

AN EXAMINATION OF TEACHERS' AND STUDENTS WITH DISABILITIES'
PERSPECTIVES AND THE EFFICACY OF CO-TEACHING

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AN EXAMINATION OF TEACHERS' AND STUDENTS WITH DISABILITIES'
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THESIS ABSTRACT

AN EXAMINATION OF TEACHERS' AND STUDENTS WITH DISABILITIES'
PERSPECTIVES AND THE EFFICACY OF CO-TEACHING

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Co-teaching has been developed as an instructional approach to support students with disabilities in general education classrooms. The purpose of the present study was to identify (a) teachers' and students' perspectives of co-teaching and (b) the efficacy of co-teaching as measured by student academic and behavioral performances. Forty-five co-teachers and fifty-eight students were selected as subjects. Subjects were asked to answer survey items and interview questions to identify their co-teaching perspectives.

Classroom observations were conducted in 15 classrooms. Students' SAT National Curve Equivalents in reading, math, and language arts from before and after co-teaching school years were compared. This study also analyzed student behavioral records, measured by their absences, tardies, and discipline referrals. Results of qualitative and quantitative measures were interpreted. Recommendations were also offered for future research in the area of co-teaching.

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I. INTRODUCTION

Co-teaching is one of the most popular instructional methods to include students with disabilities in general education classrooms (Zigmond & Magiera, 2002). In co-taught classrooms, both general and special education teachers are in one classroom and deliver instruction to a heterogonous group of students (i.e., student with and without disabilities). According to Cook and Friend (1995), co-teaching has been developed as an instructional approach to address the least restrictive environment (LRE) requirement of the Individuals with Disabilities Education Act (IDEA, 1997). The LRE portion of the law requires that students with disabilities be educated with their peers without disabilities to the greatest extent appropriate.

Currently, researchers have investigated the implementation (e.g., Walther-Thomas, 1997), unique issues (e.g., Dieker & Murawski, 2003) and challenges of co-teaching (e.g., Keefe & Moore, 2004). The results of these studies indicate that teachers and students with disabilities have positive attitudes about co-teaching. Studies have found that different co-teaching models have been developed to address the needs of students with disabilities. Researchers, as well, have identified specific co-teaching issues, such as the lack of planning time and inefficient preparation for co-teaching. However, limited research has been conducted to examine the efficacy of co-teaching. Zigmond and Magiera (2002) found only four studies that focused on student academic achievement in a co-teaching research review. Also, in a meta-analysis of the co-teaching research

(Murawski and Swanson, 2001), 89 articles were reviewed and only six were found providing sufficient quantitative data. As presented, co-teaching has been a frequently suggested instructional delivery model for meeting the needs of students with disabilities in the general education classroom. Perspectives of teachers and students involved in co-teaching are considered important factors for the inclusion process (Austin, 2001). It is also critical to investigate the efficacy of co-teaching regarding the outcome of students with disabilities.

Purpose of the Study

The purpose of this study was to investigate co-teachers' and students' with disabilities perspectives of co-teaching, and examine the efficacy of co-teaching. Specifically, this study was designed to determine the effectiveness of co-teaching by student SAT scores, attendance records, and discipline referrals.

Research Questions

Three general research questions were posed in this study:

1. What are co-teachers' (general and special education teachers) perspectives of co-teaching?
2. What are students with disabilities' perspectives of co-teaching?
3. Are there significant differences between students' academic and behavioral achievements before and after co-teaching?

II. REVIEW OF LITERATURE

Introduction

Students with disabilities have not always had access to public education. In the past, students with disabilities were either excluded from public education programs or educated in segregated settings (Heward, 2005). It was not until 1975, with the passage of the Education for All Handicapped Children Act (P.L. 94-142), that students with disabilities gained access to public education. Since the enactment of P.L. 94-142 and its subsequent amendments, students with disabilities have been required to have a “free and appropriate public education” (FAPE). The FAPE provision ensures that all 5-21 year-old students with disabilities receive educational services, regardless of the severity of their disabilities.

Another main principle found in P.L. 94-142 is the requirement that students with disabilities be educated in their least restrictive environment (LRE). The LRE for students with disabilities requires that they be educated with their peers to the maximum extent appropriate and that they not be removed from the general education environment unless the severity of their disability requires additional supplemental aids and services that cannot be achieved in the general education classroom. To address the LRE requirement, more students with disabilities are now included in general education classrooms. Many instructional approaches and strategies, such as the Regular Education Initiative (REI) and inclusion movement, have been developed and implemented to meet

the LRE requirement. REI emphasized that both general and special education teachers have the responsibilities for educating students with mild to moderate disabilities. The inclusion movement proposes that students with disabilities be integrated into the general education classroom and curricula, regardless of the severity of their disabilities (Friend & Bursuck, 1999).

Co-teaching is a strategy that addresses the LRE requirement found in IDEA (Cook & Friend, 1995). Co-teaching allows students with disabilities to be included in a general education classroom with instruction provided by both a general education teacher and a special education teacher. Bauwens and Hourcade (1995) described co-teaching as “a restructuring of teaching procedures in which two or more educators possessing distinct sets of skills work in a co-active and coordinated fashion to jointly teach academically and behaviorally heterogeneous groups of students in integrated educational settings” (p.46). Co-teaching is now the most common service delivery approach for students with disabilities to be included in general education (Magiera & Zigmund 2005).

Despite the growing interest in co-teaching, the research on this teaching practice is limited. Most studies conducted on co-teaching have investigated co-teachers’ experience and implementation of co-teaching. Very little research has examined the efficacy of this service delivery approach. The purpose of this study is to identify the perspectives of co-teachers and students with disabilities in co-taught classrooms as well as the efficacy of co-teaching in terms of of student academic and behavioral outcomes.

Legal Foundation for LRE

The Education for All Handicapped Children Act 1975 (PL 94-142) was a landmark piece of federal legislation that outlined educational service delivery for students with

disabilities. One of its requirements is that these students be educated in the least restrictive environment. Further, in the 1997 and 2004 reauthorization of PL 94-142, the LRE for students with disabilities was defined as:

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 the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily (IDEA Section 612 (a)(5)(A)).

The emphasis of accessibility for students with disabilities in the 1997 IDEA (Individuals with Disabilities Education Act 1997), as well as 2004 Individuals with Disabilities Education Improvement Act 2004 (IDEIA), changed compared with previous legislation. As Zigmond (2001) pointed out: “the emphasis is not on access to schooling, or on access to special education, but rather on access to general education” (p. 71). In that regard, schools now are focusing on providing special education students with access to general education curricula, that is, students with disabilities are taught the same content as their peers without disabilities. This has become even more of an issue with the passage of the No Child Left Behind Act (NCLB, 2001), which requires core content to be taught by teachers who are highly qualified in the content area. The practical application of this law, therefore, requires that students with disabilities be taught core subjects (i.e., math, science, social studies, English/language arts) by highly qualified

general education teachers. As a result, many school systems have opted for the co-teaching instructional approach so students with disabilities can be taught in the general education classroom by highly qualified teachers and yet still have access to special education services from their special education teachers.

Services for Students with Disabilities

IDEA 1975 established the special education service delivery principle of LRE. During the thirty decades following this mandate, efforts have been made to serve students with disabilities in the different settings (Zigmond, 2003). The need for a range of service delivery options becomes apparent as schools attempt to meet the individual needs of all students with disabilities.

One of the earliest guidelines on providing services for students with disabilities was known as the continuum (or “cascade”) of special education services (Deno, 1970). It was a flexible and adaptable system designed for students with disabilities based on individual needs rather than sorting out students so that they fit settings. According to Deno, there are seven levels of services for students with different disabilities, from the least restrictive to the most restrictive, respectively. The following is a description of each of the seven levels in Deno’s cascade of services.

Level 1: Students with disabilities are taught in a general education classroom along with students without disabilities. Appropriate accommodations are provided to students who need them. For example, students with disabilities may need extra time to complete a test or assistive technology to take notes during the class.

Level 2: Students with disabilities are in the general education classroom and receive additional instructional services. General and special education teachers work

collaboratively in order to meet students' unique needs. Both teachers may differentiate instruction and adapt curriculum according to students' Individualized Education Programs (IEPs). Usually, special education teachers will provide more intense and explicit instruction to students with disabilities in the general education classroom.

Level 3: Students with disabilities are in the general education classroom as well as in a part-time special education classroom. Students receive one-to-one or small group instruction from the special education teacher. Some students with disabilities may take their tests in this separate environment.

Level 4: Students with disabilities are in the special education classroom for the majority of the school day. A special education teacher has the primary responsibility of delivering instruction to these students. Students may participate in other classrooms with students without disabilities for part of the school day.

Level 5: Students with disabilities attend special/separate schools. Students usually have multiple disabilities or medical problems and need physical assistance or close monitoring. Students with serious emotional disabilities may also attend separate schools.

Level 6: Homebound or hospital instruction programs include students who are unable to attend any public school. Students who are medical fragile, or need medical treatments (e.g., surgeries), or have emotional crisis may receive education in a home or hospital setting.

Level 7: "Noneducational services" (Deno, 1970, p. 235), such as medical and welfare care and supervision, are provided for students at level seven.

These seven levels of cascade of services are based on a range of environments to meet the individual needs of students with disabilities. However, more and more students

with disabilities have been intergraded into the general education in order to achieve improved outcomes. The 12th Annual Report to Congress indicated that about 30% of students with disabilities received their education in the general education for more than 80% of the school day during 1988-1989 (U.S. Department of Education, 1990).

According to the 25th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act (U. S. Department of Education, 2003), in the year of 2002-2003, 46.5% of students with disabilities received instruction in the general education classroom for more than 80% of the school day. These numbers represent a substantial rise of the students with disabilities participating in the general education classroom over the past thirteen years.

Inclusion Movement

After the LRE became a requirement during the 1970s, most students with disabilities received their education in either part-time or full-time special education classrooms (Friend & Bursuck, 1999). During the 1980s, a national movement called the “Regular Education Initiative” (REI) (Will, 1986) was initiated to serve students with disabilities, especially those with mild and moderate disabilities, in general education settings. REI was an attempt to reform general and special education by creating a unified service system for at-risk students, culturally diverse students, and students with mild disabilities based on individual educational needs in general education classrooms (Choate, 2004; Will, 1986).

Since the mid-1980s, another movement, the “full inclusion movement”, also has focused on integration of special education students into general education classrooms. Some advocates of inclusion believe that all students with disabilities, regardless of the

severity of their disabilities, should have all their instruction provided for them in the general education classroom. Inclusion occurs when students with disabilities receive education and services along with their nondisabled peers unless the student's education cannot be achieved in the general education setting even with support and additional services (Kochhar, West, & Taymans, 2000). The inclusion movement called for restructuring general and special education to improve the delivery of service to students with disabilities. In conjunction with this trend, three models of inclusive teaching have developed: (1) the consultant teaching model, in which the special education teacher assists the general teacher as a consultant, providing curriculum adaptation, remediation, assessment modifications and/or accommodations; (2) the coaching model, in which the special and general education teachers teach each other in areas in which they are the "experts"; and (3) the co-teaching or collaborative model, in which special and general education teachers share responsibilities of lesson planning, instruction delivery, and student assessment (Fishbaugh, 1997; Pugach & Seidl 1995).

