	9.33

Table 17. Team Two Individual Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
T2G Solo	25.00	.00	30.00	11.00	11.00
T2G Co-taught	9.00	3.00	57.00	8.00	1.00
T2S Co-taught	23.00	3.00	14.00	12.00	16.00

T2G-Team Two General Educator, T2S- Team Two Special Educator

Tables 16 and 17 provide data of comparison for Team Two. Team Two taught seventh grade mathematics classes. The general education teacher in Team Two maintained consistent levels of one-on-one interactions with the 23 students (one student with a disability) in the solo-taught class (an average of 2 one-on-one interactions per student per class). One-on-one interactions significantly increased when the special educator was present in the co-taught class. On average all students (7 students with disabilities, 9 general education students), had slightly

less than 4 one-on-one interactions with the co-teachers per class. The nature of the interactions focused on checking student work and responding to student signals. The one-on-one interactions with students were observed while the teachers traveled around the class (general educator 3.08%, special educator 15.63%), at students desks (general educator 7.69%, special educator 39.06%), and occasionally during small group instruction lead by the special educator (3.13% of instructional time).

In addition to the increase of one-on-one interactions with all students in the co-taught class versus the solo-taught class, the percent of instructional interactions increased in the co-taught classes. The general educator's instructional time in the co-taught class (73.08%) nearly doubled the amount of instructional time in the solo-taught class (38.96%). During the exit interview, the general educator explained,

I think the increase of time is due to the needs of the students...the students are at different levels, therefore, I have to increase the instructional time and change the way I present the lessons...I adjust to my students' needs.

The nature of the interactions during the co-taught class changed in comparison to the solo-taught classes. The general educator used questioning 50.85% in the co-taught class and 24.44% in the solo-taught class. The general educator spent nearly 30% of instructional time on managerial and personal interactions in the solo-taught class. When the special educator was present, the time devoted to managerial and personal interactions reduced to less than 12%. Although the special educator did not take an instructional lead in the class (the team was observed using one teach, one drift and one teach, one observe for the majority of the observations), her presence had an impact on the amount of time the general educator spent on managerial and personal interactions with students. The special educator devoted slightly less

than 25% of class time on managerial and personal interactions. Despite the special educator's self-reported feelings of inadequacy as reported in her pre-interview, her presence in the class appears to reduce the amount of time the general educator spent on managerial and personal tasks subsequently providing more time for instructional interactions. Although the special educator only was coded 14% of the class, the total mean instructional interactions of both teachers in the co-taught class more than doubled the instructional interactions in the solo-taught class due to the general educators increase from 30% in the solo-taught class to 57% in the co-taught class. The total amount of no interactions and managerial interactions coded in the co-taught class by both teachers increased by approximately 10% in comparison to the solo-taught class while the total personal interactions in the co-taught class increased by 6% in comparison to the solo-taught class.

Although the roles of the teachers were distinctly different, the general educator led instruction while the special educator supported. Both teachers in Team Two had a shared presence in the classroom. The general educator commented about her relationship with her co-teacher, "We work well together...we find ways to make it work." Each teacher worked in her area of expertise, the general educator focused on the content while the special educator primarily monitored student work, checked for understanding, and made modifications.

The special educator shared concerns during the pre-interview about her role in the co-taught class,

I don't know the content very well...I do the homework every night with the kids to show them that I am learning with them and if I can do it they can to...I try to make a difference in other areas since I am not confident with the content. I ask questions that I

have or I think the students have... If I am confused and I've had this material before, I am sure that they might be too. So I ask the questions they don't ask. I hope it helps.

Usually, as I'm bouncing around, I see the same mistake. I see the same pitfall... and I just at that point know. Like today, there was this one, either the problem had a question mark or it was blank on this one particular question. They were going to copy the correct answer down for number seventeen... but they would absolutely not ask. I say, "you know what, it seems to me a lot of us had trouble with number seventeen... so that kind of stuff. I really see I can rarely improve on it, with the exception of asking the questions they're not asking... I do a lot of behavior monitoring and things like that.

The general educator, although she clearly expressed her satisfaction in working with her current co-teacher, shared similar concerns about the co-teaching model. The general educator expressed her concerns about sharing the instructional time with someone who does not know the content.

I am very comfortable with her (current co-teacher)... I would like to see more content certification for the ESE (exceptional students education teachers) co-taught teachers because I believe that all good teachers should know how to modify instruction and make accommodations for students. Without the content... it puts the ESE teachers in a hard position because they are expected to know the accommodations and the content. I don't know what the answer is, but I want to see ESE teachers with content certification so they can co-teach the content with the general education teacher. They don't feel comfortable with the heavy content.

Despite the lack of content knowledge noted by both teachers, they both agreed that the content should be delivered by the content teacher. The general educator commented about the teaching structure used in the co-taught class.

I do all the instruction, and she circulates to make sure the students are on task and asking questions. Help clarify questions for them, making sure that modifications are being made for them, whether it be note taking, or interjecting where she might feel a student might need further clarification.

The special educator on Team Two scored less than the average scores for exemplary co-teaching teams and less than her general education counterpart who exceeded the exemplary average scores. It is interesting to note the teachers' results for Factor I on the CO-ACT differed by 10 points on Importance and 9 points on the presence of Personal Prerequisites. Some of the specific components of Factor I that the special educator rated lower pertained to the teachers' level of confidence about skills, and the teachers' distinct purpose in the class. The special educator's comments made during the interview mirrored her scores on Factor I of the CO-ACT. Although the teachers have a mutual respect and positive working relationship, the general educator scored slightly below the exemplary team average on the presence of Factor II, Professional Relationship. The general educator specifically rated the presence of shared responsibility of instruction lower. This finding is consistent with comments made during the interview pertaining to the level of content knowledge the special education co-teacher possessed. The pair also differed on the Importance and Presence of Factor III, Classroom Dynamic. The general educator exceeded the exemplary average for the Importance of Factor III but scored below on the presence of the components of the factor in the co-taught classroom. The special educator's scores for the presence of Factor III were consistent with the general educator. Factor III specifically focused on items such as the variety of co-teaching structures utilized, varied student groupings, and varied methods of student assessment. The teachers' scores on the Classroom Dynamics section and comments made during the interview were consistent. In

addition to their shared concern about the special educator's level of content knowledge, the teachers expressed their concerns about the lack of time to prepare for the co-teaching environment. The general educator empathized with her co-teacher's teaching schedule as she explains how she plans for the co-teaching class.

She (the special educator) has to go to five different classes...I do all the planning... She has access to my plans... all of my lesson plans are online...there is room for improvement...we need time to plan...We have lunch together, so we talk, and we meet in the morning while the kids aren't around.

Overall, Team Two had a good working relationship and both teachers were committed to making the co-teaching model work for the students despite the lack of content knowledge of the special educator and the lack of planning time. The shared instructional time increased the amount of one-on-one interactions for all students, increased the amount of instructional time for the general educator, and provided the special educator with valuable information (content and class expectations) to help the students with disabilities maintain success in the class. The special educator capitalized on the time she spent in the co-taught class by helping students while in the class and out of the class. The special educator helped students with disabilities stay organized, complete homework assignments, prepare for class activities, and provided additional time and modifications for assessments during an academic support period. The teachers reported that the students with disabilities in the classes observed were all passing at the end of the study. The teachers on Team Two would like to continue their co-teaching partnership to build on the progress that they have made over the past two years.

From the researcher's perspective, the co-teaching partnership benefited the students. The teachers were committed to working on behalf of the students. Both teachers expressed a desire

for more professional development and planning time dedicated to improving their co-teaching practice. The general educator would like to have had a co-teacher who is competent in secondary mathematics. The special educator realized the importance of the content and her lack of knowledge in the area and committed to relearning the content. She took the homework home and demonstrated active learning in the class by asking questions, which helped the students who were unsure of the content and afraid to ask questions. The special educator spent time out of class supporting students with homework and organization. Although the special educator was not completely competent in the mathematics content and did not lead instruction, her time in class provided her with the “skills” that she needed to adequately support the students on mathematics assignments. Both teachers would like to continue to work with each other.

Team Three

Table 18. Team Three Total Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	20.33	15.33	28.00	4.33	2.00

Table 19. Team Three Individual Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
T3G Solo	22.00	.00	39.00	2.00	2.00
T3G Co-taught	13.00	25.00	27.00	7.00	2.00
T3S Co-taught	26.00	21.00	18.00	4.00	2.00

T3G-Team Three General Educator, T3S- Team Three Special Educator

Tables 18 and 19 provide data of comparison for Team Three. Team Three taught seventh grade science classes. Similar to Team Two, Team Three utilized the one teach, one

observe and one teach, one drift models of co-teaching for the majority of the observations. The teaching role was primarily the general educator. Occasionally the special educator took the lead with whole group instruction during reading and note taking. In addition to observing, drifting and monitoring student work, the special educator interjected at the end of sections of the lesson to review the key points. During the review portion of class led by the special educator, he would write important information on the board such as the directions to assignments and vocabulary notes. Both teachers would like more time to prepare for the co-teaching environment. The general educator would like to see more shared instructional time between the co-teachers and more modification and adaptations of the lessons led by the co-teacher. Both teachers are committed to student success and recognize that although the students have had academic success, their co-teaching practice has room for improvement.

The general educator from Team Three maintained the same level of engagement with students during the solo-taught class, the general educator from Team Three had an average of 5.5 one-on-one interactions with the 2 students with disabilities in the class and less than 3 with the 17 general education students. When the special educator was present in the co-taught class the one-on-one interactions slightly decreased to an average of less than 4 one-on-one interactions with students with disabilities (9 students) and 3 with general education students (11 students). When presented with the interaction results, the special educator commented,

I spend a lot of my time watching and waiting to be needed. He (the general educator) knows the content, and he keeps them engaged. We don't have problem behaviors when we are both there, Nicole (pseudonym for the interpreter) answers some of the questions for the DHH students...I travel around the class so they know I am there, and I ask questions to make sure they know what is expected of them. I'd like to do more but it

takes time, this is our second year...each year it improves because I learn the teachers' style and get familiar with the content.

Similar to the special educator in Team Two, the special educator in Team Three capitalized on the time spent in the general education classes to prepare him to help students with disabilities during an academic support period. The students in the class were aware that the special educator would be available after the class to assist with homework from the content area classes.

It is interesting to note that during the co-taught classes the general educators percent of instructional interactions decreased from 60% in the solo-taught class to 36.49% in the co-taught. The pair spent 29.58% of class time interacting with each other (adult interactions). During the adult interactions, the teachers were planning for lessons, clarifying expectations for assignments, and the general educator answered the special educators questions about the content and class activities. Many of the conversations were audible by the class, which also served as a review for the students but the sole purpose of the conversations appeared to benefit the teachers as they worked together. Unlike the other teams observed, the general educator's managerial and personal interaction time with students did not decrease with the presence of the special educator. The total personal interactions coded of both teachers in the co-taught class mirrored the amount of interactions coded in the solo-taught class at 2%. The total amount of managerial interactions coded in the co-taught class by both teachers was nearly six times as much coded in the solo-taught class. The total no interactions coded in the co-taught class exceeded the amount coded in the solo-taught class by 17%. While the instructional interactions increased by 6%.

The pairs' CO-ACT scores are consistent with the results from the observations. Both teachers scored above the exemplary team average on the Importance of the critical components

present in a co-teaching environment and both teachers scored below the exemplary team average on the Presence of the critical components within the co-teaching environment. The teachers agreed that they do not exhibit all of the necessary components for a successful co-teaching partnership, but they are both willing to continue working together in efforts to improve upon the progress that they have made.

Throughout the study, the participants in Team Three consistently echoed the same concerns about their co-teaching practice related to the lack of preparation, content knowledge of teachers, and role parity. When asked about his satisfaction with the current teacher roles and interactions present in the co-teaching class, the general educator commented,

I would say dissatisfied...It has always been a sore point for me. I think that there is some kind of inequity of teaching roles. It should kind of be a 50/50... the modifications are as important as the delivery of the content...I end up teaching slower while they (co-teacher) are doing crowd control and circulating...I have always gotten along with the people, but the lack of planning time has always been an issue...we see each other in class and when we make time, it's not enough.

Although the special educator shared the same concerns about his role in the class, he did comment about the pairs shared role in modifying for students with disabilities,

Whenever we give...a quiz or a test, we will take something that he (general educator) created, and then, I will go through it and modify it. And then we'll talk together about what we have...and we look at certain questions...that maybe need to be changed or taken out...and before we photocopy, that means he and I have a final eye on it. When we grade it, we actually do the assessing. We grade it differently for every single student, based on what they are able to do...because during the test, some students may have

more one-on-one, where we will actually read questions to them...so they're not at a disadvantage

During the exit interview, the special educator continued to explain how he felt about his current co-teaching partnership with the science general educator,

I think it is a slow process...learning each other's teaching styles. I am pleased that we have a shared teaching relationship...but I think that if we had more common planning time so we could sit down and look at the lessons and decide on who will teach, it would be better...so I can feel like I am adding value to the class. Sometimes I am just walking around and I feel like "ok, he's got it, I am not needed." And Other times I just am not familiar with the content so I don't add to the lesson, I just monitor the students. And I am in the wings. But next year will be our third year and we will be in a better place as far as teaching together. I don't feel 100% comfortable in any of the classes that I co-teach with, that's why I was wondering how he (the general educator) teaches when he is alone.

Despite the clear need for improvement noted by both teachers, 78% (7 students) of the students with disabilities in the co-taught class were passing. Two students were failing in the co-taught class; one student had attendance problems as a result of a preexisting medical issue and the other student is failing due to insufficient skills to succeed in the class. The special educator explained, "the second student is reading at about a 2nd Grade Level...needs constant one-on-one...doesn't do anything outside of school...he currently has a 52% and that is with differentiated curriculum, modifications, and many many accommodations." The general educator reported one of the two students with disabilities was failing in the solo-taught class due to lack of homework completion.

From the researcher’s perspective, the students on Team Three benefitted from the instruction in the science co-taught class, but it is not clear whether the presence of the special educator was the determining factor that led to student success. Similar to Team Two, the special educator met with students outside of the co-taught science class and provided academic and organizational support. The pair has been teaching together for two years and they are aware of the areas that need improvement. Both teachers would like to have a common planning time, co-teaching support and professional developments to improve their current co-teaching practice. The general educator preferred a special education co-teacher with content knowledge so he could share the teaching responsibilities evenly. Although both teachers were willing to continue the partnership, neither teacher was confident that the co-teaching would improve drastically without the time to plan together.

Team Four

Table 20. Team Four Total Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	31.33	8.00	36.00	9.33	12.00

Table 21. Team Four Individual Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
T4G Solo	32.00	.00	32.00	20.00	16.00
T4G Co-taught	46.00	12.00	26.00	6.00	6.00
T4S Co-taught	16.00	12.00	50.00	2.00	14.00

T4G-Team Four General Educator, T4S- Team Four Special Educator

Tables 20 and 21 provide data of comparison for Team Four. Team Four taught ninth grade integrated science classes. Team Four had a positive collaborative working relationship that was apparent in the observations. All of the data collected consistently echoed the shared presence of both teachers in the co-teaching environment. The team had the youngest co-teaching partnership yet they shared instructional time, planned together, modified and adapted instruction, and shared assessment responsibilities in the class. Unlike the other co-teaching partnerships, both teachers were certified in the content area. It was evident during the study that the general educator was comfortable sharing the instructional time with the special educator and she was comfortable delivering instruction. The pair utilized team teaching and one teach, one drift for the majority of the observations.

The one-on-one interactions increased during the co-taught classes. On average the 2 students with disabilities had 8 one-on-one interactions with the general educator while the 23 general education students averaged less than 2 per class. The general educator, during the exit interview, commented regarding the one-on-one interactions with students in the solo-taught class.

I try to check on them (students with disabilities) a little more to make sure they are on track. The other students are ok with asking for help when they need it but that's not the case for the ESE (Exceptional Student Education) students. When the co-teacher is here, she does a lot of the checking, but when I teach alone, I try to check on them.

The one-on-one interactions increased when the co-teacher was present in the co-taught class. The 7 students with disabilities averaged approximately 8 one-on-one interactions with the co-teachers while the 17 general education students averaged 2 per class. The special educator commented about the increased one-on-one interactions,

The ESE students in that class need a lot of reminders and redirection. Some have more behavioral concerns than academic so I find myself constantly circulating and checking on them for both academics and behavior. The other students (general education) are not ignored, they don't ask as many questions or require as much at times but everyone in the class is there for a reason, they need two teachers to be successful.

As mentioned earlier, the teachers from Team Four displayed a shared presence in the co-teaching class. The general educator's instructional interactions with students slightly decreased from 32% (solo-taught) to 27% (co-taught) of class time. It is interesting to note that the special educator's instructional time exceeded the amount of time the general educator spent with instructional tasks at 53%. The general educator spent 36% of class time on managerial and personal interactions with students during the solo-taught class and less than 13% in the co-taught class. The special educator not only took on more instructional responsibilities, she also shared the managerial and personal interaction time at slightly less than 20% of class time. The teachers were coded interacting with an adult slightly less than 13% of the time. The interactions with an adult were typically with each other despite the presence of an interpreter in the class. Although all adults were friendly and had a good working relationship, the interpreter mainly interacted with the co-teachers as a voice for the students she provided services for in the class. Overall the teacher interactions were impacted by the presence of the special educator in the co-taught classroom. The total mean instructional interactions of both teachers in the co-taught class more than doubled the instructional interactions in the solo-taught class. The general educator's time coded as no interaction increased by 14% in the co-taught class in comparison to the solo-taught class. As a result, the total amount of no interactions coded in the co-taught class significantly increased in comparison to the solo-taught class. The managerial interactions coded

in the co-taught class decreased by 12% in comparison to the solo-taught class while the total personal interactions in the co-taught class increased by 6% in comparison to the solo-taught class.

The CO-ACT scores for both teachers on Team Four exceed the exemplary average for co-teaching teams. Both teachers agreed on the Importance and the Presence of all of the critical components identified on the CO-ACT. The high CO-ACT scores not only reflect the interaction data collected but also were consistent with comments shared during the interviews. The special educator commented about her new co-teacher and her role in the co-taught class,

A lot of what we do is to try several different methods or ways to teach. I feel like what we are trying to do is give kids a variety of ways to be exposed to the curriculum and if a kid is struggling, we try to pay attention to that kind of thing... I used to do a lot of it (co-teaching) on the fly but now we plan and talk during our lunch... I think we just kind of decide that these are my strengths and these are my weaknesses... I am familiar with most of the content, I had a science classroom but never had a science lab or supplies from the science department, and I have the strategies to offer and I know when the kids are not getting it. It just works.

The teachers were in a unique situation as a result of a structural change within the school. The general educator was a new member to the teaching staff at the school and the special educator was the veteran staff member. Despite the adjustments necessary to acclimate to the new school, new co-teacher, and new students; the general educator did not appear to have trouble adjusting and the students were experiencing academic success. All except for 2 students with disabilities in the co-taught classes were passing at the end of the study. The general

educator explained, “the ones who are failing can do the work but they miss out because of poor attendance and they don’t make up the work.”

From the researcher’s perspective, Team Four had a successful co-teaching partnership. The teachers shared all teaching responsibilities. The general educator provided the special educator with the opportunity to make the necessary accommodations and modifications to instruction for students with disabilities during instructional time. The special educator had a secondary science degree, subsequently; the instruction was not compromised when the special educator led class. Both teachers were confident in each other’s ability to teach and had a mutual professional respect for each other. The teachers’ were enthusiastic about their successes and shared an interest in continuing to work with each other the following year.

Team Five

Table 22. Team Five Total Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
Mean	30.66	6.66	18.00	11.33	6.00

Table 23. Team Five Individual Mean Interactions

	No Interaction	Adult	Instructional	Managerial	Personal
T5G Solo	36.00	.00	20.00	20.00	4.00
T5G Co-taught	33.00	10.00	22.00	6.00	2.00
T5S Co-taught	24.00	10.00	12.00	8.00	12.00

T5G-Team Five General Educator, T5S- Team Five Special Educator

Tables 22 and 23 provide data of comparison for Team Five. Team Five taught ninth grade language arts classes. Team Five had a mutual respect for each other, displayed a shared

presence in the class, shared instructional time, and assessment responsibilities. The pair was in their first year of co-teaching. The model of teaching was new to the general educator, but the special educator was familiar with co-teaching and had previous co-teaching experiences. The teachers' utilized team teaching and one teach, one drift for the majority of the observations.

On average the 3 students with disabilities had 5 one-on-one interactions with the general educator while the 20 general education students averaged 1 or less one-on-one interactions. The one-on-one interactions with the general educators were consistent in the solo-taught and co-taught settings. The co-teachers made an average of less than 3 one-on-one interactions with the 14 students with disabilities while the 9 general education students received on average less than 1 one-to-one interaction from the teachers per class.

The general educator maintained consistent instructional interactions in both settings (25% solo-taught, 30.56% co-taught.). Although there was a shared presence in the co-taught class between the teachers, the special educator was only coded with instructional interactions with students 18.18% of the observation. It is interesting to note that the special educator spent more time (30.30%) with managerial and personal interactions, than with instructional interactions (18.18%). The general educator's time on managerial and personal interactions with students was higher in the solo-taught class (30%) and drastically decreased in the co-taught class (11.11%). The pair spent slightly less than 14% of class time interacting with each other. During the adult interactions, the teachers restructured lessons, shared ideas about the class, and planned. Overall the teacher interactions were impacted by the presence of the special educator in the co-taught classroom. The total mean instructional interactions of both teachers in the co-taught class nearly doubled the instructional interactions in the solo-taught class. The total amount of no interactions increased in the co-taught class while the personal interactions

decreased and the managerial interactions coded slightly increased in comparison to the solo-taught class.

The Team's overall CO-ACT scores exceeded the average exemplary team score. Both teachers agreed on the Importance and the Presence of all of the critical components identified on the CO-ACT. The high CO-ACT scores reflect the interaction data collected and comments shared during the interviews. The special educator commented about her working relationship and her role in the co-taught class,

I am not treated like a teacher's aide or expected to give out pencils or do things like that, I'm actually helping, you know like delivering instructions, and it is nice that she covers most of the content. I do have some good strategies, and I feel comfortable delivering them.

She continued to explain how the pair maintains their positive working relationship,

Well we constantly talk about and reflect about how our lessons went, and we do it all day...reflecting in between classes, always talking about what we need to do next period to make it smoother, or what didn't work, and be like wow that didn't work what do we need to do and then we will adjust it for the other classes... I am very satisfied. It is working very well. We bounce back and forth with each other. If we feel we have to chime in or give kids the direction, I don't feel like I am stepping on her feet and if I am teaching a lesson and she has to chime in because I have forgotten a component of whatever we are doing, it's fine. My biggest thing is that we are both consistent; we both follow the agenda.