As demonstrated by the growing number of students with disabilities included in general education classrooms (U.S. Department of Education, 2003), steady progress has been made to serve these students in more inclusive environments. Co-teaching has been considered as a viable approach to address the needs of students with disabilities in the general education classrooms. In fact, according to the National Center for Restructuring and Inclusion (1995), co-teaching is the most common service delivery model for serving students with disabilities in general education classroom.

Co-Teaching: Definition and Practice

Cook and Friend (1995) define co-teaching as “two or more professionals delivering substantive instruction to a diverse, or blended, group of students in a single physical space” (p.2). They further describe the four components involved in this instructional approach as: (a) two certified educators, usually one general education teacher and one special education teacher; (b) equivalent instruction delivery by both professions; (c) a heterogeneous group of students; and (d) a single classroom. Co-teaching is expected to (a) provide a wider range of instructional options for students with disabilities, (b) enhance special education students’ participation in general education classes, (c) improve performance of students with disabilities, (d) reduce student-teacher ratio, (e) increase supports for both general and special education teachers, and (f) eliminate the stigma of students with disabilities being separated from their peers without disabilities (e.g., Cook & Friend, 1995; Keefe and Moore, 2004; Klinger, Vaughn, Schumm, Cohen & Forgan, 1998; Zigmond & Magiera, 2001).

Several co-teaching models have been developed through the implementation of co-teaching. Student characteristics and needs, content areas, and instructional goals should be taken into account when co-teachers select a particular co-teaching model for implementation (Cook & Friend, 1995; Dieker & Murawski, 2003). Cook and Friend (1995) have outlined five models typically implemented by co-teachers. However, there is one overall purpose of all these models; that is, to bring perspectives and strengths of both co-teachers together for a better learning environment for students with disabilities.

All the co-teaching models mentioned here meet the criteria of co-teaching, including (a) two certified teachers, one general education teacher and one special education

teacher, (b) equivalent teaching roles, (c) a group of heterogeneous of students (i.e., students with disabilities are taught with students without disabilities), and (d) one classroom. The difference between these five models include (a) different teacher roles for the general and special education teachers, (b) teachers' activity within the classroom, and (c) student group distributions.

Leading and assisting. In this model, one teacher takes the lead in much of the instruction while the other teacher provides support and assistance for students who need it. Cook and Friend (1995) defined this model as “one teaching, one assisting” (p.6). Limited co-planning time is required in this model because only one teacher is primarily responsible for presenting the instruction to the students. The problem associated with this model is that students might question the authority of the other teacher, who only assists for most of the time. To solve this problem, Cook and Friend (1995) suggested that teachers alternate their roles. For example, when teaching subject content, the general education teacher takes the lead role while the special education teacher assists students; when conducting activities or explaining assignments, the special education takes the lead role and the general education assists.

Station teaching. In this model, the whole class is divided into two, or more than two groups. Both teachers present half of the content to different stations and then trade stations and repeat the same content just taught. If students are divided into more than two groups, for example, three groups, the third group of students usually is able to work independently or work together as a group. This model is beneficial for students because of the lower teacher-student ratio. Furthermore, both teachers can actively participate in instruction delivery. However, since two teachers teach or two groups of students have

discussions at the same time, the high noise level makes it difficult for some students to focus on tasks. This model also requires more co-planning time between both co-teachers to decide how to group students and divide curricular content.

Parallel teaching. This model is similar to *station teaching*. When co-teachers select this model, both teachers need to plan the instruction together. In this model, each teacher teaches a heterogeneous group of students consisting of half the class. This model is appropriate for hands-on activities and group discussions.

Alternative teachings. In this model, the class is divided into one big group and a small group. The small group usually consists of students with disabilities and other students who need more intensive instruction. While alternatively teaching, one teacher pre-teaches, re-teaches, or provides remediation for students in a small group and the other teacher instructs the big group. This model ensures the unique needs of students with disabilities are met. However, stigmatization becomes a risk when grouping students with disabilities into the small group. Therefore, teachers need to vary groupings so that most of the students in co-taught classroom are periodically included into the small group (Cook & Friend, 1995).

Team teaching. In team teaching, both teachers take turns leading the class and share content instruction. Co-teachers can take turns discussing a topic, or one speaks while the other teacher provides models or demonstration. The critical factors for this model are trust, commitment, and most important of all, mastery of content knowledge of both co-teachers.

While delivering specific content or direct instruction, the *leading and assisting* model or the *team teaching* model will be an option. *Parallel teaching* or *station teaching*

will be selected when the class is divided into groups. Teachers may choose *alternative teaching* when some students need re-teaching or pre-teaching (Dieker & Murawski, 2003). Also, co-teachers can combine models to address curricular demands or students' needs in one class.

Co-teaching, as a service delivery approach, has been developed to ensure inclusion of students with disabilities in general education settings and curriculum (Cook & Friend, 1996). Ideally, students with disabilities in the co-taught classroom will have learning opportunities equal to their peers without disabilities in the co-taught classroom. After visiting six inclusive schools in five states, Zigmond and Baker (1995) reported that all the special education students who had been co-taught had the same learning opportunities as their nondisabled peers. Meanwhile, supports and services were provided for these students, usually by special education teachers in the co-taught classroom. However, the authors also noted that no intensive or more individualized instruction was found in those classrooms observed.

Some researchers state that co-teaching emphasizes collaboration and communication among members of the co-teaching team (e.g., Pugach & Johnson, 1995; Simpson, Whelan, & Zabel, 1993). In theory, co-teachers should collaboratively plan educational goals, design instructional strategies, teach subject content, and evaluate student outcomes. However, classroom size and increased curriculum requirements might be challenges facing co-teachers who work closely with another teacher in a single classroom, especially at the secondary school level.

Dieker (2001) investigated nine middle and high school co-teaching teams perceived as being effective by university professors, special education supervisors, and

administrators. Significant factors that led to the effectiveness of these co-teaching teams were identified. First, all nine effective co-teaching teams had a positive learning environment even though each team used different co-teaching models. In these co-taught classrooms, students with disabilities were accepted by co-teachers and students without disabilities. Co-teachers also had high behavioral and academic expectations for students with disabilities. If students needed more assistance, a more restrictive environment was provided to ensure all student needs were met. Second, all members of these effective co-teaching teams had positive perspectives of co-teaching. According to the interviews with students taught by these co-teaching teams, co-teaching improved students academic and behavior outcomes and teachers' professional skills. Third, all teams had a common planning period, ranging from 90 minutes per week to 217 minutes per week. In fact, co-teachers considered a daily planning schedule necessary for the success of co-teaching. Last, all these teams were observed using different ways to teach and assess students. Rather than only lecture instruction or pencil/paper assignments, co-teachers designed hands-on activities so that all students actively engaged in class. These teams also used creative methods to assess students' performance and both co-teachers collaboratively evaluated student academic and social performance.

Co-teaching has been of interest to schools that aspire to promote successful inclusion of students with disabilities. Administrators' and other teachers' support and commitment are fundamental for co-teaching because co-teaching requires the sharing of teaching, rather than the simply sharing space in one classroom. More specially, co-teachers considered the principal's support as an essential factor to successful co-teaching (Walther-Thomas, 1997). Rice and Zigmond (2000) investigated co-teaching in

secondary schools in the United States and Australia. Based on interviews with co-teachers, they reported that all teachers interviewed believed that they could not co-teach successfully unless all the co-teachers, as well as other teachers and administrators in the school, had similar perspectives of co-teaching.

School-wide support is also very important for co-teaching (Morocco & Aguilar, 2002). In a study investigating of a school-wide co-teaching practice, three indicators identified for a successful school-wide co-teaching model were (a) a regular planning time, (b) consistent school wide support, and (c) professional development, including the special education teachers' development of content knowledge. The parity between co-teachers was also observed in this study. The authors listed some unique features as reasons for the parity. First, both co-teachers were valued as full members of the team. Second, school policy supported special education co-teachers' shared participation in making decisions about curriculum and teaching methods and strategies. Finally, in this school-wide co-teaching model, it was found that all special education co-teachers developed subject matter knowledge. Some researchers emphasized the equality between educators (e.g., Bauwens & Hourcade, 1995; Cook and Friend, 1995; Walther-Thomas, 1997). However, some studies found that special education teachers were not actively involved in instruction in co-taught classrooms, especially at the secondary school level (e.g., Keefe & Moore, 2004; Rice & Zigmond, 2000).

Rice and Zigmond (2000) and Keefe and Moore (2004) investigated co-teaching at the secondary level and found that the special educators' lack of active involvement was caused by student age levels, content areas, variations in resource availability, and different school schedules. In elementary schools, special education teachers serve a

substantive teaching role due to the learning of basic skills in literacy and numeracy.

However, in secondary schools, the emphasis on content area knowledge has become an obstacle for special education teachers serving an equal role as general education.

Several challenges have been identified for co-teaching in secondary classrooms (Weiss & Lloyd, 2002). First, students with disabilities did not have opportunities to interact with teachers because of the academic and behavioral gaps between students with disabilities and students without disabilities. Second, special education teachers usually did not have adequate time to modify instruction. As a result, they were viewed as an instructional aid in the co-taught classroom while the general education teachers delivered the majority of the instruction.

In response to the increased practices of inclusion, much has been studied about co-teaching. To date, most co-teaching research has focused on rationale, teacher preparation, and implementation and planning issues. Some co-teaching studies have revealed perspectives of co-teachers and students with disabilities. However, there has been limited research related to the achievement of students with disabilities participating in co-taught classrooms.

Perspectives of Co-Teaching Research

Co-Teachers' Perspectives

Co-teachers' perspectives are critical factors affecting co-teaching. In a study conducted by Austin (2001), 92 general and special education co-teachers who co-taught kindergarten through 12th grade completed a perspective survey on co-teachers; 12 of them had follow-up interviews. The results of this study revealed that the majority of co-teachers believed co-teaching improved their teaching. Most co-teachers interviewed

reported that co-teaching is beneficial to students with disabilities by reducing student-teacher ratio. Co-teachers also reported their perspectives on the difference between co-teaching and co-teaching practice. Most co-teachers believed that, in theory, they should share classroom management and instructional delivery; however, they did not share these responsibilities while co-teaching. In fact, the general and special education co-teachers agreed that general education teachers did more than special education teachers in a co-taught classroom. Austin's explanation for this disparity is that special education teachers are viewed as visitors in general education classrooms.

Sharing beliefs about co-teaching and co-teachers' agreement of the ability of student learning have been found to be essential elements of successful co-teaching (Cook & Friend, 1995). Other studies have also reported teachers' satisfaction about co-teaching regarding the outcome of students with disabilities in co-taught classroom (Austin, 2001; Ritter, Michel, & Irby, 1999; Trent, 1998).

When co-teachers move from their separate special education and general education environments to the co-taught classroom, their roles and responsibilities also change. In Austin's study (2001), co-teachers expressed concerns of specifying unique responsibilities for both general and special education co-teachers. In a statewide survey (Fennick & Liddy, 2001), general and special education co-teachers showed a consensus regarding planning and evaluation responsibilities. However, each group saw themselves as having more responsibilities for instructional and behavioral management than the other. In addition, it was found that teachers believed their responsibilities were the same in co-taught classrooms as they were in their traditional settings (i.e., special education teachers are responsible for individuals or small groups and general education teachers

are responsible for teaching content and evaluating student progresses). In this type of arrangement, it is not surprising that special education teachers were perceived as assistants. This finding is consistent with results of another previously described study conducted by Rice and Zigmond (2000). Rice and Zigmond indicated that special education teachers did not assume an equal role in co-taught classrooms. The co-teaching partnership was “characterized by a domination by content subject teachers” (p.190) while special education teachers were assigned to monitor or help.