Both teachers expressed enthusiasm about continuing to co-teach the following year. The team was satisfied about the progress they were able to make in their first year of co-teaching together. At the end of the study the general educator reported,

I think it (co-teaching) makes a difference. It helps me, I go a little slower with the co-taught class, she (the special educator) helps me to pace the instruction so the kids can get it...It's working for most of them but some are failing, they have poor attendance and some just don't turn the work in. We give class time for make-up work, but it still isn't enough for them. They have to do their part to succeed.

Of the 14 students with disabilities, 8 were passing and 5 were failing at the end of the study. According to the teachers, the students who were not passing had attendance problems and were not consistent with completing assignments. The teachers believed the students had the ability and the support within the class to be successful.

From the researcher's perspective, Team Five had a successful co-teaching partnership. The teachers worked collaboratively and were comfortable sharing teaching responsibilities. The teachers participated in co-teaching professional developments together and received school and district level supports to assist with the development of their co-teaching partnership. The general educator was aware of her limited knowledge pertaining to instruction for students with disabilities and welcomed the special educator to implement any necessary adjustments to instruction. The teachers appreciated the expertise of the team and looked forward to continuing the teaching partnership.

Conclusion

Overall the data from the CO-ACT was consistent with the interaction and interview data. The CO-ACT data demonstrated mixed perceptions of co-teaching. Three of the teams' scores mirrored each other, exceeding the exemplary co-teaching team average, on the importance and presence of critical co-teaching components while one team's scores were lower than the exemplary average. The remaining team's scores differed on the presence of critical co-teaching components. The findings imply that three of the teams were collaborative and two were still developing or had barriers to becoming an exemplary team.

The interaction data differed amongst the individual teams. The overall results revealed that general educators consistently taught using whole group instruction in the solo-taught and co-taught classes. With the exception of two teams, the special educators interacted in an instructional capacity less than the general educators during the co-taught classes. The findings imply a need for varied instructional methods particularly in the co-taught class and the use of various models to increase use and presence of both teachers.

Teachers were aware that co-teaching required time to develop and maintain a good working relationship but also shared they would like additional support and professional developments on co-teaching to improve their current co-teaching practice. The three teams that were more collaborative in nature utilized more team teaching while the remaining teams dominantly used the one teach, one observe and one teach, one support models of co-teaching as identified by Friend and Cook (2004).

Each model used during the classes observed exhibited evidence of success. Although all of the teachers had an ideal goal of being fully collaborative so team teaching would be utilized for the majority of instruction, the study revealed that there was value added by the special

educator's presence regardless of the co-teaching model. A new outcome from this study was the value of co-teaching for preparing the special education teacher for support in more restrictive settings. Two teams had an academic support class where special educators were able to continue to support students despite their limited content. Being in the co-taught setting allowed them to become familiar with the content, class assignments, and teacher expectations.

Although the researcher concluded that the co-teaching models utilized by the teaching teams had varied levels of success, areas of improvement were noted, such as, the need of increased preparation for teachers. Some special educators expressed a need to increase their content knowledge. Although the teachers had positive attitudes about co-teaching they were not fully aware of all of the benefits embedded within the co-teaching model. Co-teaching professional developments and support for both teachers would enhance the co-teaching practice for all participants. Teachers would benefit from understanding the positive impact that the co-teaching model has on students and professionals.

Chapter Five provides additional insight into the co-teaching partnerships and how the findings relate to current co-teaching literature. The researcher identifies interesting trends in the data, discusses the limitations of the study, implications for the field, and concludes with suggestions for future research.

CHAPTER FIVE: DISCUSSION

Purpose of the Study

The purpose of this research study was to identify the critical components that contribute to instructional delivery in co-taught secondary classrooms in various content areas. This chapter provides a thorough description of the research design employed in the implementation of the study. The chapter begins with a presentation of the research design followed by results, interesting trends, and limitations. The chapter concludes with implications for the field and suggestions for future research.

Research Design

This study employed a non-experimental mixed method research design. The study integrated qualitative and quantitative methods to gain insight into general education teachers' roles in solo-taught and co-taught classrooms and special educators' roles in co-taught classrooms. Instrumentation included the use of the Teacher Roles Observation Schedule (TROS), the Colorado Assessment of Co-Teaching (CO-ACT), interview questions, and field notes. The quantitative portion of the study consisted of event recording of teacher interactions (TROS), co-teacher perception rating scale scores (CO-ACT), and class seating charts to monitor the occurrence of one-on-one interactions with students in both settings. The qualitative portion of the research study consisted of the researcher gathering ongoing field notes and teacher interviews.

The researchers observed five general and special education co-teaching teams (10 teachers) and five of the same general educators' solo-taught classrooms over a 10-week period using the TROS, a time sampling evaluation tool to monitor the level of teacher interactions

during instruction. Four research questions were investigated. The first question explored the perceptions of co-teachers' current co-teaching partnerships. The Second question investigated general education teachers' interaction behaviors in solo-taught inclusive classes. Similarly, the third and fourth questions investigated both the general and special education teachers' interaction behaviors in co-taught classes. After the observations and final interviews, the data were statistically analyzed and triangulated utilizing SPSS, a statistical analysis software and ATLAS.ti, a qualitative data analysis software. The triangulation strategy enabled the researcher to enhance the validity of the findings (Glesne, 2006; Mathison, 1988).

Results

In summary, the data analysis revealed the interaction behaviors and perceptions of five teams of co-teachers and how specific findings related to the general educators' solo-taught class. The research findings were consistent with current literature and provided additional insight on teacher interaction behaviors in secondary inclusive settings (solo and co-taught classes), potential use of less engaging models of co-teaching, and successes and failures of these co-teaching teams. Based on the findings from the data analysis, the researcher selected from her lens, as an expert in co-teaching, the most and least successful co-teaching teams from the study (Team One and Team Three respectively). The following section highlights the factors that contributed to the researcher selected ranking of Team One as successful and Team Three as unsuccessful. Additional comments about Teams Two, Four and Five are woven throughout the discussion.

Hughes and Murawski (2001) defined collaboration as “a style for interaction, which includes dialogue, planning, shared and creative decision making, and follow-up between at least

two co-equal professionals with diverse expertise, in which the goal of interaction is to provide appropriate services for students, including high achieving and gifted students” (p.196). The data collected on Team One exemplified collaboration as defined by Hughes and Murawski. Based upon the data from the various sources, the researcher ranked Team One as the most successful co-teaching team. This ranking evolved from the data of interactions, CO-ACT scores, interviews and researcher’s field notes.

As mentioned by Blum, Lipsett, and Yocom, (2002), small group instruction is a practical approach to meet the needs of a diverse group of learners. The general education teacher on Team One occasionally used small group instruction to maximize the amount of one-on-one interactions with students, and therefore, the team had the highest one-on-one interactions in both settings. In the co-taught class, general education students had an average of 4 one-on-one interactions while students with disabilities averaged 8 per class. In the solo-taught class, general education students had an average of 5 one-on-one interactions while students with disabilities averaged 8 per class. Similar to this study’s findings, Magiera and Zigmond reported students with disabilities received more instructional interactions in co-taught classes than solo-taught general education classes. The general educator was coded 46.27% of the observations in an instructional capacity during the solo-taught class setting while in the co-taught class she shared the instructional responsibilities with the special educator who was coded 59.65% of the time in the co-taught classes in an instructional role. When the special educator was present, the general educator’s instructional interactions decreased (40.35%) as the special educator took on a defined instructional role. The data trends show that the general educator, although she had the highest level of one-on-one interactions of all of the general educators in the study, had increased one-on-one interactions with all students in the co-taught class setting. The data trends also show

shared presence of both teachers (Team Teaching 90% of the instructional time). Teachers reach this collaborative level, team teaching, when a shared presence is established through ongoing planning and shared teaching responsibilities (Gatley & Gatley, 2001). The team's CO-ACT scores reflected the co-teachers' shared perceptions about the Importance and Presence of critical co-teaching components. Both teachers exceeded the average exemplary co-teaching team scores as stated by Adams, Cessna, and Friend (1993), "A high overall score typically reflects co-teaching that relies extensively on a collaborative relationship" (p. 6).

Qualitative data further demonstrates this teams' success. Experts assert successful co-teaching requires teacher compatibility and common planning time (Dieker, 2001; Scruggs, Mastropieri, & McDuffie, 2007). Despite the lack of common planning time within the teachers' schedules, Team One made time to plan between classes and utilized various technology resources during the team's personal time (text messages, emails, phone calls, and lesson plans shared on a school database) over the two years of their co-teaching partnership. In addition to a commitment to plan, as suggested by Dieker (2001), Team One maintained a consistent positive classroom atmosphere, shared planning and goal-setting responsibilities for behavioral and academic needs, and had role clarity for both teachers. Both teachers were comfortable with the content delivery and shared instructional time during the co-taught class. Researchers show that little emphasis is placed in teacher preparation programs on preparing general educators for students with disabilities in secondary content areas (Cawley, Hayden, Cade, & Baker-Kroczyński, 2002). The general educator recognized her limited knowledge on differentiating instruction and welcomed the special educator to implement the necessary strategies to assure student success in the co-taught classroom.

Although there were benefits to Team Three's co-teaching partnership, this team was ranked as the least successful co-teaching team from the researcher's perspective. This ranking evolved from the various data sources. This team, also in their second year of co-teaching, did not have common planning time within their schedule nor did they establish a consistent commitment to meet at another time outside of the co-taught class. Gately and Gately (2001) assert, common planning time, scheduled by the day, week or unit, is essential for co-teaching pairs to reach a truly collaborative relationship. The team did use time to plan and interact with each other during class time but rarely met out of class. Team Three was observed planning "on the fly" frequently (30% of class time). Magiera and colleagues (2005) reported, co-teachers who lacked planning time taught "on the fly." With an exception of Team Three, all teams made time to plan outside of class, subsequently, they spent less instructional time interacting with their co-teacher for the purpose of planning during class time. Team Three utilized twice as much instructional time during class to plan, review content with each other, clarify assignments and class expectations than the other teams in the study. On average 14% of the instructional time was used by the co-teaching teams to do tasks similar to Team Three's. According to both teachers on Team Three, the time spent interacting during instructional time was due to the lack of planning time and the special educator's lack of science content knowledge. The general educator, despite his positive personal and professional relationship with his co-teacher, said he felt that there was an inequality in the teaching roles within the co-teaching class. He welcomed the support from the special educator but did not experience a high level of shared teaching responsibilities such as planning, assessment, modifications and accommodations led by the special educator. Previous research indicated special educators commonly managed behaviors, praised students, circulated the class to help students stay on task, and clarified and modified

instruction (Morocco & Agilar, 2002; Gatley & Gatley, 2001; Weiss & Brighman, 2000). On this team, the general educator shared that he was not satisfied with the special educator's role of "managing the crowd." The general educator's strong stand against the special educator's management role may have been due to the fact that the co-taught class had limited behavioral problems and the general educator maintained consistent engagement with all students, therefore the special educator's role in the class was limited and not clearly defined. The co-teaching model was created to provide two highly qualified teachers to work together in an inclusive setting (Trent et al., 2003). Collaboration between general and special educators can be an asset to both teachers and serve as a tool to support all students (Murawski, 2009; Friend & Cook, 2007; Weiss & Lloyd, 2003). The general educator on Team Three welcomed the presence of the special educator but wanted more of a collaborative partnership to share teaching responsibilities. Unfortunately, due to the insufficient content knowledge sometimes offered in the preparation of special educators, Team Three did not effectively reach its potential to maximize the presence of the two professionals (Greer & Meyen, 2009).

The teams' CO-ACT scores reflected their common perceptions of the Importance and Presence of critical elements of successful co-teaching. Both teacher's overall scores on the CO-ACT exceeded the exemplary average on the Importance of critical co-teaching components while their scores on the Presence of the components were below the exemplary team average (general educator 187/146, special educator 182/125) indicating the lack of a collaborative relationship (Adams, Cessna, & Friend, 1993).

During the early stages of co-teaching, special educators commonly assume the role of classroom assistant (Gately & Gately, 2003). Team Three mainly used the one teach, one observe and the one teach, one drift models of co-teaching (80% collectively). Although there

were identified benefits to using the two models of co-teaching, the special educator said he felt like he “wasn’t needed” during the co-taught class and waited for opportunities to assist.

Although the special educator often felt out of place, the general educator demonstrated professional respect for his colleague and occasionally stopped during instruction to see if he had anything to add. At that point, the special educator had the opportunity to add the “specialness” of special education by using effective practice to enhance instruction (Cook & Schirmer, 2003). The special educator generally reviewed directions, provided guided instruction when students took notes, and wrote important information on the board for the students to use as a guide.

Bauwens, Cook, Friend, Hourcade, Walther-Thomas and other experts in the field of co-teaching (Buckley, 2005; Dieker, 2001; Karge, McClure, & Patton, 1995; Magiera & Zigmond, 2005; Mastropieri, et al., 2005; Murawski & Swanson, 2001; Scruggs, Mastropieri & McDuffie, 2007; Trent, et al., 2003; Villa, et al., 2005; Walther-Thomas, 1997; Weiss & Brigham, 2000; Wiess & Lloyd, 2002) stress the importance of role parity of educators in co-taught classrooms to ensure success of the instructional model. Consistent planning and communication of co-teachers lead to clearly identified roles and expectations within the co-teaching environment (Dieker & Murawski, 2003). The teachers on Team Three agreed about the importance of the critical components of co-teaching but had difficulty implementing the practice successfully. The literature suggests, positive attitudes about inclusion help to ensure the success of inclusive practices. Scruggs and his colleagues (2007) reported, unsuccessful co-teaching teams used less collaboration, which led to conflict. In contrast to the findings of Scruggs and his colleagues, Team Three had a positive personal and professional relationship. With the appropriate supports in place, the team could have the potential to improve their current co-teaching practice.

CO-ACT

According to Adams, Cessna, and Friend (1993), an overall high CO-ACT score is characteristic of a collaborative co-teaching relationship. The CO-ACT scores for the teacher participants were consistent with the researcher's conclusions about the levels of successful co-teaching observed. The overall scores of Teams One, Four and Five exceeded the exemplary average of successful co-teaching teams while Teams Two and Three were below exemplary. It is interesting to note that the teams with high scores demonstrated characteristics necessary for successful inclusion models such as collaborative partnerships, constant communication, established planning time, and positive classroom environments (Dieker, 2001; Villa, Thousand, Nevin, & Liston, 2005), shared teaching responsibilities, and were both qualified in the content area. The CO-ACT specifically focused on the importance and presence of critical components of co-teaching consist with current literature such as personal prerequisites, the professional relationship, classroom dynamics, and planning time (Adams, Cessna, & Friend, 1993).

Interactions

The data reveal that general educators increased their levels of interactions in the co-taught setting. On average the general educators were coded 32.78% of the observations as "no interaction" during the solo-taught classes while this number reduced to 28% during the co-taught classes. The general educator from Team Two explained, "I think the increase of time is due to the needs of the students...the students are at different levels therefore I have to increase the instructional time and change the way I present the lessons...I adjust to my students' needs." Murawski (2006) reported similar findings in her observations of secondary English classes. General educators were coded approximately 32.5% in non-instructional tasks while special

educators were observed approximately 46% in non-instructional tasks during co-taught classes observed by Murawski.

On average general educator's "instructional" interactions were slightly higher in the solo-taught class than the co-taught class (48% and 41% respectively). Magiera and colleagues (2005) reported instructional interactions of a mathematics teacher in a co-taught setting at 67% of observations, as the special educator took on the support role of drifting around the class to each student. Friend (2009) reported, general educators, who commonly take the instructional lead in co-taught classrooms, contribute 70% to 80% of the talk time, leaving the special educator with limited verbal interactions with students. Similar to Friend's findings, on average the special educators did not share equal "talk time" during instruction. Although special educators were often observed in a support role, they were observed doing instructional tasks 38% of the time. The interactions mainly took place at students' desks or traveling around the class for the purpose of checking student work, responding to student signals, and clarifying directions. Special educators on teams with and without role parity gravitated to interactions coded as "managerial" (8%) and "personal" (12%), therefore reducing the amount of time general educators spent on similar task. General educators were observed interacting in more managerial and personal interactions in the solo-taught class than the co-taught class (17% and 10%, 9% and 7% respectively).

The use of co-teaching environments provides special educators the opportunity to add what is special about special education while supporting students as the general educator leads instruction. Special educators were able to assume the responsibility of personal and managerial tasks in order to allow the general educators additional class time to focus on instruction.

One-on-One

Magiera and Zigmond (2005) reported students with disabilities received more instructional interactions in co-taught classes than general education classrooms. The majority of the teams' one-on-one interactions with students identified with disabilities were consistent with current research. Overall, students with disabilities received more one-on-one interactions from the general and special educators in the co-taught setting. However, the team identified as most successful, Team One, had more one-on-one interactions with students than all of the other teams in the study. Again the most effective team, Team One, varied their instructional methods and was observed interacting with students the most by using small group instruction. Small group instruction maximizes the potential for one-on-one interactions with students, provides an opportunity for students to problem solve with peers, and promotes students to explore their own ideas (Bennett, Sylvia, Lubben, Campbell, & Robinson, 2010).

Interesting Trends

The researcher sought to identify the interaction behaviors amongst general and special education co-teaching teams. Although the research questions did not specifically address the differences in co-teaching instruction between content areas, notable differences were revealed. The following section provides a discussion about the interesting trends in the study pertaining to teacher content knowledge, instructional delivery methods, the benefits to the lower models of co-teaching, and the impact on student grades.

Content Knowledge

Team One and Team Five, both were identified by the researcher as successful co-teaching teams, and yet were both Language Arts classes. Although interesting that this content

was easier for collaboration, this small study cannot go beyond a level of acknowledging this fact. Interesting to note though that both Language Arts teams did not have common planning time, yet the teams were dedicated to finding time to plan. In addition to shared planning, the teams shared all teaching responsibilities. Although the special educators were not certified secondary English teachers, they both stated that they felt comfortable with the majority of the instruction and were welcomed by their general education counterparts to modify instruction and provide the necessary accommodations to students with disabilities. The research literature suggests that special education teachers, although predominately observed as assistants, transition easier into secondary English/Language Arts and elementary co-taught classes (Huber, 2005; Murawski, 2006; Wilson & Michaels, 2006). Similar to the Language Arts teams, Team Four was identified as a successful co-teaching team. Team Four also did not have a common planning time but was committed to using their lunch period for planning. The teachers also shared all of the teaching responsibilities and shared a unique factor- they both were certified in science. Harbort and colleagues (2007) conducted a study on secondary co-taught science classes and found that the special educator most often served in a support role and the expertise of the special educator was not used to the greatest potential. Despite Harbort and colleagues' findings, the special educator on Team Four was observed in a lead instructional role. She comfortably shared the planning, teaching, and assessment due to her background in science. She held a Bachelor's degree in secondary science and had previously taught self-contained secondary science classes. According to Mastropieri and colleagues (2005), special educators are often viewed as instructional assistants when they lack the content knowledge. The special educators on Teams One, Four, and Five were comfortable with the content and confidently shared teaching roles with their co-teachers.

In contrast, the special educators on Teams Two and Three were viewed as instructional assistants and one of the contributing factors could have been that the special educator lacked content knowledge (Mastropieri et al., 2005). These two teams were the least successful in the study although there were notable contributions made by the special educators. The teams did not have a common planning time and subsequently used more of an “on the fly” planning during the instruction. This planning was observed 30% of the instructional time. If the teachers shared comparable content knowledge perhaps less time would have been spent in the class for adult interaction and more time would have been dedicated to teaching students. Team Two shared their lunch period together to discuss the progress of students and upcoming lessons, yet the team rarely ventured beyond the lower models of co-teaching (one teach, one observe and one teach, one support). The two lower models of co-teaching; the one teach, one observe and the one teach, one drift model requires minimal planning for successful implementation. Teachers may be viewed as an aid when the lower models of co-teaching are used for prolonged periods (Friend & Cook, 2004). Teachers in the field who are found to be in a content area outside their expertise are cautioned by the researcher not to take on the role of the paraprofessional. To eliminate this lower role expectation, assisting teachers are encouraged to use highly specialized (Heward, 2003) well-defined (Dieker, 2002) support to students. Neither of the special educators on Team Two and Three had prior experiences in the content areas (e.g. teaching experiences, certifications or degrees) subsequently they lacked the content knowledge and confidence necessary to move beyond the lower models of co-teaching and to step up and bring into the content classes instructional strategies, vocabulary enrichment, behavioral strategies, organizational techniques, literacy techniques, specialized instruction and namely “what is special about special education”. Gately and Gately (2001) identified curriculum

competence and confidence as necessary components to the co-teaching relationship. Both special educators expressed concerns about saying or doing the “wrong” thing during instructional time that would confuse the students rather than help. Likewise, the general educators shared an interest in having co-teaching counterparts that were competent in their respective content areas.

Instructional Delivery Methods

Miller and colleagues (2000) assert, “general educators must increase their willingness to open traditionally private classrooms to special educators” (p. 35). The general educators in the study were open to the special educators although not all of them made drastic changes to their instructional practices. Consistent with previous research conducted by Magiera and colleagues (2005), the general educators rarely varied their instructional methods subsequently reducing the amount of opportunities the special educators had to enhance instruction. Additionally, similar to findings reported by Scruggs and colleagues’ (2007), co-teaching teams were not observed using parallel teaching or alternative teaching. Direct instruction and whole group instruction were the methods of choice that dominated the instructional practices used. The science classes utilized small group instruction during lab activities. Despite the lack of content knowledge possessed by the special educators on Teams Two and Three, the teams did not use the extra support to its fullest potential. Harbort and colleagues (2007) reported similar findings in a study of secondary science co-teaching teams. The special educators, with and without content knowledge possessed skills to provide additional value to the instruction. Magiera and colleagues (2005) assert, “to make the best use of the special education teacher’s skills and expertise in secondary mathematics class, smaller group instruction should become the norm” (p. 23). Small group

instruction was rarely observed in Team Two's mathematics classes. Overall, the expertise of the special education teachers were not used to the greatest potential. Both general and special educators feared the teachers without sufficient content knowledge might provide the wrong information or confuse students in teaching concepts, subsequently, small group instruction was rarely used in mathematics and science classes. The class structure in Team One provided opportunities for the special educator's expertise to be used during instruction. As previously stated, Team One incorporated small cooperative learning groups. This arrangement gave the special educator time to meet with students individually to monitor their progress, assess whether IEP goals and objectives were being met, in addition to providing support and clarification as needed without interrupting the flow of instruction.