Successful co-teaching must include time and opportunity for the teachers to participate in professional preparation (Cook & Friend, 1995). Co-teaching strategies, specified roles and responsibilities for co-teachers, and co-planning should be included in co-teacher preparation programs or inservice programs. Austin (2001) found that co-teachers, especially special education teachers, considered collaborative teacher training as an important factor of effective co-teaching. This finding is similar to the results found in Keefe and Moore’s (2004) study, which was that secondary school co-teachers expressed the need for establishing appropriate roles and clarifying responsibilities.

In their study of co-teaching in middle schools, Ritter et al. (1999) interviewed general education co-teachers who were implementing co-teaching. Increased academic progress of students with disabilities was reported by the majority of the general education co-teachers. This increased academic achievement, according to the general education teachers, was associated with higher expectations and interventions for special education students in co-taught classrooms. The general education co-teachers in this study recognized that students with disabilities had more confidence in co-taught classrooms than in special education classrooms.

In a 3-year co-teaching study, 18 elementary and 7 middle schools that used co-teaching as a service delivery approach were investigated regarding their perspectives of co-teachers (Walther-Thomas, 1997). Benefits for students with disabilities and co-teachers were reported. Benefits for students with disabilities included improved self-confidence, academic performance, social skills, and good peer relationships. Co-teachers expressed high levels of professional satisfaction regarding their students' success in co-taught classrooms. They also reported that the co-teaching experience provided ongoing opportunities for their professional development and support from others. Some issues revealed in this study included (a) major concerns for finding scheduled co-planning time, (b) problems scheduling students with disabilities into co-taught classrooms, and (c) the need for co-teaching preparation and training. Co-teachers in middle schools expressed their concerns about the need to help students with disabilities adjust to co-taught classrooms.

All the studies previously described revealed similar perspectives from co-teachers (general and special education teachers) concerning co-teaching. Teachers believed that co-teaching resulted in (a) improved academic performance and social skills of students with disabilities, (b) increased self-confidence of students with disabilities associated with higher expectations, and (c) ongoing opportunities for professional development in terms of teachers' content knowledge and teaching strategies. The results of these studies also revealed concerns for co-teachers. Some barriers that co-teachers have encountered include (a) unclear roles and responsibilities, (b) the lack of planning time, and (c) the lack of professional training.

Co-Planning

Co-planning is discussed as one of the major issues addressed in the literature on co-teaching (Cook & Friend, 1995; Dieker & Murawski, 2003; and Walther-Thomas & Bryant, 1996). Different co-teacher teams may vary in their ways of planning approaches. Co-teachers meet during lunchtime, before or after school, or even during their “walking exercise” (Cook & Friend, 1995, p.11). However, as stated by Dieker (2001), scheduled planning time is a critical practice for co-teaching. Deliberate and thoughtful co-planning is essential in order to ensure that all students in a co-taught classroom receive appropriate instruction.

Ideally, co-teachers should develop weekly and/or daily co-planning routines. Curriculum adaptations, instructional strategies, assessments of student performance, and evaluation of co-teaching effectiveness need to be discussed by both co-teachers during co-planning periods. However, co-teachers have reported that finding secured co-planning time is a big challenge for them. Walther-Thomas and Bryant (1996) found that there were different levels of planning issues, including district-level, building-level, and classroom-level. Co-planning issues at district- and school-level include discussions of topics such as district and school schedule design, financial support, staff preparation, program evaluation, and administrative support. Major issues at the classroom-level include co-teachers’ roles and responsibilities, resource distribution, content and classroom management, students’ IEPs, and progress monitoring.

Before starting co-planning, co-teachers need to spend time getting to know each other regarding teaching skills, philosophies, and perspectives (Walther-Thomas & Bryant, 1996). New co-teachers should develop a common understanding of classroom

routines, curriculum, student assessment, and behavior management. As mentioned before, specific roles and responsibilities should be identified for both co-teachers before they begin co-teaching. During the co-teaching experience, a weekly co-planning period should be secured based on regular scheduled meetings. Instructional issues, tasks for each teacher, specific concerns, and IEP goals should be included in weekly planning meetings.

Fennick and Liddy (2001) investigated the amount of co-teaching planning scheduled. Most of the co-teachers in their study did not have “mutual planning time on a daily basis during school hours” (p.234). Only about one-fifth of the co-teachers in this study had one hour or more co-planning time on a weekly basis. The results of this study indicated that co-teachers did not co-plan for curriculum, instruction and behavior management strategies. The authors argued that the lack of mutual co-planning would provide a sense that co-teaching is not a collaborative teaching process. The authors also indicated that the special education teachers would be perceived in a subordinate role when co-teachers do not plan together.

It has been reported by co-teachers that a lack of planning time is a significant problem (e.g., Scruggs & Mastropieri, 1996). Finding co-planning time during school hours was perceived as “a serious problem” (p. 405) by co-teachers in a 3-year study by Walther-Thomas (1996). This problem was made more difficult in elementary schools than in secondary schools because of the shorter planning periods and the difficulty of coordinating each co-teacher’s schedule. For secondary co-teachers, there would be less planning problem because of the organizational schedules (e.g., some secondary schools use block schedule). However, when other researchers reviewed co-teaching issues at the

secondary level, they argued that it is still a challenge for secondary school co-teachers to find common planning time, especially if the special education teachers co-teach with more than two to three other general education teachers (Dieker & Murawski, 2003). Furthermore, even with the block scheduling, it is still hard for co-teachers to plan together if they do not have common planning periods.

Perspectives of Students with Disabilities

Despite a wealth of literature on co-teachers' perspectives of co-teaching, little has been done to investigate feelings and perspectives of students with disabilities involved in co-teaching. In one of the few studies conducted in this area, focus groups with effective co-teaching teams found overall student satisfaction with the co-teaching instructional practice (Dieker, 2001). Although not all the students understood why two teachers were teaching in one classroom, they did indicate that they received more academic assistance and had less behavior problems in the co-taught classroom.

Ritter, et al. (1999) studied student perspectives on co-teaching by interviewing 5th and 6th grade students with disabilities who were participating in a co-taught classroom. Increased self-confidence was one of the themes students reported. Because there was the same teacher expectation for everyone in the co-taught classroom, students with learning disabilities learned that all students were equal, which builds students' self-esteem. The results of interviews with students also indicated students' satisfaction with the support provided by teachers in co-taught classrooms. Higher expectations from teachers for students with disabilities in co-taught classrooms were another predominant theme reported by students in this study.

In another comprehensive study, co-taught special education students from elementary, middle, and high schools were interviewed regarding their perspectives and experiences of participating in a co-taught classroom (Gerber & Popp, 1999). The majority of students with disabilities expressed that they liked being taught in co-taught classrooms. One of the advantages expressed by the students in co-taught classrooms was that they received more teachers' help and attention. These students indicated that they had the opportunity to learn in different ways. Students also reported that they could learn things well through hands-on activities. However, they expressed a major concern with the confusion associated with having two teachers in one classroom. Specifically, students were often provided different explanations from different teachers, which led to students' misunderstanding.

Perspectives of students with disabilities participating in co-teaching have yielded critical information about this service delivery model. Furthermore, students' satisfaction has been considered as one of the measures of social validity (Wolf, 1978). In the studies mentioned previously, students with disabilities indicated an overall satisfaction with co-taught was identified. Another theme of these studies is the increased self-confidence of special education students.

Efficacy of Co-Teaching

Before implementing any teaching method, the efficacy of that approach should be investigated. The focus of current research is on the efficacy of co-teaching. Some studies indicate positive trends, such as academic and social progress, when students are co-taught (e.g., Lundeen & Lundeen, 1993). However, there is limited research that examines the efficacy of co-teaching. In a co-teaching review by Reinfiller (1996), only

three studies that were relevant to co-teaching efficacy were included. The results of these three studies reported positive student attitudes and outcomes of co-teaching. The author, however, concluded that these articles did not provide adequate data to determine student achievement in co-taught classroom.

Murawski and Swanson (2001) conducted a meta-analysis study of co-teaching research literature, which included eighty-nine articles pertaining to co-teaching. They only found six studies with sufficient quantitative data that could be used in their calculations. Measures from those six individual studies yielded an average effect size of 0.40, indicating co-teaching is a moderately effective service delivery approach for students. Murawski and Swanson suggested that this finding should be explained cautiously because only three of the six studies included effect sizes related to students with disabilities. According to the mean effect sizes for all dependent measures, the highest mean effect size was reading and language arts (1.59) and; math was reported as having a moderate effect size (0.45). The effect size for student social outcomes, including peer acceptance, friendship quality, self-concept, and social skills, was low (0.08).

Rea, McLaughlin, and Walther-Thomas (2002) compared academic and behavioral outcomes of 8th grade students with LD in two middle schools. In one school, students with LD were served in a co-taught classroom. Both general and special education co-teachers co-taught four periods and had one common planning period everyday. In the other school, students with LD were served in traditional pullout programs, that is, they had their four core courses (language arts, mathematics, science, and social studies) in a general education classroom taught by the general education teachers and received

special education services in the special education teachers' classroom. Both groups of students with LD were graded by their teachers. The results of this study demonstrated that, compared to students with LD served in pullout programs, students with LD in the co-taught classroom achieved higher grades in core courses and attended more school days. However, there was no significant difference between these two groups in the state proficiency test, Literacy Passport Test (LPT). In the LPT's three subtests (reading, writing, and mathematics), students with LD in the co-taught classroom demonstrated similar scores to those in pullout programs. The third key finding of this study was that students with LD did not have more in-school or out-of-school suspensions than did students in pullout programs. The researchers in this study concluded that co-taught students with LD had better outcomes on some measures, such as higher grades in language arts, mathematics, science, and social sciences and school attendance record, than students with LD in pullout programs.

Vaughn, Elbaum, Schumm, and Hughes (1998) investigated the social outcomes for elementary school students with LD in two different inclusive settings, including co-teaching and consultation/collaboration teaching. In the co-teaching setting, one general education teacher and one special education teacher co-taught in the same classroom for the entire school day. In the consultation/collaboration teaching the general and special education teachers co-planned formally for half an hour every day and the special education teacher was in the general education classroom during language arts class, and according to students' needs, during math class. The measurements for the social outcomes of students with LD in two settings included (a) peer acceptance and reciprocal friendship, (b) self-concept, (c) friendship quality, and (d) social skills. In both settings,

students with LD had at least some reciprocal friendships with their peers. However, students with LD in co-taught settings had overall lower levels of peer acceptance and friendship quality than students with LD in consultation/collaboration settings. In addition, one of the results indicated that, in the co-teaching setting, there was no significant difference over time in either peer acceptance or friendship quality. In both settings, neither student self-concept nor social skills improved over time. The authors concluded that in co-taught classrooms, students with LD were highly accepted, but teachers did not have high expectations for these students. Furthermore, co-teachers were frustrated by the large number of low-achieving students. These findings are in agreement with Vaughn et al. (1998) who suggested that it was challenging for teachers to meet different individual needs if more than 25% of the students taught in the general education classroom had a disability.

Co-teaching is hypothesized to lower the student ratio and provide more individualized instructional experiences (Cook & Friend, 1995). In a recent research study, Magiera and Zigmond (2005) examined if this instructional advantage is evident at the secondary level with limited co-teacher training and limited or even no co-planning time. Instructional experiences of students with disabilities in co-taught classrooms were compared with the experiences of the same students who were solo-taught, that is, taught by the general education teacher alone. The results of this study indicated that there were no significant differences between co-taught and solo-taught classrooms in terms of on-task behaviors, directions provided to individual students, and student participation. However, two significant differences found in this study were that students with disabilities (a) received more one-to-one instructional interactions and (b) had less

interaction with general education teachers than students in classes taught only by the general education teacher. However, the data also revealed that even in co-taught classrooms, students with disabilities only received two individual instructional interactions for every 6.6 co-taught periods. Authors of this study believed that students with disabilities in a co-taught classroom did not receive more attention even though there were two teachers in the classroom.

Studies in co-teaching research have provided descriptive information about co-teaching practices, perspectives, and theory. However, few research studies have been conducted to examine the efficacy of co-teaching. A solid research base for this practice is needed if co-teaching is to be adopted as a service delivery approach for students with disabilities in the general education classroom. Some studies, however, did report academic and social outcomes of students with mild disabilities (e.g., learning disabilities) in co-teaching settings. Since students with moderate and severe disabilities are also included in co-taught classroom, more studies are needed in order to analyze the efficacy of this approach for these students.

Co-teaching has emerged as a service delivery option to include students with disabilities in general education classrooms. Researchers have identified different models of co-teaching. The various factors involved in co-teaching include co-teachers' perspectives, co-teaching training, and administrative support. Both descriptive and intervention studies have been conducted to investigate perspectives of co-teachers, students with disabilities involved in co-teaching, co-teaching practices and student outcomes. Research indicates positive attitudes of co-teachers at the elementary and secondary school levels. It is also evident that challenges and issues, such as co-planning

schedules, co-teaching training, and content knowledge, are associated with the co-teaching process. While limited research has investigated the co-teaching practice and issues, even fewer studies have examined the efficacy of this instructional approach and the perspectives of students with disabilities. Considering the importance of determining the validity of co-teaching as a service delivery approach for students with disabilities, future studies should be conducted to investigate the co-teaching effects on student academic and behavioral outcomes as well as their experience in co-taught classrooms.

III. METHOD

The purpose of this study was to investigate the perspectives of co-teachers and students with disabilities participating in co-taught classrooms. This study also examined the efficacy of co-teaching as measured by attendance records, discipline referrals, and SAT scores of students with disabilities who have been co-taught for one year. This chapter provides an overview of the research methods used in this study. Included are a description of participants and procedures for data collection.

Participants and Co-Teaching Setting

A variety of co-teaching definitions have been described in the literature (e.g., Cook & Friend, 1995; Rice & Zigmond, 2000). For the purpose of this study, an instructional delivery approach had to meet three criteria as defined by Cook and Friend (1995) for it to be accepted as co-teaching: (a) both co-teachers, that is one general and one special education teacher, are certified teachers; (b) both co-teachers deliver instruction to the student; and (c) heterogeneous grouping (i.e., students with disabilities are taught with their peers without disabilities).

This study took place in seven schools from a public school system in southeast Alabama. Four elementary schools, one middle school, one junior high school, and one high school were included. Participants for this study included 31 general and 14 special education teachers who had been co-teaching for one year. The grade levels of co-teaching classrooms ranged from 1st grade to 10th grade. Four core subjects, including

English/language arts, math, science, and social studies, were co-taught throughout the 2004-2005 school year.

Fifty-eight students with disabilities participating in co-teaching classrooms were recruited for this study. These students were identified as having disabilities on the basis of the criteria for disabilities defined by the Alabama Administrative Code for Special Education Service (290-8-9-.03 f). All the students with disabilities who participated in this study received special education through the 2004-2005 school year. These students also attended co-taught classrooms in one, or more than one subjects, out of four core content area subjects (i.e., English/language arts, math, science, and social studies). The demographic characteristics of student participants are comparable with those of all the students with disabilities in the school system. Table 1 presents demographic information of all students' with disabilities in the school system (i.e., population) and students who participated in this study (i.e., Participants). Table 2 provides information regarding teacher participants.

Table 1

Demographic Information of Student Participants (n=58) and All Students with Disabilities in Co-Taught Classrooms (n=112)

	Participants (n=58)		Population (n=112)	
	n	%	n	%
Ethnicity				
Caucasian	22	38%	38	34%
African-American	36	62%	73	65%
Other	0	0%	1	1%
Disabilities				
Developmental Delay	2	3%	2	2%
Emotional Disturbance	1	2%	1	1%
Hearing Impairment	3	5%	4	4%
Mental Retardation	6	10%	15	13%
Other Health Impairment	14	24%	25	22%
Orthopedic Impairment	1	2%	1	1%
Specific Learning Disabilities	24	42%	48	43%
Speech and Learning Impairment	7	12%	16	14%
Grade				
Grade 1 to 5	28	47%	51	46%
Grade 6 to 7	12	20%	22	20%
Grade 8 to 9	16	27%	29	26%
Grade 10 to 12	3	5%	10	9%

Table 2

Teacher Participants

	General Education Teacher	Special education teacher	Teaching Grade Levels			
			1st- 5th	6th- 7th	8th- 9th	10th- 12th
n	31	14	24	8	9	4
%	69%	31%	53%	18%	20%	9%

Instrumentations

Surveys

The *Teachers' Perspective Survey* and *Students' Perspective Survey* were designed to identify co-teachers' and students' attitudes as well as opinions of co-teaching by rating each survey item using a 5-point Likert scale. The *Teachers' Perspective Survey* consists of four major categories: (a) components of co-teaching (12 items), (b) teachers' roles

and responsibilities (7 items), (c) teachers' expectations (7 items), and (d) planning schedule (4 items). There are four categories in the *Students' Perspective Survey*, including: (a) difference between resource classroom and co-taught classroom (4 items), (b) students' expectations (3 items), (c) challenges (4 items), and (d) advantages and/or disadvantages (8 items). All the survey items are based on previous co-teaching literature (see Table 3 and Table 4, respectively).

Table 3

Teachers' Perspective Survey Items Alignment with Previous Literature

Related Studies	Survey Sections			
	Co-Teaching Components	Roles and Responsibilities	Expectations	Planning
Austin, V. L. (2001)	X	X		X
Cook & Friend (1995)	X	X	X	X
Dieker, L. A. (2001)	X	X	X	X
Dieker & Murawski (2003)	X			X
Fennick & Liddy (2001)		X		
Keefe & Moore (2004)		X	X	X
Gerber & Popp (1999)			X	
Murawskik & Swanson (2001)		X		
Rice & Zigmond (2000)		X		X
Walther-Thomas & Bryant (1996)				X
Weiss & Lloyd (2002)				X

Table 4

Students' Perspective Survey Items Alignment with Previous Literature

Related Studies	Survey Sections			
	Difference	Expectations	Challenges	Advantages/ Disadvantages
Cook & Friend (1995)		X	X	X
Dieker, L. A. (2001)	X			
Dieker & Murawski (2003)				
Gerber & Popp (1999)	X	X		X
Murawski & Swanson (2001)		X		
Ritter, Michel, & Irby (1999)	X		X	X
Walther-Thomas & Bryant (1996)			X	X
Zignomd (2003)			X	X

Copies of the *Teachers' Perspective Survey* and *Students' Perspective Survey* appear in Appendix A and B, respectively.

Interviews

Interviews were conducted as a follow-up to the *Teachers' Perspective Survey* and *Students' Perspective Survey*. A major feature of these interviews were that all the questions are open-ended in order to elicit deep and/or expanded responses according to co-teachers' and students' with disabilities co-teaching experiences.

Drafts of both surveys and interview questions were presented to five experts and nine co-teaching research team members for review. Expert consultants selected to review surveys for this study had survey research experience (e.g., developing and/or conducting surveys). Validity, clarity, and relevance of survey and interview questions were discussed by all the consultants during five meetings. Interview questions were

presented to interviewers and clarifying questions were discussed by the researcher and interviewers.

Classroom observation protocol

An observation protocol was designed to gather information on the co-teaching implementation. Specifically, five co-teaching models (Cook & Friend, 1995) were broken down into three dimensions and 13 specific components. Table 5 presents the dimensions and components of the co-teaching observation protocol. An interval recording method was used to measure the presence of each co-teaching component. A copy of the classroom observation protocol appears in Appendix C.

Table 5

Dimensions of Co-Teaching Observation Protocol

Teachers' Roles	Student Group Distribution	Teachers' Location
Leader (General education teacher) and assistance (Special education teacher)	Two equal size group	Change between groups
Leader (Special education teacher) and assistance (General education teacher)	Large group with individuals who need help	Remain with the same group
Simultaneous teaching	One bigger group and one smaller group	No applicable – a single group
Alternative teaching	One group	Other
Other	Other (e.g., more than two groups)	

Specific teaching behaviors for each co-teaching component were described to 11 observers by the researcher. All observers were trained to identify components of co-

teaching and use the observation protocol according to scenarios. Observers practiced determining occurrences of the 13 components in the observation protocol until they achieved 80% percent accuracy on a Co-Teaching Components test.

Procedures

School personnel were contacted for the approval of this study during April 2005. Once approval was granted, school personnel identified teachers within the system who were implementing the co-teaching instructional model. The special education coordinator of the school system held meetings with all the co-teachers, grades through 1st to 10th in seven schools. During the meetings, co-teachers were provided with a cover letter, which provided an overview of the study, procedures, methods, and researcher's expectation for the teachers. All co-teachers who attended the meetings also received consent forms for participation in this study. In addition, special education teachers who agreed to participate in this study were also asked to distribute consent/assent forms to students with disabilities in their classrooms identified as possible participants in this study. A total of 45 signed consent forms from co-teachers (82% of all the co-teachers in the school system) and 58 signed consent/assent forms from students (52% of students with disabilities participating in co-teaching in school system) were returned. Copies of the consent letters to co-teachers and parents of students with disabilities appear in Appendix D.

Once the school system's central office received the consent/assent forms from all participating teachers and students, unique alphanumeric codes were then assigned to the participants. Students' SAT scores, discipline referrals, tardies, and absences records

from 2003-2004 and 2004-2005 school years were gathered by the central office and then released to the researcher using the participants' codes.

Perspective surveys

Co-teachers and students with disabilities who returned their consent letters were asked to complete one of two survey instruments, the *Teachers' Perspective Survey* or the *Students' Perspective Survey*.

The *Teachers' Perspective Survey* was provided to the co-teachers by the researcher in the initial research orientation meeting. The researcher described the purpose of the survey and explained how to mark answers for the survey items. The special education coordinator of the school system also elaborated on the purpose of this study and ensured all the participating teachers understood that their identity would not be revealed. Finally, participating co-teachers completed the survey at the end of the meeting and placed their unique participant codes on the surveys prior to returning them. During the co-teaching meetings, the participating special education teachers were also provided directions on how to distribute and administer the *Students' Perspective Survey* to the participating students. Directions for the teachers included for them to tell the student his/her rights of declining or their right to withdraw from participation at any time. Teachers were also provided with methods of explaining the survey items to students. The central office created a code list with unique codes and student names. Teachers were provided a list of their students' names and matching codes along with pre-coded surveys. The teachers distributed the surveys to their students for completion. Teachers then returned these surveys to the central office. The researcher collected all the completed *Students' Perspective Surveys* from the central office.