Benefits to the Lower Models of Co-teaching

It has been noted that the special educators and the co-teaching model were not used to the fullest potential, on Teams Two and Three, yet an interesting trend emerged through their use of the lower models of co-teaching. The lower co-teaching models within the hierarchy had benefits beyond the general education setting for students with disabilities and the special educators in the study. While using the one teach, one observe and one teach, one drift models of co-teaching (Friend & Cook, 2004), the special educators took notes about the students' assignments, the general educators' expectations, and monitored the progress of students to determine whether the goals and objectives of the IEPs were being met. The information collected was beneficial to the special educators and students with disabilities during the academic support period when the teachers met with students to review homework assignments, organize, study and work on long term class projects. Although these support tasks may be

argued a paraprofessional task, the level of support was not one that would have emerged from an untrained specialist but took a highly qualified teacher to deliver. The general education setting allowed the teacher to have the content to increase the specialness of the self-contained delivery, balance that might be missing in higher grade level content areas.

Student Outcomes

Researchers continue to debate the effectiveness of co-teaching as it relates to student outcomes (Magiera & Zigmond, 2005; Murawski, 2006; Wilson & Michaels, 2006; Zigmond, 2003). The current study did not specifically explore student outcomes in co-taught settings although reports of student outcomes did emerge. Teachers reported student successes and failures during the exit interviews. Of the 59 students with disabilities in the study, 49 passed and 10 failed. The study did not determine the academic effects of including students in general education settings (solo-taught and co-taught), but overall the study did reveal that inclusion did not have a negative effect on student outcomes. Eighty-three percent of the students with disabilities in the classes observed passed. The teachers reported that the student failures were due to a lack of skills, insufficient work completion and absenteeism. It is important to note that the high school level classrooms reported 7 failures while the middle school level classrooms reported only 3. In two of the middle school level classrooms an academic support period was provided while this type of support was not available at the high school level. General educators in the high school level attributed student failures to absenteeism and lack of work completion related to the absences. Perhaps with academic supports, students may have shown an improvement in work completion at the high school. Overall, co-teaching outcomes for student

success did not vary from the outcomes of the solo taught classroom; a point for future research as the hope would be co-teaching would negate student failure.

Within the continuum of service delivery models, special educators at all levels took on a variety of roles. Special education teachers provided services to students with disabilities through (a) direct or indirect consultation with the general educator, (b) pullout or resource class instruction, (c) self-contained class instruction, or (d) co-teach with a general educator (Zigmond, 2003; Mastropieri & Scruggs, 2000). The teachers' on Teams Two and Three had a unique schedule, not common to all secondary settings, which allowed them to meet with students outside of the co-taught class. Without the academic support period, the predominate use of the lower models would not have been as beneficial. Special educators indirect consultation with the general educator or facilitated support as a service delivery option for students with disabilities in an area outside content area expertise would offer similar opportunities for the teachers to observe and monitor students in less time. To maximize the special educator's time supporting students, brief classroom visits and meetings with general educators could serve the same purpose of the lower models of co-teaching. The consultation model eliminates the special educator's time constraints that normally occur when spending several class periods working with one teacher and one group of students (Friend & Cook, 2007).

One of the driving forces for co-teaching and collaboration of general and special education teachers was to meet the academic needs of the students with disabilities in inclusive settings. Currently, about 96% of students with disabilities are educated in public schools. Students with mild to moderate disabilities receive at least 80% of their instruction in general education classrooms (Annual Report to Congress, 2006; The American Youth Policy Forum, 2002). The interesting trends within the study findings indicate notable successes and room for

improvement in the implementation of co-teaching and student outcomes related to grade performance. Murawski (2006) explains, teachers' willingness to participate in co-teaching partnerships is not enough to ensure successful implementation of co-teaching. Student credit generation is critical at the high school level and should be an issue of further investigation.

Implications

The data gathered provides insight into co-teaching partnerships at the secondary level. The present status of special education teacher preparation programs at the secondary level needs to be adjusted to the rising needs and concerns revealed in this study to ensure that students with disabilities receive the general content knowledge accompanied with the necessary accommodations (Greer & Meyen, 2009). Particularly, increased attention needs to be placed in the mathematics and science content areas for special educators during their preparation programs or much like secondary content teachers, an area of expertise in a content area needs to emerge related to licensure and practice. This recommendation not only comes from the researcher, but from the voices of the teachers in the study. The teachers on Teams Two and Three all shared common concerns about the insufficient content knowledge of the special educators in science and mathematics. The mathematics teacher on Team Two shared, "I would like to see more content certification for the ESE (exceptional students education teachers) co-taught teachers." The general education science teacher echoed similar concerns as he discussed the inequity of teaching roles due to the minimal level of science content knowledge possessed by his special education co-teacher,

I think that there is some kind of inequity of teaching roles. It should kind of be a 50/50... the modifications are as important as the delivery of the content...I end up teaching slower while they (co-teacher) are doing crowd control and circulating.

The research in the field of special education continues to struggle with “what is special about special education.” Yet in an inclusive co-taught setting the specialty of the field may have to morph and change. According to Greer and Meyen (2009) “current preparation standards and practices may be insufficient for preparing special education teachers to effectively meet the academic needs of students with learning disabilities in content areas and thus ensure that those students are not disadvantaged in meeting accountability mandates resulting from NCLB (2001) and IDEA (2004)” (p. 196-197).

In qualitative research the lens of the researcher is a critical component. The researcher conducting this study was a secondary special educator who co-taught for 7 years prior to conducting the study. Although she did not have college courses on co-teaching or any content areas, she co-taught in secondary language arts and mathematics classes and provided facilitated support for social studies and science classes. In efforts to increase her mathematics and science content knowledge, she participated in enrichment activities and programs. Her experience as a teacher in the Connecticut Pre Engineering Program (CPEP) offered her an opportunity to participate in Science, Technology, Engineering and Mathematics (STEM) teacher workshops that focused on utilizing hands-on activities to teach secondary students. The researcher also coordinated a research tutoring clinic that focused on improving mathematics and reading fluency. Science content material was used to reach reading goals for the student participants in the tutoring clinic. In addition to the teaching experiences and professional development opportunities that the researcher participated in, she also worked along-side engineers at the

Lockheed Martin Corporation as a consultant in the development of a virtual mathematics professional development program for beginning teachers to improve their mathematics instructional techniques. The experiences in mathematics and science provided the researcher with an informed lens to identify the need for special educators to have a higher level of content knowledge in the mathematics and science areas to contribute at an increased level in co-teaching partnerships. So why is this information important? Just as a special educator can never be prepared for all the ranges of abilities and disabilities he or she will serve, the same holds true for content. Just as general educators cannot ever take enough in the field of special education, the time is now for special educators to become content specialist if they are moving toward the high school level. Currently only 19 states provide separate special education certification by elementary and secondary (National Association of State Directors of Special Education, 2010). The research on co-teaching and the field of special education is currently not clear and may never be as to how much “content” is enough but with a movement to common core content areas, special educators can add to what is “special” about special education. The time is right for special education to reflect upon Greer and Meyen’s words, “special education teachers need an additional set of skills to maximize their effectiveness in enhancing the academic achievement of students with learning disabilities as they access the general education curriculum” (p. 201).

The beginning results of the study strongly emphasize as does the voice of the teachers for special educators to improve their content knowledge in mathematics and science areas to provide greater opportunities to contribute at a higher level. Although this study was about co-teaching interaction behaviors, a clear difference in the development of co-teaching relationships when content knowledge is or is not equal did emerge. McLeskey and Billingsley (2008)

reported that 82-99% of special education teachers at the secondary level did not meet the highly qualified standards. To reach higher levels of co-teaching, as demonstrated by Teams One, Four and Five, secondary special education teacher preparation programs need to equip future teachers with the necessary content knowledge and skills to become highly qualified. Similarly, as suggested by the general educator on Team Two, secondary general education preparation programs need to equip future content area teachers with the necessary skills to deliver instruction to ALL students.

Magiera and colleagues (2005) suggested that the goal in the co-taught secondary class is not to make the special educator a quasi specialist in the content area. In contrast, it is to increase the amount of small group and specialized instruction to meet the needs of students with disabilities and share the responsibility of delivering instruction. The least successful co-teaching teams rarely used small group instruction and the special educators shared limited instructional time due to lack of content knowledge. Cawley and colleagues (2002) discussed the lack of preparation secondary content teacher preparation programs dedicate to teaching students with disabilities. Likewise, Greer and Meyen (2009) noted the need for an increase presence of content knowledge in special education preparation programs. When the special and general educators are adequately prepared, it will reduce the learning curve that co-teaching teams experience in new co-teaching partnerships, providing greater value to co-teaching regardless of content. None of the co-teaching pairs had co-teaching course work during their teacher preparation programs. Likewise, the general educators did not have coursework or teaching experiences in designing and delivering instruction for students with disabilities. The special educators, with the exception of the special educator on Team Four, did not have specific

training or course work in the content that they co-taught. Hence the problem, preparation for a new way of teaching is critical together in high level content.

Teacher preparation programs need to provide all teachers with a co-teaching or collaboration course while defining the role of “what is special about special education”. In addition to teaching the critical components to successful co-teaching partnership, it is important to specifically outline how teachers with and without extensive content knowledge can add value to instruction. Practical ways to implement a variety of successful co-teaching models are outlined throughout the co-teaching literature (Dieker, 2001; Dieker & Murawski, 2003; Friend & Bursuck 2009; Murawski, 2009). After exploring the academic benefits of students in secondary co-taught English classes, Murawski (2006) concluded, there is an “overwhelming need for additional training, implementation, evaluation, and improvement of the co-teaching... It is also clear that the issues facing secondary content instruction may be different from those of co-teachers at the elementary level” (p. 241).

Limitations

The study was limited by intervening factors not related to co-teaching (a) generalizability, (b) participant selection, (c) observer effects, (d) construct effects, and (e) research design.

Caution should be taken when generalizing the findings of the study due to the fact that all participants were from the same school district in the central Florida area and the study only included five co-teaching teams. The researcher could not control teacher selection so the participants were selected on a voluntary basis. The researcher could not control for teacher demographics such as, teacher experience or co-teaching experience. Although participant

selection was voluntary, participants were recruited through the recommendations of school administrators. The recommendations were made without specific selection criteria on the part of the administrators. Building administrators identified teams as successful co-teachers. Administrators' opinions on good co-teaching teams may be bias. Administrators identify successful teachers for various reasons (Fullan, 2003) Building administrators classify "good" teachers as individuals who handle classroom behaviors with minimal administrative support, pleasant personalities, good classroom atmosphere, and good student outcomes.

The observer effects limited the study due to research biases. The interrater reliability helped control for researcher subjectivity as did member-checking during the final interviews as to themes that emerged. The construct effects also caused a limitation in the study. Each teacher and co-teaching team had varying operational definitions of co-teaching.

Mixed method research design offers benefits of blending qualitative and quantitative methods. Each method in isolation has its own limitations. Qualitative research perceives the researcher as the instrument in the study (Rossman & Rallis, 2003). The specific data collection procedures and the interrater reliability assisted in controlling for researcher error. The research assistant collected and coded 25% of the data. Based on Fleiss (1981) interrater reliability was established at 80% or greater in which 75% or greater is considered excellent agreement.

Future Research

Despite the vast benefits for inclusive education that are documented in the literature, there are limited examples at the secondary level (Villa, Thousand, Nevin, & Liston, 2005). The following section highlights the researcher's specific recommendations for continued co-

teaching research in mathematics and science content areas, public school, and secondary co-teaching.