Interviews

Once teachers and students had completed their surveys, 18 general education teachers, 13 special education teachers and 53 students participated in follow-up interviews, which consisted of open-ended questions that were aligned with survey items. Each co-teacher was contacted and scheduled for an interview. The special education teachers then provided the researcher with interview schedules. Co-teachers and students were individually interviewed in teachers' conference rooms or vacant classrooms within the interviewees' schools. All interview sessions lasted approximately 20-30 minutes. Interviewers took notes during each interview session.

Observations

The purpose of the observations was to determine if teachers were implementing components of various co-teaching models. The researcher randomly chose two observers out of 11 co-teaching research team members to conduct observations in each of the 15 co-taught classrooms. Each observer checked the co-teaching components observed on the observation protocol independently. All observations were unobtrusive and conducted at mutually agreed-upon locations and times. Observations occurred during complete co-teaching periods; that is both general and special education teachers were teaching a heterogonous group of students in a single classroom for a full class period. All the co-teachers were requested not to make alterations to their routine classroom practice during observation periods.

Independent Variables

The independent variables for this study were the co-teaching as a service delivery approach and different models of co-teaching implemented by co-teachers. The

definition of co-teaching employed in this study was based on the Cook and Friend (1995) description of co-teaching, that is, “two or more professionals delivering substantive instruction to a diverse, or blended, group of students in a single physical space” (p.2). All the co-teaching classrooms involved in this study meet co-teaching criteria, which included: (a) there were one general education teacher and one special education teacher; (b) both teachers were certified; (c) students with disabilities were taught with students without disabilities, and (d) both general and special education teachers taught in the same classroom.

During the implementation of co-teaching, teachers developed several models to meet different needs of students with disabilities. Research on the co-teaching approach has five defined and described models, including (a) leading and assisting, (b) station teaching, (c) parallel teaching, (d) alterative teaching, and (e) team teaching. In this study, identification of different co-teaching models were primarily based on three features, including co-teachers’ roles, student group distribution, and co-teachers location during teaching. Table 6 presents major components of these five co-teaching models.

Table 6

Components of Co-Teaching Models

Models	Teacher Role	Group Distribution	Teacher Movement	Group Heterogeneous
Lead and assisting	Lead and Assist	1 group and individuals who need help	Not applicable	Yes
Station Teaching	Simultaneous teaching	2 equal groups	Change between groups	Yes
Parallel Teaching	Simultaneous teaching	1 bigger group and 1 smaller group	Stay with one group	Yes
Alternative Teaching	Lead and Assist	2 equal groups	Stay with one group	No
Team Teaching	Alternative teaching	1 group	Not applicable	Yes

Dependent Variables

The dependent variables measured in this study included academic achievement and behavioral records of students with disabilities who have been taught in co-taught classrooms for one school year. This study also assessed perspectives of co-teachers and students with disabilities.

Dependent Measures

The Stanford Achievement Test (SAT) National Percentile Ranks (NPRs) of students with disabilities on reading, language arts, and math from 2003-2004 school year and 2004-2005 school year were collected. The same academic achievement records of all students in the school system from 4th to 8th grade were gathered in order to examine the extent to which the co-taught students gained at a rate comparable to the total student population. The NPRs were then converted into National Curve Equivalent (NCE) in

order to determine the academic achievements of co-taught students. School attendance included the number of days per school year each student was absent from school and the number of the times per school year each student was late for class. Student behavioral records used in this study were determined by the number of in-school or out-of-school suspensions of each student per school year. Both school attendance and referral records information was gathered from the school system's computerized records.

Data Collection and Analysis

Perspective surveys

Analyses were conducted on the survey data from the returned *Students' Perspective Survey* and *Teachers' Perspective Survey* to determine the means of all the item responses from the participants. In addition, internal consistency was calculated on each category in the *Students' Perspective Survey* using Cronbach. For the *Teachers' Perspective Survey*, the reliability measures were calculated on the "teachers' expectation" category. Survey items regarding expectations, students' behavior, and support provided from both the *Students' Perspective Survey* and the *Teachers' Perspective Survey* were analyzed to determine if three groups of participants (i.e., general education teachers, special education teachers, and students with disabilities) had significantly different perspectives by using one-way ANOVA at the .05 level of significance.

Interviews

Responses to the interview questions were read independently by the researcher and the nine co-teaching research team members. Then, a thematic analysis was conducted on the interview responses (Walther-Thomas, 1997). A variety of themes were identified and

discussed by the co-teaching research team. All the interview responses were analyzed for common themes and grouped into different categories.

Student Outcome Data Analysis

The data analyzed in this study included the students' performance on three separate measures: (a) SAT scores, including reading, language arts, and mathematics, (b) school attendance, and (c) discipline referral records. All data were analyzed using the SPSS 11.5 for Windows (SPSS, 2003) with the significance level for statistical tests set at .05. This study utilized a pre-post repeated measures design. Paired-samples t-tests were used to determine if there was a significant difference between the academic outcomes of students with disabilities outcome before co-teaching and after co-teaching. In order to examine the rate with which the NCEs increased from 2003-2004 school year to 2004-2005 school year, the increase rates and differences of NCE means were calculated by each grade level for both the student participants and student population. Furthermore, a one-sample t-test was conducted to examine the extent to which the co-taught student group improved academically at a rate comparable to the total student population. In other words, analysis was conducted to determine if "typical gain" was achieved by the co-taught students with disabilities as compared to the entire student population.

IV. RESULTS

The data analyzed in this study included (a) classroom observations; (b) perspectives of co-teaching from general education teachers, special education teachers, and students with disabilities; (c) students' academic performance measured by SAT National Percentile Ranks (NPRs) and National Curve Equivalents (NCEs); and (d) students' behavioral performance as measured by absences, tardies, and discipline referral records. All data were analyzed using SPSS for Windows (2003).

Classroom Observations

Classroom observations were conducted across all 15 classrooms to determine if the teachers were implementing co-teaching as their instructional delivery method. All observations were based on components that constitute co-teaching models. The amount of time that each co-teaching component was implemented in co-taught classrooms was computed. All the co-teaching components were grouped into three categories, including (a) different teacher roles for the general and special education teachers, (b) teachers' activity within the classroom, and (c) student group distributions. Based on the percentage of each component in one classroom per observation, the specific co-teaching model being implemented were identified. The overall consistency among observers across these 15 classrooms was 94%. Based on observations of these classrooms, there were eight (53.3%) co-taught classrooms implementing the *Leading and Assisting* model, six (40%) classrooms implementing a model that combined *Leading and Assisting* model

and *Team teaching* model, and one (6.7%) classroom implementing a model that combines *Leading and Assisting* model, *Parallel Teaching* model, and *Alternative Teaching* model.

Perspective Surveys

Descriptive Statistics

Teachers' and students' perspectives of co-teaching were determined from their responses on the *Students' Perspective Survey* and the *Teachers' Perspective Survey*. For all the sections in the *Students' Perspective Survey* and two sections in the *Teachers' Perspective Survey* ("Teacher's Expectations" and "Planning Schedule"), respondents used a 5-point Likert scale to rate items (0= "strongly disagree", 1= "disagree", 2= "neutral", 3="agree", and 4="strongly agree"). To summarize the data more succinctly, "agree" and "strongly agree" were collapsed for reporting the respondents' agreement about the survey items. Likewise, "disagree" and "strongly disagree" were collapsed for reporting the respondents' disagreement about the survey items. For the other two sections in the *Teachers' Perspective Survey* ("Components of Co-Teaching" and "Teacher's Roles and Responsibilities" sections), teacher respondents used a 5-point Likert scale to indicate to what extent the options occurred in their co-teaching practices (0= "never", 1= "seldom", 2= "sometimes", 3= "often" and 4= "always"). Therefore, "never" and "seldom" were collapsed to indicate infrequently-used components and "often" and "always" were collapsed to indicate components that were frequently used.

Internal consistency was calculated on each section in the *Students' Perspective Survey* using Cronbach (difference between co-taught and resource classroom = .77, Students' expectation = .64, Challenges = .75, Advantage/Disadvantage = .64). For the

Teachers' Perspective Survey, the reliability was calculated on the “teachers’ expectation” section (Chronbach = .80). To address the research questions descriptively, survey item means were separately calculated for each group (i.e., general education teachers, special education teachers, and students with disabilities). Agreement and frequency percentages of survey items were also reported. Table 7, 8 present the survey item means in each category for both *Students' Perspective Survey* and *Teachers' Perspective Survey*.

Table 7

*Results of Students' Perspective Survey (*n=50)*

Survey Sections	Mean	Agreement (%)
A. Differences Between Co-Taught and Resource Classrooms		
More friends in a co-taught classroom	2.60	58
Fewer friends in a co-taught classroom	1.30	20
More help from friends in a co-taught classroom.	2.70	62
Learn from friends in a co-taught classroom	2.66	58
B. Student's Expectations		
Learn as well as others	2.88	66
Not sure if I can learn as well as other	1.04	14
Cannot learn as well as others	.86	10
C. Challenges		
Harder assignments	2.10	44
Easier assignments	2.18	46
Harder textbooks	1.56	32
Hard tests	1.84	42
D. Advantage/Disadvantage		
Learn more	2.90	65
Learn less	.96	8
Work harder	2.86	68
More attention	2.28	50
More help from two teachers	2.73	65
Better behavior	2.63	61
I am expected to do more than I can do.	2.41	55
Hard to focus on my tasks	1.71	35

* Fifty *Students' Perspective Surveys* were completed and returned by student participants.

Table 8

Results of Teachers' Perspective Survey

Survey Sections	GT^a	ST^b	GT	ST
A. Components of Co-Teaching	Item Mean		Frequency (%)	
One leads and another assists	3.27	3.50	84	93
Simultaneous teaching	1.90	2.00	29	36
Alternating teaching	1.60	2.36	27	57
Same content	2.68	2.57	52	50
Different content	1.28	1.46	10	23
Two equal size groups of student	.63	.86	10	14
One group with individuals who need support	3.03	3.21	70	71
One bigger group and one smaller group	1.94	1.93	48	36
One group of students	1.90	2.36	30	57
Teaching locations change between groups	2.00	2.57	42	57
Teachers remain with the same group	1.81	1.71	23	14
Heterogeneous group(s)	2.80	3.21	63	86
B. Teacher's Expectations	Item Mean		Agreement (%)	
Insufficient support for students with disabilities	1.39	.43	23	0
Students with disabilities learn more	3.26	2.93	87	71
Students with disabilities increase positive feeling	3.19	2.86	80	79
Students with disabilities have difficulty adjusting to higher expectations.	1.87	1.86	36	36
Better students' behaviors	2.63	2.64	57	57
Worse students' behaviors	1.13	1.50	3	14
The behavior issues	2.03	1.71	39	36
C. Planning Schedule	Item Mean		Agreement (%)	
A common planning time	3.65	3.79	94	100
A daily planning time	3.23	3.21	81	79
A weekly planning time	3.26	3.79	80	100
Comprehensive planning	3.61	3.79	100	100
D. Roles and Responsibilities	Item Mean		Frequency (%)	
GT is responsible for leading instruction.	3.34	3.36	90	93
ST is responsible for leading instruction.	1.27	1.64	3.8	7.1
GT is responsible for planning.	3.40	3.50	93	93
ST is responsible for planning.	1.50	1.50	19	14
GT is responsible for instruction.	3.33	3.43	90	93
ST is responsible for instruction	1.77	2.14	19	29
GT is responsible for evaluating	3.17	3.43	80	93
ST is responsible for evaluating	2.15	2.50	30	43
GT is responsible for modification	2.47	1.93	43	29
ST is responsible for modification	3.15	3.29	85	93
GT is responsible for monitoring behaviors.	3.57	3.14	93	78
ST is responsible for monitoring behaviors.	3.00	3.36	74	93
GT is responsible for remediation	3.00	2.46	73	54
ST is responsible for remediation	3.19	3.21	85	86

Note. GT = general education teachers; ST = special education teachers. The number of respondents reported for each section is the maximum number of participants who responded for that section. ^an = 31. ^bn = 14.

According to the results of *Students' Perspective Survey*, sixty-six percent of the student participants reported that they could learn as well as others. Sixty-five percent of the student participants reported that they learned more and got more helps from teachers in co-taught classrooms. Sixty-eight of the student participants believed that they worked harder in co-taught classrooms. Based on the results of *Teachers' Perspective Survey*, ninety-three of the teacher participants believed that “one leading and one assisting” was a component that often occurred in their co-taught classrooms. All the teacher (n=45,100%) participants believed that they needed a common weekly planning period and needed to plan for lessons, evaluations and other general issues.

Inferential Statistics

One-way Analysis of Variance (ANOVA) was used to compute mean differences in five sections of the co-teaching perspectives among (a) general education teachers, (b) special education teachers, and (c) students with disabilities. These five sections included that students with disabilities (a) increase their self-confidence, (b) learn more, (c) have difficulty adjusting to high expectation, (d) receive sufficient teachers' support, and (e) exhibit better behaviors. The ANOVA results indicated significantly different perspectives regarding the support for students with disabilities between these three groups, $F(2, 91) = 3.40, p = .04$. Table 9 presents the mean, standard deviations, ANOVA results of perspective differences among three groups (i.e., general education teachers, special education teachers, and students with disabilities). Table 10 presents the multiple comparisons among the three groups for section D – students with disabilities receive sufficient support.

Table 9

Means, Standard Deviations, and Analysis of Variance for Five Survey Sections across Three Groups

Survey Sections	^a GT n=31		^b ST n=14		^c Student n=50		df	F
	Mean	(SD)	Mean	(SD)	Mean	(SD)		
A. Students with disabilities increase self-esteem.	3.19	.83	2.86	.77	2.88	1.12	92	1.01
B. Students with disabilities learn more.	3.26	.89	2.93	.92	2.90	1.16	91	1.19
C. Students with disabilities have difficulty adjusting to high expectation.	1.87	1.23	1.86	.95	2.41	1.46	91	1.97
D. Students with disabilities receive sufficient support.	2.61	1.23	3.57	.65	2.73	1.27	91	*3.40
E. Students with disabilities exhibit better behaviors.	2.63	.89	2.64	1.01	2.63	1.27	90	.00

Note. The number of respondents reported for each section is the maximum number of participants who responded for that section. ^aGT = General Education Teacher. ^bST = Special Education Teacher. ^cStudent = Students with disabilities. * $p < .05$

Table 10

Multiple Comparisons for Survey Section D

Survey Section D (I)	Survey Section D (J)	Mean Difference (I-J)	Standard Error
GT	ST	*-.96	.38
	Student	-.12	.27
ST	GT	*.96	.38
	Student	.12	.36
Students	GT	.12	.27
	ST	-.84	.36

Note. GT=General Education Teacher Group, ST=Special Education Group, Student=Student with Disabilities Group. * The mean difference is significant at the .05 level.

The general education teacher group, special education teacher group, and students with disabilities group all agreed that students with disabilities increased their self-esteem, learned more, and exhibit better behaviors in co-taught classroom. The mean scales for “students with disabilities have difficulty adjusting to high expectation” were 1.87, 1.86, 2.41 from the general education teacher group, special education teacher group, and students with disabilities group, respectively. There was a significant

difference between the general education teacher group and the special education teacher group for section D (i.e., students with disabilities receive sufficient support.)

Perspective Interviews

Themes of teacher interview

According to the thematic analysis, five themes emerged from the teacher interviews, which were: (a) benefits and challenges of co-teaching, (b) roles and responsibilities of co-teachers, (c) co-teaching practice, (d) expectations for students with disabilities in co-taught classrooms, and (e) co-teaching planning. There are a number of sub themes for each main theme. For each sub theme, the number and percentage of the teachers who mentioned the theme during interview were also reported.

Benefits of co-teaching. The two themes reported by teachers as benefits co-teaching were the support they received from another teacher and the improved performance of students with disabilities. Fourteen teachers (45%) indicated that one of the benefits of co-teaching was having another teacher's support ("There are two teachers instead of one in a co-taught classroom, and both of us are experts for different areas" – T14). Nine teachers (29%) reported that the academic and behavioral performance of students with disabilities improved while these students were co-taught. One special education teacher noted that, "[co-teaching] really helps students succeed academically and improves students' appropriate behaviors" (T2). Some co-teachers (n=6, %=19) also felt that the self-esteem of students with disabilities increased, as one teacher stated, "students strive to excel" (T4).

Challenges of co-teaching. Planning time was reported as a challenge by 11 teachers (35%). Another challenge indicated by five teachers (16%) was that students with disabilities had difficulty adjusting to the high expectation of co-teachers.

General education teachers' roles. There were nine general education teachers (50%) who viewed their roles in co-taught classrooms as the leader. This view was represented well by one general education teacher, who described her role as: "I'm the lead teacher in charge of leading discussion, creating tests, and getting students started" (T8). Other general education teachers (eight, 44%) believed that both special and general education co-teachers had equal roles. As one general education teacher said, "[We] have equal roles – I am lead instructor but not the leader" (T3).

Special education teachers' roles. Eight special education teachers out of 13 (62%) indicated that they had an assistant role. One special education teacher described this role as his or her responsibility to "provide help and support for the general education teacher, as well as provide accommodation and modification for all students" (T7). Five special education teachers (38%) reported they had an equal role to the general education teachers because they "both share teaching responsibilities" (T6).

Co-teachers' responsibilities. Seventy-eight percent of the general education teachers (n=14) stated that they are responsible for all the students in the co-taught classrooms, while sixty-two percent of special education teachers (n=8) reported that they are responsible for all co-taught students.

Co-teaching practice. Seventy-two general education teachers (n=13) reported that their major task of co-teaching was "deliver most of the instructions" (T18), and sixty-nine percent of the special education teachers (n=9) indicated that they usually

“provide support for the general education teacher” (T1) while co-teaching and/or “circulate and help students” (T7).

Expectations for students with disabilities. Thirty-two percent of all the co-teachers (n=10) who were interviewed believed that students with disabilities needed more help. Some of the co-teachers expressed their concerns about the appropriateness of co-teaching for all the students with disabilities (e.g., “[it] is not for all students”(T1). Increased self-confidence of students with disabilities was reported by 23% of co-teachers (n=7). As described by one teacher that students with disabilities had “increased motivation [of learning]” (T30).

Planning time. Planning in co-taught classroom time was reported as the “biggest issue” (T16) in co-teaching, and there were 45% of the co-teachers (n=14) who did not have a common planning schedule. Co-teachers planned “via email or met several minutes before class” (T11), or the general education teachers “do the majority of the planning alone” (T20).

Planning topic. Fifty-five percent of all the co-teachers (n=17) planned for comprehensive issues (e.g., teaching content, group activities, and behavioral management plan).

Themes of Student Interview

According to the thematic analysis, three themes emerged from the student interviews, including (a) more friends, (b) more help from teachers, and (c) learning more and learning better.

More friends. Sixty-eight (n=36) percent of the students interviewed reported that they had more friends in the co-taught classrooms than they did in resource classrooms.

Furthermore, some of these students indicated that their friends in co-taught classroom helped them with their work. As one student shared his or her experience: “if teachers can't help right away, we can ask them (friends)” (S12). Another student told us that he had “more friends and we both help each other out ” (S5).

More help from teachers. More help from teachers in co-taught classrooms than in resource classrooms were reported 57% (n=30) of the students during the interview. One student indicated, “having two teachers is better to help you out, and the other teacher may know more to help you. I like it better than having (only) one teacher (S08).” Another student stated he could understand the content because, “They can explain the question more to you if you don't understand what the teacher is saying” (S15).

Learn more and learn better. Fifty-five students believed that they learned more and learned better when they were co-taught than when they were taught by only one teacher. One student thought that he was learning better because his “grades were better than they were last year (before being co-taught) ” (S12). Another student believed that she actually learned more because “everyone is learning the same level of stuff” (S45).

Academic Performance of Students with Disabilities

SAT National Percentile Ranks (NPRs) in reading, language arts, and math in the school year prior to students' enrollment in the co-taught classrooms (i.e., 2003-2004) and the school year when they were co-taught (i.e., 2004-2005) were gathered from their permanent records. The NPRs were converted to National Curve Equivalents (NCEs). The differences of the SAT NCEs from before co-teaching and after co-teaching were computed. There were statistically significant differences in reading and math NCEs between the year when students were co-taught compared with the NCEs and the

previous year when they were not co-taught (($t = 2.96, p < .01$; $t = 6.97, p < .001$; respectively). Table 11 presents the NCE means from the 2003-2004 and 2004-2005 school years, the standard deviations, and the paired-samples t-test.

Table 11

Paired-Samples T-test for Mean Differences for Student SAT NCE Scores (Pre-Post)

Courses	Mean of Differences	df	t
Reading	6.46	27	2.96*
Language arts	4.36	27	1.71
Math	11.71	27	6.97**

* $p < .01$, ** $p < .001$

SAT NPRs of all students from 4th to 8th grade in this school system in 2003-2004 and 2004-2005 school years were also collected. The NPRs for all students were converted into National Curve Equivalents (NCEs). The rate with which the SAT NCEs of co-taught student participants increased during the co-teaching year was compared with the NCE increase rate of all the students in the school system. There were no significant differences between the gains of student participants and the gains of the entire population in the school system as measured by SAT NCEs. Table 12 present NCE means, standard deviations, and one-sample t-test of SAT NCEs for the 2003-2004 and 2004-2005 school years by subject. Table 13 presents the increase rates of three subjects by grade level.

Table 12

Means, Standard Deviations, and One-Sample T-Test of Students' SAT NCEs –All Students and Co-Taught Student Participants*

Subject	All		CT		t
	Mean	(SD)	Mean	(SD)	
Reading					.545
2003-2004	60.62	4.17	30.00	8.88	
2004-2005	61.62	3.73	34.50	9.13	
Increase	1.00		4.50		
Language arts					1.232
2003-2004	62.31	4.347	27.40	12.95	
2004-2005	62.77	5.09	36.82	7.69	
Increase	.46		9.50		
Math					1.753
2003-2004	60.15	5.242	27.73	9.28	
2004-2005	63.23	6.11	36.36	9.38	
Increase	3.08		8.64		

*Note. *NCE: National Curve Equivalent. All – all students in the school system. CT – co-taught students with disabilities.*

Table 13

*Typical Gains in Reading, Math, and Language Arts as Determined by Increase of NCE
(All Students and Co-Taught Students)*

		Reading					
School Year	Grade	NCE		Difference		Rate	
		All	CT	All	CT	All	CT
2003-2004	4	60	22				
2004-2005	5	60	35	0	15	.00	1.67
2003-2004	5	62	36				
2004-2005	6	58	38	-4	2	-.06	.06
2003-2004	6	55	38				
2004-2005	7	62	35	7	-3	.13	-.08
2003-2004	7	61	23				
2004-2005	8	58	26	-3	13	-.05	.57
		Math					
2003-2004	4	59	24				
2004-2005	5	62	30	3	6	.05	.25
2003-2004	5	61	32				
2004-2005	6	59	32	-2	0	-.03	0
2003-2004	6	57	26				
2004-2005	7	62	42	5	16	.09	.62
2003-2004	7	62	38				
2004-2005	8	63	36	1	-2	.02	-.05
		Language arts					
2003-2004	4	65	17				
2004-2005	5	60	35	-5	18	-.08	1.06
2003-2004	5	61	38				
2004-2005	6	59	34	-2	-4	-.03	-.11
2003-2004	6	56	39				
2004-2005	7	62	36	6	-3	.11	-.08
2003-2004	7	61	25				
2004-2005	8	57	34	-4	9	-.07	.36

Behavioral Performance of Students with Disabilities

Student discipline referrals, school absences, and tardy records from the co-teaching year (2004-2005) and the previous year (2003-2004) were gathered. The differences of these behavioral records from both years were computed. There were statistically significant differences in discipline referral and school absence records in the co-teaching year compared with the records of students in the previous year when they

were not co-taught ($t = 2.715, p < .001$; $t = 2.602, p < .05$). Table 14 presents the student behavioral record means and standard deviations from the 2003-2004 and 2004-2005 school years.