Gately and Gately (2001) suggest, special education co-teachers should become “competent and confident in the general education curriculum...Acquiring a knowledge of the scope and sequence and developing a solid understanding of the content of the curriculum to progress to a collaborative stage” (p.43). The co-teaching teams classified as successful included teams with special educators who were competent and confident with the secondary content. In contrast the mathematics and science classes with special educators who did not have content knowledge still demonstrated some benefits to having the special educator present. However, both teams had the potential to have stronger co-teaching partnerships if the special educators had stronger content knowledge. Students with disabilities have increased challenges and require additional support to succeed in general education content area classes (Zigmond, 2006). Leko and Brownell (2009) note, special education teacher preparation programs do not always prepare teachers with the appropriate content instruction. Both general education mathematics and science teachers on Teams Two and Three were reluctant to share instructional time due to the lack of content knowledge the special educators had in their respective content areas. Future research studies should look more closely at the co-teaching relationships of secondary science and mathematics teams, to uncover if the trends in instructional interactions of co-teachers are consistently observed in other schools, districts and states where co-teaching is used as an instructional method.

Spillane and colleagues (2001) assert, “the way in which school leaders enact leadership tasks may be what is most important when it comes to influencing what teachers do” (p. 24). In this study, with the exception of Teams Four and Five, who were in the first year of co-teaching

and had ongoing support from school and district level personnel, co-teaching pairs did not receive specific feedback from administration on how to improve their co-teaching practice. Although the teachers' independent evaluations provided feedback that could be used to improve instruction in the co-teaching setting, teachers recognized the different dynamics that exist within the two settings and welcomed specific feedback and support from administration on how to improve their co-teaching practice. This researcher recommends administrators should provide teacher evaluations and feedback about teaching success and instruction to co-teaching teams. Future studies should focus on the impact of administrative involvement with secondary co-teaching teams. Such a study would benefit the co-teaching literature and provide administrators with valuable data on how to best support co-teaching teams.

Experts report, participation in well-designed teacher professional developments that connect to content and student data have a positive effect on teacher performance (Leko & Brownell, 2009; Smith, Hofer, Gillespie, Solomon, & Rowe, 2003). Administrators can ensure that teachers have professional developments on co-teaching and other evidenced based methods to improve instruction (Villa, Thousand, & Nevin, 2004). All of the teachers in the study expressed an interest to participate in professional developments in co-teaching to enhance their practice. The researcher recommends school administrators provide professional development for faculty focusing on teaching diverse learners and co-teaching partnerships. Murawski (2006) specifically suggested ongoing professional developments co-presented by a content expert and a co-teaching/collaboration expert to provide both teachers the benefit of understanding best practices in each respective field. Future studies should focus on creating parity between the two teachers who are actively engaged in ongoing professional developments focused on co-teaching.

Such a study should provide data to identify whether or not content knowledge or preparation of co-teaching teams determine the level of success.

Harbort and colleagues (2007) reported, special educators interacted with students with disabilities more than general educators during co-taught instruction at the secondary level. The current research study revealed student one-on-one interactions actually increased in the co-taught setting when compared to interactions in the solo-taught setting. The data correlate with the findings of Harbort and colleagues. This researcher recommends future investigation of interaction data specifically exploring the amount of one-on-one interactions and the adaptation or modifications each teacher makes directly to students with and without disabilities.

Future for Co-teaching and Special education

The findings from this study bring many issues to the table for the special education field to consider. As we move forward, we need to reflect on the purpose of the construct of special education and assess if students' needs are being met. This section provides reflections of the findings, suggestions, and questions to consider for the future of co-teaching and special education.

Shared "Talk Time" in Co-Taught Classes

Friend (2009) reported general educators, who commonly take the instructional lead in co-taught classrooms, contribute 70% to 80% of the talk time, leaving the special educator with limited verbal interactions with students. Similar to Friend's findings, on average the special educators in the study did not share equal "talk time" during instruction. The fact that the "talk time" is not shared amongst the teachers raises a question. Why are the teachers taking turns talking in the first place? It would be a richer learning environment if both teachers were

engaged with students throughout the entire class period. Using cooperative learning could be a core consideration for future research to allow more student and teacher engagement. It is worth taking a closer look at how we utilize the two professionals in one classroom. Is it necessary for the teachers to take turns talking as they lead instruction, or should more co-teaching structures or peer to peer structures be used to allow the teachers to move from leaders to coaches for learning in all classes but particularly, co-taught classes.

Instructional Style

Throughout the observations, limited use of instructional styles occurred other than whole group instruction. The lack of variety in instructional delivery contributed to the unequal “talk time” in co-taught classes. As a result, one teacher spoke (or led instruction) at a time. Teachers were observed talking at the same time when one teacher (usually the special educator) drifted around the room to check student work and respond to student signals during whole group instruction. Teachers were also observed talking at the same time during small group instruction, which was infrequently used by the teams. The groups that used small group instruction had considerably higher one-on-one interactions with all students and both teachers felt like a valued member of the teaching team.

Technology

In addition to the lack of variety of teaching methods that had the potential to facilitate increased teacher-student interactions and shared teacher “talk time,” there was a lack of technology utilized. The teams were observed using calculators, overhead projectors, PowerPoint for note taking and instruction, and smart boards in two of the five team classrooms. Although the students in the classes were digital natives (Prensky, 2001) and were accustomed to using

technology as a means of social networking, entertainment, and for finding personal and academic information; the computers in the classrooms were only observed being used by students in one observation. The question for the field is, why are our teachers not integrating the use of technology? The lack of the use of technology is extremely alarming in the co-taught classes where there is an advantage of one additional professional to assist in the planning and management of such activities, another area for future research consideration.

Universal Design for Learning (UDL)

The principles for universal design for learning (UDL) focus on providing students with multiple means of representation, expression, and engagement. Consistent with the principles of UDL the science special educator on Team four provided her general education colleague with supplements to class activities that gave the students an opportunity to engage in the lesson a variety of ways. For example, as the students reviewed science vocabulary words, they made vocabulary foldables with construction paper. The 3D paper foldables allowed students to explore learning through a hands-on kinesthetic way. The students created visual representations to describe the vocabulary words, talked with their peers to review the words, and the concluding activity was for the students to share their foldable vocabulary study tool with the class. The co-taught class is a perfect place for more UDL principles to appear. As the general educator focuses on the content, the special educator should be equipped with ways to individualize instruction for students and provide UDL learning activities to enhance the instruction.

Content Matters

One of the interesting findings from the study was how secondary co-teaching teams felt about content knowledge. The special educators on the science and mathematics teams felt they

were not able to enhance the instruction as much due to their lack of content knowledge. Their general education colleagues agreed and expressed a desire to have special education co-teachers who have a greater knowledge of the content that they are co-teaching. The general educators also expressed concerns about their lack of knowledge of how to successfully prepare instruction for students with disabilities. The issue of content knowledge leads to several questions. How much is enough content for special educators to know? Where is the field of special education going if we want our secondary special educators to have more content and the general educator to have more special education preparation? Are we merging the two professions? The general education math teacher on Team Two believed all teachers should be able to supplement the instruction with the necessary accommodations and modification for the students in their classes. If that is the direction that we are going in, what will secondary special education services look like in the future?

Conclusion

The researcher sought to identify the interaction behaviors of secondary co-teaching teams. The findings indicate teacher preparation programs need to prepare all teachers for the diverse learning needs of all students and how to effectively collaborate in inclusive settings. Special education preparations programs need to include more secondary content teaching courses. Likewise, general education preparation programs need to prepare future secondary general educators to differentiate instruction to meet the needs of students with disabilities. In addition to improvements in teacher preparation programs, school leaders need to provide ongoing support for co-teachers via planning time and professional development so they can maximize the collaborative potential embedded within the co-teaching model. The ultimate

outcome of co-teaching research must be to determine if student learning increases across secondary content areas when two teachers are present.

APPENDIX A: UCF IRB OUTCOME LETTER



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Lisa A Dieker, Kelly J Grillo, Tanya Moorehead**

Date: **November 09, 2009**

Dear Researcher:

On 11/9/2009, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Initial Review
Project Title: Inclusive Practices in Secondary Settings
Investigator: Lisa A Dieker
IRB Number: SBE-09-06496
Funding Agency: None

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB.

****NOTE: This study may not commence until you have received approval from the Orange County School District. Please submit a copy of the approval when it becomes available.**

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 11/09/2009 12:51:14 PM EST

A handwritten signature in black ink that reads "Janice Turchin".

IRB Coordinator

APPENDIX B: PARTICIPANT CONSENT FORM

Participant Consent Form

Dear Participant:

We are conducting a study entitled *Inclusive Practices in a Secondary Urban Setting*, the purpose of which is to examine the process of change in a collaborative urban setting. The focus of the study is to create a framework of inclusion where teacher teams have support/coaching of implementing research best practices. The members of the research team include faculty advisor, Dr. Lisa Dieker, and UCF doctoral students, Tanya Moorehead, and Kelly Grillo.

Participation in this research is comprised of three parts, observations, interviews, and a survey. Participants will be asked to allow researchers to observe them co-teaching, co-planning and co-instructing. The observations will last no longer than 60 minutes each. With your permission, we would like to videotape the observations. Only the research team will have access to the videotapes, which may be professionally coded to measure teacher interactions, patters that emerge over time observing co-planning, co-instructing and co-assessing. Participants will also be asked to complete an interview. The interview will last no longer than 20 minutes. With your permission, we would like to audiotape the interview. The interviews will be professionally transcribed removing any identifiers during transcription unless you give us permission to use them in professional publications. You will not have to answer any question you do not wish to answer during the interview. All data collected will be kept in a locked filing cabinet. The audiotapes will be destroyed after transcription. Lastly, participants in this study will be asked to take a brief survey on teacher perceptions of teaching science. The survey will be provided to the participants in paper format. The identification of the participant will be protected by assigning a code to the survey for later analyses.

There are no anticipated risks, compensation or other direct benefits to you as a participant in this study. You are free to withdraw your consent to participate in the study at any time without consequence.

If you have any questions about this research project, please contact Dr. Lisa Dieker, (407) 823-3885 or by email at ldieker@mail.ucf.edu or Tanya Moorehead at (407) 380-9177 or by email at tmoorehe@mail.ucf.edu or Kelly Grillo (407) 823-6076 or by email at kgrillo@mail.ucf.edu. Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (IRB). Questions or concerns about research participants' rights may be directed to the Institutional Review Board Office, IRB Coordinator, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246. The telephone number is (407) 823-2901. The office is open from 8:00 am to 5:00 pm Monday through Friday except on UCF official holidays.

Please sign and return one copy of this letter. A second copy is provided for your records. By signing this letter, you give Dr. Lisa Dieker, Tanya Moorehead, and Kelly Grillo permission to report your responses anonymously in the final manuscript.

Sincerely,

Dr. Lisa Dieker, PhD

Tanya Moorehead

Kelly Grillo

- I have read the procedure described above for this study.
- I voluntarily agree to participate in the study.
- I agree to be videotaped during the study.
- I agree to be audiotaped during the study.
- I agree to allow the researchers to use segments of audio in professional presentations and publications.
- I am over 18 years old.

_____/_____
Printed Name Date

Participant Signature

APPENDIX C: INTERVIEW PROTOCOL AND QUESTIONS

Interview Protocol

Hello. My name is Tanya Moorehead. I am a graduate student at UCF. I'd like to speak with you about your perceptions on co-teaching. My work is being supervised by Dr. Dieker and I will provide her contact information later in this conversation.

I think the conversation will take approximately 30 minutes. It will be a confidential interview. Do you think this is something that you would be willing to do?

Share the informed consent.

Is this a convenient time (during their planning) or would you prefer to make an appointment for me to meet?

(If no, ask for the interviewee to suggest a time you could return during plan time)

I just want you to know that I am required to read a script so my language might seem a little awkward.

I really appreciate that you have taken time out of your busy schedule to talk to me about your experience with co-teaching. The goal of this research is to get a more complete view of what is happening in the co-taught classroom. Furthermore, results from this study will be presented to local, state and national audiences and will be submitted to scholarly research journals for publication.

My questions will focus on your perceptions of the co-teaching and the role you have in co-planning, assessment, and co-instruction process.

There is no right or wrong, desirable or undesirable answers. Feel free to express your opinions, whether they are positive or negative. I just want you to openly share with me what you really think and feel. There are no anticipated risks, to you as a participant in this interview other than the small amount of risk associated with confidential studies where a breach of confidentiality might occur but measures will be taken so that this is very unlikely to occur. With your permission, I will be audio-tape recording the discussion so that I do not miss anything you have to say. When we are finished with any audiotapes they will be erased and all data will be stored in a locked filing cabinet. Your responses will be kept confidential and no one will know who said what as a code will be used as identifiers instead of your name.

There is no compensation, or other direct benefits to you for participating in this research you may also choose not to respond to any or all of the questions without an explanation. You may also decline to participate in this interview without any consequences.

If you have any questions about participants' rights, you can direct those to the UCF-IRB Office. I'll give you all that contact information at the close of interview today. And it is also on your copy of the consent form.

Do I have your permission to record our conversation?

If yes, turn on tape recorder and continue as follows:

Again my name is Tanya Moorehead. Today is __I will state the day__, and I am speaking with

__a co-teacher, you do not have to same your name, but please indicate you are in fact a co-teacher, __wait for response__. I've just turned on the tape recorder and would like for you to verify I have your permission to tape our conversation now that the tape is running.

As I mentioned, I am tape recording the discussion so that I don't miss anything you have to say.

Do you have any questions before I begin asking questions?

Pause (waiting for response)

Procedure

This part of the interview will focus on your perceptions and utility of co-teaching in general, many of the questions are focused around co-planning, co-teaching and co-assessing.

1. Explain the professional development and or coursework you have had in regards to co-teaching
2. Explain the professional development you have had with your current co-teacher.
3. In regards to students' abilities and or disabilities do you identify (academically, socially, disabilities) with your students that you currently teach?
4. Describe the planning model you have been exposed to.
5. How do you make sure you address all ability levels within the co-taught classroom?
6. Tell me about your planning routines.
7. How do you and your co-teacher assess your effectiveness in delivering the lessons you develop?
8. Explain how you address each of your roles in co-planning, co-teaching, and co-assessing.

9. Are you satisfied or dissatisfied with your current co-teaching assignment? (Please elaborate in terms of co-planning, co-teaching and co-assessing)
10. Is there anything else you would like to add?

Well I'm about done now. Do you have any further information for me to add in this part of the interview?

The next part of this interview is going to inform me of basic background information (Demographics) as applied to teaching, as I mentioned before you do not have to answer any of the following questions if you do not want to, are you ready to continue?

Pause (waiting for response)

1. What is your teaching role currently (subject, grade level, setting)?
2. What are the total numbers of students in each of your co-taught classes, and of those, how many are students with disabilities? (RATIO)
3. What is the range of abilities in each of your co-taught classes? (for example, SLD, EBD, OHI, etc.)
4. How many years have you been teaching in general? ____ How many years co-teaching? ____ How many with current co-teacher? ____
5. Is your main degree in teaching? If not, what is your main degree?
6. What is the highest level of your education and in what areas?
7. Are you considered highly qualified under NCLB (*if needed, explain the difference b/t content area HQT, example HQT Sped Ed versus HQT science educator*) in your current role teaching?
8. How do you classify yourself in terms of ethnicity/race?
9. Would you mind disclosing any disabilities?

10. Have I left anything out, would you like to add anything to this interview?

Okay, well, thank you very much for letting me talk to you today. Your time is very much appreciated, and your comments have been very helpful.

Now I'd like to give you some contact information. If you have any questions about this research please contact Dr. Lisa Dieker, my supervising teacher at 407-823-3885.

If you have any questions or concerns about research participants' rights they may be directed to the UCFIRB Office, UCF Office of Research, Orlando Tech Center, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246. The phone number is 407-823-2901.

I have provided an additional copy of the contact information for you and it is also on your copy of the consent form.

Thank you so very much for letting me speak with you today. Your time, which I know is valuable, is very much appreciated and your comments have been very helpful.

Turn off tape recorder. Thank them again, and say goodbye.

APPENDIX D: TEACHER ROLES OBSERVATION SCHEDULE

**Teacher Roles Observation Schedule
Technical Manual**

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**Revised February, 1988,
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Teacher Roles Observation Schedule

The Teacher Roles Observation Schedule (TROS) is an instrument designed specifically to describe the nature and patterns of teacher behaviors within adaptive instruction programs. Teachers are observed with reference to: (1) the extent of their interaction with others (i.e., either students or other adults), (2) the settings in which the observed behaviors occur, (3) the subject area on which they are working, (4) the purpose of the interaction, and (5) the nature of the interaction. The Schedule consists of one recording sheet which includes five major constructs or headings (interaction, setting, subject area, purpose of interaction, and nature of interaction) and spaces for recording 10 intervals or samples of these constructs. A number of categories are listed under each major heading.

Data obtained from the TROS can serve several purposes. They can be used as process data that directly or indirectly affects student outcomes. They may also serve as measures of dependent variables that are associated with contextual conditions, teacher attitudes, or degree of program implementation variables.

Procedures for Observing and Recording

The schedule is used to record observations of a teacher's classroom behavior in 30-second intervals. Space for 10 intervals is provided on the form. The observer watches the teacher for a 30-second interval and records as many purposes and natures of interactions, as appropriate. If the teacher uses both questioning and modeling, for example, during the 30 second interval, then both these categories should be recorded. After the 30 second interval, the observer then records the appropriate categories that indicate the predominate type of interaction, setting, and subject area that occurred during the interval. Only one category per heading should be recorded for these three sections (interaction, setting, and subject area). If the teacher worked in two or more settings, for example, during the interval, the one that predominated or occupied the student for the greatest amount of time, should be recorded.

Since the TROS is intended to be time sampling of a teacher's classroom behavior, teachers are observed non-continuously (i.e., not consecutively) to facilitate a wider sample of observations for each teacher. If possible, the ten intervals should be randomly spaced throughout the observation period (i.e., the period of time the observer is in the classroom). Ideally, the TROS should be utilized at least three separate times (e.g., at the beginning, middle and end) during the observation period.

Operational Definitions

This section provides operational definitions of the categories listed under each of the five main constructs or headings.

Interaction

The construct, Interaction, describes the type and purpose of any exchange a teacher may have with students and/or other adults. Five types of interactions are operationalized as follows:

1. No interaction -- this category includes teachers who are observed to be working alone and not interacting with others (e.g., the teacher is correcting papers at his/her desk).
2. Interaction with other adults -- this category includes any exchange the teacher has with another adult (e.g., the teacher is talking to a parent or teacher aide.)
3. Interaction with student(s) /Instructional -- this category includes any teacher-student exchange that has a pedagogical or instructional purpose (e.g., the teacher checks a student's work in his or her presence and gives feedback; the teacher explains a concept).
4. Interaction with student(s)/managerial -- this category includes any teacher-student exchange that has a managerial purpose (e.g., the teacher reminds a student of classroom rules or scolds the student for misbehaving; the teacher records student data or scores papers).
5. Interaction with teacher for personal purposes -- this category includes any teacher-student interaction on a personal matter (e.g., the teacher asks the student if s/he had a good weekend).

Setting

The construct, Setting, describes the location or setting in which the students are situated. Six types of settings are operationalized as follows:

1. Teacher's desk -- this category includes teachers who are working at their desk or working space (e.g., the teacher is correcting student's work at the teacher's desk).
2. Student's desk -- this category includes teachers who are working at a student's desk or working space (e.g., the teacher is correcting a student's work at the student's desk).

3. Small group -- this category includes teachers who are working at a setting where two or more students (and not the entire class) are working together (e.g., the teacher is supervising a reading group).
4. Whole class -- this category includes teachers who are working with the whole class of students at the same time (e.g., the teacher is presenting a lesson to the entire class).
5. Traveling -- this category includes teachers who are working with several (i.e., more than one) students at several student work areas (e.g., the teacher is going from student's desk to student's desk checking each student's work).
6. Other -- this category includes settings that cannot be recorded under the previous categories.

Subject Area

The construct, Subject Area, describes the academic area in which the students are working. Six different subject areas are operationalized as follows:

1. Reading -- this category includes all types of reading activities (e.g., supervising a small reading group or checking an individualized reading assignment).
2. Math -- this category includes all types of math activities (e.g., supervising students using manipulative materials or grading math workbooks).
3. Language Arts -- this category includes all types of activities related to language arts (e.g., correcting writing assignments or giving a spelling test).
4. Science -- this category includes all types of science activities (e.g., conducting a science experiment or checking science workbooks).
5. Social Studies -- this category includes all types of activities related to social studies (e.g., discussing current events or presenting a geography lesson).
6. Other (specify) --this category includes subject areas that cannot be recorded under the previous categories.

Purpose of Interaction

The construct, Purpose of Interaction, describes the intent of the teacher's exchange with the student(s). There are 21 purposes which are operationalized as follows:

1. Responding to student's signal -- this category includes any verbal or non-verbal response by the teacher to a student's signal for assistance (e.g., the teacher calls on students after they raise their hand).
2. Discussing student's work-plans/progress -- this category includes any interaction where the teacher assists the student with work plans or progress towards completing the plans (e.g., the teacher asks the student how much work s/he has left to do).
3. Determining the difficulty of the task -- this category includes any statement or question a teacher makes in order to determine the source of difficulty in a student's task (e.g., the teacher asks the student if the work is too hard for him/her).
4. Communicating task procedures -- this category includes any statement or demonstration by the teacher to help students structure learning tasks (e.g., the teacher explains exactly how the task should be done).
5. Communicating task's criteria for success --this category includes any statement or demonstration by the teacher that includes the criteria for successful performance on either a prescriptive or non-prescriptive task (e.g., the teacher explains that students need to correctly answer at least eight of the ten problems).
6. Focusing on the task's content - this category includes teachers assisting students with the content of a specific prescriptive or non-prescriptive task (e.g., the teacher defines some terms on the worksheet).
7. Restructuring specific learning tasks -- this category includes teachers prescribing different materials or tasks for students or altering the length of assignments to help students master a curricular objective (e.g., the teacher assigns additional problems to the student).
8. Helping students complete work on time - this category includes teachers helping students figure out how much time they need to complete a task or assisting students in the planning process of determining how they will finish their work on time (e.g., the teacher explains to the student that it will take him/her 30 minutes to finish his/her math).
9. Checking student's work -- this category includes teachers checking student's work in the student's presence and providing feedback to the student concerning his/her performance (e.g., the teacher checks a student's workbook and tells her/him that s/he has done well).