Table 14

Means, Standard Deviations, and Paired-Sample T-test of Student Behavioral Records (2004-2005 and 2003-2004 school years)

Behavioral Records	2003-2004		2004-2005		df	t
	Means	(SD)	Means	(SD)		
Absence	6.20	5.56	8.49	7.16	54	2.715*
Tardy	5.22	8.07	6.55	9.70	54	1.146
Discipline Referral	.64	2.11	1.07	2.23	54	2.602**

* $p < .001$, ** $p < .05$

Student participants' absence, tardy, and discipline referral records increased from 2003-2004 school year (before co-teaching) to 2004-2005 school year (one year after being co-taught). More specifically, there was a significant increase in students' absences and discipline referrals after one year co-teaching.

All data were collected from classroom observation, the Teachers' Perspective Surveys, the Students' Perspective Surveys, and student academic and behavioral records. Quantitative and qualitative data analyses were conducted. Paired-sample t-test revealed that there were significant differences in reading and math SAT NCEs before and after co-teaching. The results of the paired-sample t-test also identified that there was significantly different perspectives regarding the support for students with disabilities in co-taught classroom across three groups (i.e., general education teachers, special

education teachers, and students with disabilities). Other analyses did not yield significant differences.

V. DISCUSSION

Co-teaching practices in this school system, teachers' and students' perspectives and concerns, and student academic and behavioral performances are addressed in this chapter. In examining the findings of this study, certain inferences can be drawn and possible explanations can be discussed regarding the results.

Co-Teaching Practices

Results of co-taught classroom observations indicated that all the teachers in this study implemented either one of the five co-teaching models found in the literature or a combination of several models. By examining the percentage of different co-teaching models used throughout grade levels, it was apparent that the leading and assisting model was used by most co-teachers. The general education teachers took the lead, while the special education teachers provided assistance and individualized support to students. However, based on the classroom observation data, co-teachers were also able to vary different co-teaching instructional strategies based on content area and student individual needs. In fact, co-teachers in the elementary schools in this study were able to combine several different co-teaching models. This may be due to the fact that the co-taught classes were more activity-based at elementary level than at the secondary level.

Teachers' and Students' Perspectives

Increased Student Self-Esteem

Throughout this study, student and teacher participants reported positive perspectives about co-teaching. The majority of the participants stated that students had increased self-esteem. Both general and special education teachers indicated that students with disabilities were trying their best to excel; while students with disabilities felt that they could learn as well as their peers in co-taught classrooms. Furthermore, students with disabilities indicated that they learned more in a co-taught classroom than in a resource classroom. Co-teachers also reported the same view regarding students' learning. This finding is in agreement with findings of prior research, in which students' self-esteem was found to be higher in co-taught classrooms (e.g., Austin, 2001; Walther-Thomas, 1997). This may be due to the fact that the stigma for students with disabilities is reduced when they are taught with their peers without disabilities instead of leaving the classroom for special services (Cook & Friend, 1995).

Improved Students Academic Performance

Teachers reported increased academic performance of students with disabilities in the co-taught classrooms. Walther-Thomas (1997) also found that teachers perceived that students with disabilities had higher academic performance in co-taught classrooms. In their study, both groups (i.e., co-teachers and students) reported that the supports for students with disabilities in co-taught classrooms were sufficient during co-teaching. The moderate strength of this finding emphasizes the importance of support and accommodations provided by teachers, especially by special education teachers in the co-taught classroom. One of the challenges for co-teaching is the high standard-based general education curriculum. However, students with disabilities may learn well and feel confident about their learning abilities with the supports they receive.

Improved Student Behaviors

Similarly, teachers believed that co-teaching contributed positively to the behavior of students with disabilities. Students with disabilities in this study also reported that their behaviors were better than in resource classrooms. Walther-Thomas (1997) also found that students with disabilities exhibited more appropriate behaviors than they did in resource classrooms. One way to explain this finding is to consider the importance of “behavior models” from peers. As indicated by a general education teacher during the interview: “students with disabilities could learn appropriate behaviors from their peers in co-taught classroom.” (T22)

Challenges and Issues of Co-Teaching

Some challenges and issues were also revealed according to the survey and interview data. First, the lack of co-planning time was reported by co-teachers as a major challenge. This finding is in agreement with prior research, which also identified the lack of co-planning as a barrier to co-teaching (e.g., Keefe & Moore, 2004; Walther-Thomas & Bryant, 1996).

Based on the results of Teachers’ Perspective Survey, most teachers valued a common planning schedule during school hours. Teachers also believed that comprehensive planning, which includes content, evaluations, and other classroom issues (e.g., behavior management), are important for the success of co-teaching. However, due to the lack of planning time, some co-teachers planned via email, or right before starting teaching, or during lunchtime. Therefore, the quality of their planning could be a problem. Zigmond and Magiera (2001) stated that communications between teachers is the key to develop parity of co-teaching. More specifically, the development of a co-planning

routine is an essential part of effective co-teaching (Walther-Thomas & Bryant, 1996). For this purpose, co-teachers need to have a secured planning time, so they can ensure that all students receive appropriate instruction that will help them achieve their goals.

Another important discovery in this study was that the identification of the importance of clarifying co-teachers' roles and responsibilities. More specifically, co-teachers need to discuss their roles and responsibilities before starting co-teaching. In this study, both general and special education teachers viewed themselves as having more responsibilities for behavioral management than the other teacher. This finding is consistent with the result of a previous study (Fennick & Liddy, 2001), in which the researchers found that each group of teachers viewed themselves as having more responsibilities for behavioral management. The planning time could be a plausible explanation for the confusion of teacher roles and responsibilities for behavior management.

Special education teachers' limited role in the co-teaching partnership cannot be overstated. Based on the results of the surveys and interviews, special education teachers did not actively implement lessons in co-taught classrooms. Also, special education teachers did not actively participate in planning. The assistant roles of special education teachers were also found in prior research (Austin, 2001; Dieker, 2001; Keefe & Moore, 2004; Rice & Zigmond, 2000). Keefe and Moore (2004) pointed out that the role as an assistant was due to special education teachers' lack of content knowledge. One approach to increase the likelihood that both teachers are actively involved in providing instructions is to have shared professional development activities. For example, Morocco and Aguilar (2002) found that in a school-wide co-teaching model special education

teachers participated in professional development services with general education teachers so that they were active in providing instructions.

Outcomes for students with Disabilities

Student Academic Performance

The results of this study demonstrated that students with disabilities who were co-taught in general education classrooms achieved better academic outcomes on some measures than they did before co-teaching. More specifically, students with disabilities who had been co-taught for one year had significantly higher SAT NCEs in reading and math than they did before being co-taught. Furthermore, there was no significant difference between the co-taught students and all the students in the school system regarding the rate with which the academic performances increased. These results suggest the academic achievements of co-taught students with disabilities are as typical as the whole student population. Therefore, co-teaching, as an instructional approach, provides students with disabilities adequate support for their achievements on standardized tests when they are taught with their peers without disabilities.

Student Behavioral Performance

In this study, the results of student behavioral records were in contrast with those found by Rea, McLaughlin, Walther-Thomas (2002), in which students with LD attended more schools days when they were co-taught. In fact, students with disabilities participating in this study had more absences and discipline referrals after one-year of co-teaching compared with their behavioral records in the school year before co-teaching. More discipline referrals may be due to the confusions of co-teachers' responsibilities regarding behavior management. Another explanation for this finding may be the lack of

planning time. Even though most teachers addressed the importance of comprehensive planning (i.e., plan for instructions, accommodations and modifications, and behavior management), they did not have adequate planning time to include specific behavior management in their planning.

It is also interesting to find that there was difference between teachers' perspectives regarding students' behaviors and the student behavioral records. According to the Teachers' Perspective Survey and interviews, co-teachers reported improved students' behaviors. However, based on the actual behavioral records, there is no evidence to show the improvements. It was found that there was a difference between co-teachers' perspectives and their implementations (Austin, 2001). Most teachers did not share responsibilities when they were implementing co-teaching, even though they believed that they should share classroom management. Furthermore, general and special education teachers may have different beliefs about acceptable classroom behavior. Therefore, co-teachers need to discuss a behavior management plans, regarding their expectations for students' behaviors and alternative expectations for students with some specific disabilities (e.g., behavior disorders) (Cook & Friend, 1995).

Limitations

A limitation of this study is its single focus on the co-teaching group. Data from a non-co-taught classroom was not possible for this study due to the fact that all schools in this school system were implementing either co-teaching or consultative teaching. Future research should investigate co-teaching efficacy with experimental and control groups in order to determine how co-teaching differs from other instructional delivery approaches.

A second limitation that may have influenced the findings of this study involves a group administered the standardized test. Other studies should also include individualized assessments to measure the efficacy of co-teaching for students with disabilities. Furthermore, there were four subjects (i.e., English/language arts, math, science, and social studies) co-taught across grade levels but only records in math and language arts were analyzed in this study because data were available from these subject areas. This study should be replicated with measurements of all co-teaching subjects in standardized and individualized assessments.

In spite of the limitations, this study found the co-teaching perspectives of teachers and students. Planning time was revealed as a big challenge for implementing co-teaching. Also, it is found that planning issues are not unrelated to the confusion of teachers' roles and responsibilities. Furthermore, based on the improved student academic achievement and positive perspectives from teachers and students, co-teaching still appears to be an effective instructional approach to meet the needs of students with disabilities in general education classrooms.

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APPENDICES

APPENDIX A

Teachers' Perspective Survey

Teacher's Perspective Survey

Teaching Grade Level _____
 Teacher Yes__ No __
 Teacher Code _____
 Teacher Yes__ No __
 Teaching Subject(s) _____

General Education

Special Education

Date _____

Directions: Read each item in the column below. Using the scale to the right indicate that if you disagree or agree with the item.