10. Encouraging self-management -- this category includes any interaction between the teacher and student where the teacher positively reinforces a self-management skill (e.g., the teacher encourages the student to decide for him/herself what to work on next)
11. Encouraging students to help each other -- this category includes teachers encouraging students to assist other students with their work (e.g., the teacher tells a student to ask another student to help him/her with the problem).
12. Encouraging students to succeed -- this category includes any teacher initiated words or behaviors that communicate to the students that they are expected to succeed (e.g., the teacher tells the student that s/he can do well on the assignment).
13. Encouraging extended student responses --this category includes any teacher initiated questioning techniques that encourage students to verbalize a response in more than just one or a few words (e.g., the teacher asks the student to explain why s/he liked the story).
14. Showing personal regard for student -- this category includes any response that indicates the teacher's concern for students (e.g., the teacher asks the student how s/he feels).
15. Making contact with students in exploratory activities-- this category includes any response that indicates the teacher is aware of and/or interested in what students are doing in non-prescriptive exploratory areas (e.g., the teacher asks the student what s/he is drawing).
16. Showing interest in student's work -- this category includes any response that indicates the teacher is interested in what the students are doing in prescriptive or non-prescriptive areas (e.g., the teacher asks the student what his/her story is about).
17. Praising student behavior -- this category includes teachers commending, approving, or praising students regarding their classroom behavior (e.g., the teacher tells a student that s/he has behaved very nicely all day).
18. Praising student performance -- this category includes teachers commending, approving, or praising students regarding their academic performance (e.g., the teacher tells a student that s/he has done well on the math test).
19. Correcting student behavior -- this category includes

teachers disapproving, scolding, reprimanding, or criticizing students regarding their classroom behavior (e.g., the teacher admonish a student for misbehaving during reading).

20. Correcting student performance -- this category includes teachers disapproving, scolding, reprimanding, or criticizing students regarding their academic performance (e.g., the teacher admonish the student because s/he did poorly on the math test).
21. Other (specify) -- this category includes any category not listed above, and should be listed on the observation form in the space provided.

Nature of Interaction

The construct, Nature of Interaction, describes how the teacher interact's with the student(s). Seven types of nature of interaction are operationalized as follows:

1. Questioning -- this category includes any questioning technique used by the teacher (e.g., the teacher asks questions or a series of questions to see if students know the material).
2. Explaining -- this category includes any information given by the teacher concerning a prescriptive or exploratory task (e.g., the teacher clarifies or explains exactly what should be done).
3. Cueing or prompting -- this category includes any hints or clues given by the teacher to assist the student toward understanding or completing a task (e.g., the teacher gives several examples to help the student understand the concept).
4. Demonstrating -- this category includes any manipulative explanations which facilitate showing the student how a similar task is to be performed (e.g., the teacher illustrates, with a sample problem, how to subtract two numbers on the blackboard).
5. Modeling -- this category includes any active demonstration by the teacher which replicates the students' prescribed tasks (e.g., the teacher shows the student exactly how a particular problem should be done).
6. Commenting - - the teacher is not interacting as in 1-5 above, but is making statements (comments) to the students or another adult.
7. Listening - - the teacher is not interacting verbally at all but is listening to a student(s) or another adult.

TEACHER ROLES OBSERVATION SCHEDULE

This checklist is designed to observe the teacher's ongoing behavior as he or she interacts with student(s). It allows for easy identification and charting of the setting, subject area, purpose and nature of teacher interactions. The checklist is divided into 10 intervals of 30-second observations. The first three areas of the checklist are mutually exclusive (the observer can check only one category in each area); the two remaining areas of observation contain categories that are not mutually exclusive (the observer should check as many categories as he or she observed).

The observer will first observe for 30 seconds and then record (check) the most dominant behaviors (i.e., the longest occurring behaviors) for the mutually exclusive areas on the checklist (sections I-III). Sections IV and V also should be checked according to the behaviors observed in the 30-second interval. This process is to be repeated 10 times for a total of ten 30-second intervals of observation. The checklist should be used only when the adaptive instruction program is in progress.

DATE
 PERIOD
 TEACHER(S)

SCHOOL
 GRADE

G- General Educator, S- Special Educator, B- Both teachers

	1	2	3	4	5	6	7	8	9	10
Interaction										
1. No Interaction										
2. Interaction with other adult										
3. Interaction with student(s)/ Instructional										
4. Interaction with student(s)/ Managerial										
5. Interaction with student(s)/ Personal										
Setting										
1. Teacher's desk										
2. Student's desk										
3. Small group										
4. Whole class										
5. Traveling										
6. Other										
Purpose of Interaction										
1. Focus on the task's content										
2. Focus on the task's product										
3. Focus on the task's process										
4. Communicate the task's procedures/directions										
5. Determine the difficulty of the task										
6. Restructure specific learning task										
7. Redirect student's thinking										
8. Check student's work										
9. Respond to student signal										
10. Show interest in student work										
11. Encourage students to succeed										
12. Praise student performance										
13. Correct student behavior										
Nature of Interaction										
1. Questioning										
2. Explaining										
3. Commenting										
4. Listening										
5. Cueing or prompting										
6. Demonstrating										
7. Modeling										
Student Counts										
1. Total students present										
2. Students with IEPs										

APPENDIX E: FIELD NOTES SHEET

Number notes in terms of when it occurred (ie. The interval observation that it precedes and or occurred within)

Date
 Period
 Content
 Teacher

Special Education Teacher	
General education Teacher	
Students	
Co-teaching Model	One Teach, One Observe One Teach, One Drift Parallel Teaching Station Teaching Alternative Teaching Team Teaching (Tag teaming)
Technology	
Objective	Posted

	Not Posted
Activities	Posted Not Posted
Environment	
Other	

APPENDIX F: DETAILED TROS OBSERVATION TOTALS FOR GENERAL EDUCATORS
IN SOLO-TAUGHT CLASSES

Interaction

	T1G	T2G	T3G	T4G	T5G
	Solo	Solo	Solo	Solo	Solo
1. No Interaction	12	25	34	32	36
2. Interaction with other adult	0	0	0	0	0
3. Interaction with student(s)/ Instructional	31	30	60	32	20
4. Interaction with student(s)/ Managerial	17	11	3	20	20
5. Interaction with student(s)/ Personal	7	11	3	16	4

Setting

1. Teacher's desk	4	0	3	44	6
2. Student's desk	8	5	0	0	4
3. Small group	6	0	9	0	0
4. Whole class	30	44	28	38	24
5. Traveling	9	2	0	14	10
6. Other	3	14	0	0	8

Purpose of Interaction

1. Focus on the task's content	15	11	22	6	6
2. Focus on the task's product	0	0	0	0	0
3. Focus on the task's process	0	14	8	4	0
4. Communicate the task's procedures/directions	8	6	2	20	16
5. Determine the difficulty of the task	0	0	0	0	0
6. Restructure specific learning task	1	0	0	0	0
7. Redirect student's thinking	0	0	0	0	0
8. Check student's work	6	1	4	14	0
9. Respond to student signal	14	1	4	8	4
10. Show interest in student work	0	0	0	0	0
11. Encourage students to succeed	0	6	0	4	0
12. Praise student performance	5	0	1	0	4
13 Correct student behavior	6	2	0	4	2

Nature of Interaction

1. Questioning	7	2	17	4	2
2. Explaining	19	11	14	28	24
3. Commenting	10	11	2	30	4
4. Listening	12	6	1	0	2
5. Cueing or prompting	4	1	0	0	0
6. Demonstrating	2	14	10	6	0
7. Modeling	1	0	0	0	0

APPENDIX G: DETAILED TROS OBSERVATION TOTALS FOR GENERAL EDUCATORS
IN CO-TAUGHT CLASSES

Interaction	T1G	T2G	T3G	T4G	T5G
1. No Interaction	8	9	13	46	32
2. Interaction with other adult	2	3	25	12	10
3. Interaction with student(s)/ Instructional	23	57	27	26	22
4. Interaction with student(s)/ Managerial	7	8	7	6	6
5. Interaction with student(s)/ Personal	17	1	2	6	2
Setting					
1. Teacher's desk	5	2	5	48	14
2. Student's desk	14	2	4	6	2
3. Small group	6	0	8	0	0
4. Whole class	13	50	24	12	16
5. Traveling	9	5	1	10	12
6. Other	2	4	1	4	2
Purpose of Interaction					
1. Focus on the task's content	7	28	22	18	4
2. Focus on the task's product	0	0	0	0	2
3. Focus on the task's process	1	7	3	0	2
4. Communicate the task's procedures/directions	7	5	5	12	12
5. Determine the difficulty of the task	0	0	0	0	0
6. Restructure specific learning task	0	1	0	0	2
7. Redirect student's thinking	6	9	2	0	2
8. Check student's work	7	6	4	8	4
9. Respond to student signal	10	0	0	0	2
10. Show interest in student work	0	0	0	0	0
11. Encourage students to succeed	1	5	0	0	0
12. Praise student performance	4	0	2	0	0
13 Correct student behavior	0	0	0	2	0
Nature of Interaction					
1. Questioning	8	0	15	0	2
2. Explaining	13	30	12	24	16
3. Commenting	4	8	2	4	0
4. Listening	4	4	4	6	4
5. Cueing or prompting	4	0	2	0	2
6. Demonstrating	0	17	3	0	0
7. Modeling	1	0	0	0	0

APPENDIX H: DETAILED TROS OBSERVATION TOTALS FOR SPECIAL EDUCATORS
IN CO-TAUGHT CLASSES

Interaction

	T1S	T2S	T3S	T4S	T5S
1. No Interaction	8	14	26	16	24
2. Interaction with other adult	2	3	21	12	10
3. Interaction with student(s)/ Instructional	34	14	18	50	12
4. Interaction with student(s)/ Managerial	9	3	4	2	8
5. Interaction with student(s)/ Personal	4	7	2	14	12

Setting

1. Teacher's desk	5	2	2	14	8
2. Student's desk	10	25	7	10	14
3. Small group	6	2	8	0	0
4. Whole class	25	11	8	34	8
5. Traveling	6	10	3	16	10
6. Other	0	14	0	12	0

Purpose of Interaction

1. Focus on the task's content	16	6	5	12	2
2. Focus on the task's product	0	0	0	0	0
3. Focus on the task's process	0	1	1	4	2
4. Communicate the task's procedures/directions	8	5	2	22	10
5. Determine the difficulty of the task	0	0	0	0	0
6. Restructure specific learning task	1	1	0	0	2
7. Redirect student's thinking	0	7	0	0	2
8. Check student's work	12	18	2	14	6
9. Respond to student signal	4	7	2	4	0
10. Show interest in student work	0	0	1	4	0
11. Encourage students to succeed	0	2	0	0	0
12. Praise student performance	0	0	1	4	10
13 Correct student behavior	0	0	0	2	0

Nature of Interaction

1. Questioning	5	5	13	0	4
2. Explaining	13	13	6	38	12
3. Commenting	5	5	1	14	6
4. Listening	5	3	2	6	0
5. Cueing or prompting	6	12	2	0	4
6. Demonstrating	2	3	0	0	0
7. Modeling	2	0	0	2	0

APPENDIX I: ONE-ON-ONE STUDENT INTERACTIONS IN BOTH CLASS SETTINGS

Total One-on-One Student Interactions in Solo-Taught Classes

	T1G	T2G	T3G	T4G	T5G
ESE student	16	2	11	16	15
GEN student	76	15	42	26	17
Total Interactions	92	17	53	41	32
Number of students	17	23	19	25	21
ESE	2	1	2	2	1
GEN	15	22	17	23	20

Total One-on-One Student Interactions in Co-Taught Classes

	T1	T2	T3	T4	T5
ESE student	96	24	35	58	38
GEN student	12	30	25	22	7
Total Interactions	108	54	60	80	45
Number of students	15	18	19	24	23
ESE	12	7	9	7	14
GEN	3	9	10	17	9

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