		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Components of Co-Teaching						
1.	<i>One teacher leads and another offers assistance and support to individuals or small groups.</i>	0	1	2	3	4
2.	<i>Both teachers simultaneous teach.</i>	0	1	2	3	4
3.	<i>Both teachers alternating teach.</i>	0	1	2	3	4
4.	<i>Both teachers teach the same content segments.</i>	0	1	2	3	4
5.	<i>Both teachers teach different content segments.</i>	0	1	2	3	4
6.	<i>There are two equal-size groups of students in one classroom.</i>	0	1	2	3	4
7.	<i>There is one group in a classroom with individuals who need support and help sometime.</i>	0	1	2	3	4
8.	<i>There are two groups of students in a classroom: one bigger group and one smaller group.</i>	0	1	2	3	4
9.	<i>There is one group in a classroom.</i>	0	1	2	3	4
10.	<i>Both teachers change teaching location between groups when they are teaching.</i>	0	1	2	3	4
11.	<i>Both teachers remain with same group when they are teaching.</i>	0	1	2	3	4
12.	<i>There are heterogeneous groups in a classroom.</i>	0	1	2	3	4
Teacher's Roles and Responsibilities						
13.	<i>The general education teacher leads in a co-taught</i>	0	1	2	3	4

	<i>classroom.</i>					
14	<i>The special education teacher leads in a co-taught classroom.</i>	0	1	2	3	4
15	<i>The general education teacher is responsible for lesson planning</i>	0	1	2	3	4
16	<i>The general education teacher is responsible for instruction.</i>	0	1	2	3	4
17	<i>The general education teacher is responsible for evaluating students.</i>	0	1	2	3	4
18	<i>The special education teacher is responsible for modification</i>	0	1	2	3	4
19	<i>The special education teacher is responsible for monitoring student behaviors.</i>	0	1	2	3	4
20	<i>The special education teacher is responsible for monitoring student remediation.</i>	0	1	2	3	4
Teacher's Expectations						
21	<i>The support provided to students with disabilities in a co-taught classroom are insufficient.</i>	0	1	2	3	4
22	<i>Students with disabilities learn more in a co-taught classroom than in a single-teacher general education classroom.</i>	0	1	2	3	4
23	<i>Students with disabilities in a co-taught classroom increase positive feelings about themselves as capable learners.</i>	0	1	2	3	4
24	<i>Students with disabilities have difficulty adjusting to the higher expectations in the co-taught classroom</i>	0	1	2	3	4

25	<i>The behaviors of students with disabilities are better in a co-taught classroom.</i>	0	1	2	3	4
26	<i>The behaviors of students with disabilities are worse in a co-taught classroom.</i>	0	1	2	3	4
27	<i>The behavior issues interfere with other students' learning needs.</i>	0	1	2	3	4
Planning Schedule						
28	<i>Co-teachers need a common planning time officially scheduled during school hours.</i>	0	1	2	3	4
29	<i>Co-teachers need a daily planning period.</i>	0	1	2	3	4
30	<i>Co-teachers need a weekly planning.</i>	0	1	2	3	4
31	<i>Co-teachers need to plan for lessons, evaluation of students' performance, and other general issues.</i>	0	1	2	3	4

APPENDIX B

Students' Perspective Survey

Student's Perspective Survey

School Name _____

Student Code _____

Grade Level _____

Date _____

Directions: Read each item in the column below. Using the scale to the right indicate to what degree you disagree or agree with the item.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
-------------------	----------	---------	-------	----------------

Differences between Resource Classroom and Co-Taught Classroom

1.	<i>In a co-taught classroom, I have more friends.</i>	0	1	2	3	4
2.	<i>In a co-taught classroom, I have fewer friends.</i>	0	1	2	3	4
3.	<i>In a co-taught classroom, I can always get more help from my friends.</i>	0	1	2	3	4
4.	<i>In a co-taught classroom, I can always learn from my friends.</i>	0	1	2	3	4

Student's Expectations

5.	<i>I can learn as well as other students in a co-taught classroom.</i>	0	1	2	3	4
6.	<i>I am not sure if I can learn as well as other students in a co-taught classroom.</i>	0	1	2	3	4
7.	<i>I cannot learn as well as other students in a co-taught classroom.</i>	0	1	2	3	4

Challenges

8.	<i>In a co-taught classroom, assignments are harder.</i>	0	1	2	3	4
9.	<i>In a co-taught classroom, assignments easier.</i>	0	1	2	3	4

10	<i>In a co-taught classroom, the textbooks are harder to understand.</i>	0	1	2	3	4
11	<i>In a co-taught classroom, the tests are harder.</i>	0	1	2	3	4
<p>Directions: Read each item in the column below. Using the scale to the right indicate to what degree you disagree or agree with the item.</p>		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Advantage/Disadvantage						
12	<i>In a co-taught classroom, I learn more.</i>	0	1	2	3	4
13	<i>In a co-taught classroom, I learn less.</i>	0	1	2	3	4
14	<i>In a co-taught classroom, I work harder.</i>	0	1	2	3	4
15	<i>In a co-taught classroom, I receive more attention from teachers.</i>	0	1	2	3	4
16	<i>In a co-taught classroom, I get more help from two teachers.</i>	0	1	2	3	4
17	<i>In a co-taught classroom, my behavior is better.</i>	0	1	2	3	4
18	<i>In a co-taught classroom, I am expected to do more than I can do.</i>	0	1	2	3	4
19	<i>In a co-taught classroom, I find it is harder to focus on my tasks.</i>	0	1	2	3	4

APPENDIX C

Classroom Observation Protocol

Co-Teaching Observation Sheet

CO-TEACHING DIMENSIONS	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	Total Mins	
A. Teaching Roles																				
1 Leader (General Ed.) and a Assistant (Special Ed.)																				
1 Leader (Special Ed.) and b Assistant (General Ed.)																				
2 Simultaneous teaching																				
3 Alternating teaching																				
4 Other _____																				
B. Student Group Distribution																				
1 Two equal-size group																				
2 Large group with individuals																				
3 One bigger group and one smaller group																				
4 One group																				
5 Other _____																				
C. Teachers' Location																				
1 Changes between groups																				
2 Remains with same group																				
3 Not applicable--a single group																				
4 Other _____																				

APPENDIX D
Informed Consent

Auburn University

Auburn University, Alabama 36849-5226

Department of Rehabilitation & Special Education

1228 Haley Center

Telephone: (334) 844-5943

Informed Consent for Participation in A Research Project Titled *Perspectives and Efficacy of Co-teaching Study*

You are invited to participate in a research study designed to identify teachers' and students' perspectives of co-teaching. This study is being conducted by Qi Hang, a graduate student at Auburn University under the direction of Dr. Karen Rabren, Associate Professor at Department of Rehabilitation and Special Education of Auburn University and Qi Hang. The objective of this study is to identify (1) models of co-teaching, (2) teachers' roles in a co-taught classroom, (3) teachers' responsibilities in a co-taught classroom, and (4) teachers' expectations for students with disabilities participated in co-teaching. You were selected as a possible participant because (a) you are a general education teacher or special education teacher employed by one of the school in the Auburn City Schools system, and (b) you are implementing co-teaching.

If you decide to participate, we will ask you to answer some questions, have an interview with you to determine what your perspectives about co-teaching are, and observe your co-taught classroom. You will answer some questions on a survey and then you will be asked to answer other questions during an interview. Both the survey and the interview will be conducted in your school and all the questions will take from thirty minutes to one hour to answer. In addition to collecting information using surveys and interviews, we also will observe the teaching process of a co-taught classroom. The study will take place during spring, 2005 and will conclude January 2006.

The results of this study will help to identify educational approaches that are beneficial to teachers and students who are participating in co-teaching. The risks are minimal with respect to your participation in this study. The first risk is the possible time constraints (e.g., approximately thirty minutes to an hour to answer questions). The second risk is the possible discomfort of being observed and discussing issues of co-teaching. Please be aware that any information obtained as a result of your participation will be solely used for the purpose of this study. We would also like to inform you that you may withdraw your participation at any time, without penalty. You may also withdraw any data that has already been collected about you. Your decision whether or not to participate will not jeopardize your future relation with Auburn City School System. Any information obtained in connection with this study and that can be identified with you will remain confidential. Neither your identity nor any specific information regarding your involvement will ever be released.

Participant's initial

Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the Department of Rehabilitation and Special Education. We will be happy to answer any questions you may have now or later. You may reach us (Qi Hang) at (334) 844-5927 or by e-mail (hangqil@auburn.edu). For more information regarding your rights as a research participant you may contact the Office of Human Subjects Research by phone or e-mail. The people to contact there are Executive Director E.N. "Chip" Burson (334) 844-5966 (bursoen@auburn.edu) or IRB Chair Dr. Peter Grandjean at (334) 844-1462 (grandpw@auburn.edu).

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature Date

Investigator's signature Date

Print Name

Print Name

Auburn University

Auburn University, Alabama 36849-5226

Department of Rehabilitation & Special Education

1228 Haley Center

Telephone: (334) 844-6943

Student Informed Assent/Parental Consent for Participation in A Research Project Entitled *Perspectives and Efficacy of Co-teaching Study*

You are invited to participate in a research study designed to identify students' perspectives of co-teaching. Co-teaching occurs when two teachers (general education and special education teacher) teach students with and without disabilities in one classroom. This study is being conducted by Qi Hang, a graduate student at Auburn University under the direction of Dr. Karen Rahren, Associate Professor at the Department of Rehabilitation and Special Education of Auburn University. The objective of this study is to identify (1) the difference that students are experiencing between the resource classroom and co-taught classroom, (2) students' expectations for being taught in a co-taught classroom, (3) challenges students may have in a co-taught classroom, and (4) the advantages and/or disadvantages of co-teaching. You were selected as a possible participant because (a) you are a student enrolled in one of the schools in the Auburn City School system and (b) you are a being taught in at least one co-taught classroom.

If you decide to participate, we will ask you some questions about your experience in a co-taught classroom. You will answer some questions on a survey and then you will be asked to answer other questions during an interview. The interview will be conducted in your school after the survey. Both the survey and interview questions will take from thirty minutes to one hour to answer. Also during the interview, you don't have to answer any questions if you don't want to. In addition to collecting information using surveys and interviews, we also will come to your classroom and observe the teaching process of a co-taught classroom. The school system will provide coded information on your SAT scores, achievement test scores, discipline referrals and attendance. If you decide to participate now but wish to discontinue or quit at a later time – you will be free to do so. Your decision whether withdraw your data or quit participation will not jeopardize your future relations with Auburn City School System. The study will take place during spring 2005 and will conclude during January, 2006.

The results of this study will help identify educational approaches that are beneficial to students who are participating in co-taught classrooms. The risks are minimal if you choose to participate in this study. The first risk is the time constraints (e.g., approximately thirty minutes to an hour to answer questions). The second risk is the possibility of a breach of confidentiality, however, your name nor will anyone's name associated with your class or school system be used in the study. Please be aware that any information obtained as a result of your participation will be used solely for the purpose of this study.

Student's initials

Parent's/Guardian initials

Page 1 of 2

A LAND-GRANT UNIVERSITY

Any information obtained in connection with this study and that can be identified with you will remain confidential. Neither your identity nor any specific information regarding your involvement will ever be released.

Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the Department of Rehabilitation and Special Education. If you have any questions we invite you to ask them now. If you have questions later, you can reach us (Qi Hang) at (334) 844-5927 or by e-mail (hangqi@auburn.edu). We will be happy to answer them. You will be provided a copy of this form to keep.

For more information regarding your rights as a research participant you may contact the Office of Human Subjects Research by phone or e-mail. The people to contact there are Executive Director E.N. "Chip" Burson (334) 844-5966 (bursoen@auburn.edu) or IRB Chair Dr. Peter Grandjean at (334) 844-1462 (grandpw@auburn.edu).

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature Date

Investigator's signature Date

Participant's Print Name

Investigator's Print Name

Parent's or Guardian's Signature Date

Parent's or Guardian's Print Name