

THE EFFECT OF COLLABORATIVE TEACHING ON THE GENERAL EDUCATION
STUDENT POPULATION: A CASE STUDY

A Doctoral Thesis Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Education

by

Kregg Cuellar

April, 2011

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Abstract

The study aims to answer the following questions: (1) How do non-disabled students perform academically in a collaborative teaching environment using the method of inclusion in comparison to a traditional non-inclusive learning environment? (2) Does the collaborative teaching inclusion method in a learning environment alter the non-disabled students' socio-emotional state, with emphasis on behavior and discipline, in comparison to a traditional non-inclusive learning environment? (3) Is there a change in class attendance with non-disabled students in a collaborative teaching inclusion environment in comparison to a traditional non-inclusive learning environment?

In order to answer the research questions above, thirty (30) non-disabled students were randomly selected from an HISD High School, fifteen (15) sophomores and fifteen (15) juniors. Student grades in English, Mathematics, Science and their average grade on the three subjects, number of absences, number of disciplinary referrals, ELA/Reading TAKS scaled scores and Math TAKS scaled scores were collected. On the second year, they were all in a classroom with co-teaching and the data for the same set of variables were collected from each of the thirty non-disabled students.

Repeated Measures Analysis of Variance (ANOVA), and Chi-square tests of goodness-of-fit were used to determine if there were significant differences between without co-teaching and with co-teaching in the areas of academic performance (TAKS scores and academic grades in English, Math and Science), attendance (number of

absences), and discipline (number of disciplinary referrals). Paired Sample T-Tests were used as Post-Hoc tests on variables found with significant differences via Repeated Measures Analysis of Variance (ANOVA).

Based on the Repeated Measures ANOVA, Chi Square test of goodness-of-fit and Paired sample T-Tests, the following conclusions were obtained: (1) Students who are non-disabled perform academically better in a collaborative teaching environment using the method of inclusion in comparison to a traditional non-inclusive learning environment in the areas of TAKS ELA/Reading, TAKS Math, average grade (English, Math and Science) and Science grades. However, no significant differences were observed between without co-teaching and with co-teaching on non-disabled students grades in English and Math; (2) The collaborative teaching inclusion learning environment has significantly lower number of disciplinary referrals in comparison to a traditional non-inclusive learning environment; and (3) Attendance by non-disabled students in a collaborative teaching inclusion environment is significantly higher (fewer number of absences) in comparison to a traditional non-inclusive learning environment.

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CHAPTER ONE

INTRODUCTION

Introduction

Educators have often had to determine which methods would be the best option to use when providing services to students with disabilities. Content issues, along with appropriate setting, have to be carefully considered. This is a complex task that requires analysis of students' current abilities with adaptations to differentiate learning so that challenging academic skills can be mastered. Educators must find a way to balance the principle of providing an appropriate education within the least restrictive of environments. Educators must also evaluate assessment data and diagnostic criteria of students with disabilities to reach a consensus on what key points of knowledge should be used for each student to learn the higher order, analytical skills that need to be taught, reinforced, assessed, and incorporated for successful learning to occur. Furthermore, if this model of teaching is successful, it should be applicable to all students of disabilities, as long as differentiation occurs to individualize learning. After these determinations, a teacher must balance these principles to provide an appropriate education within a setting that allows for the least restrictive environment.

Inclusion is a process that bridges the gap between regular and special education by minimizing the practice of separating students from general education instruction while they receive their special education instruction. Within inclusive classrooms, students with disabilities learn side-by-side with their non disabled peers.

Special education students' learning is dependent upon the diagnosis determined where upon the student receives a label to identify his needs. For instance, if a child is

learning disabled, he is noted as LD, or if he is emotionally disturbed, he is categorized as ED. This labeling process may, or may not be accurate, as the testing environment, skills of the diagnostician, and the mood or mindset of the student on the day of testing may influence test results. This identifying label defines the process for that particular child, forever altering hindering the student of receiving the educational requirements in the manner of the non-labeled classmates.

Students who are severely disabled in learning processes are classified as having a learning disability. Learning disabled students have their curriculum modified, and this implements a need for a development plan that will require those specific students to be closely monitored and tracked throughout their educational career. After being labeled LD, the student is now classified under the umbrella of special education, and the student will have modifications and accommodations attached to the Individual Education Program (IEP) to ensure success in completing classes and coursework.

Two point nine million students are currently receiving special education services for learning disabilities in the United States, with the majority of the services being focused upon reading. Over one fourth (27%) of children with learning disabilities drop out of high school, and of the full-time college freshman with disabilities, 40% are identified as having learning disabilities. Another 13% percent of students with LD have attended a 4 year post-secondary school program, in comparison to 53% of students in the general population. (Wrong Diagnosis, 2009).

Students with disabilities face a multitude of obstacles while receiving educational services that their identified label of LD requires. Wikipedia defines the term learning disability as “any of a diverse group of conditions that causes difficulties in perception,

either auditory, visual, and/or spatial. Of presumed neurological origin, it covers disorders that impair such functions as reading (dyslexia), writing, (dysgraphia) and mathematical calculations (dyscalculia). They vary widely within each category in the patterns they exhibit?” (Wikipedia, 2010). Learning Disabled Online classifies LD as “a disorder that affects people’s ability to either interpret what they see and hear or to link information from different parts of the brain.” As with any physical or mental health definition for diagnostic criteria, material will always be adapted and updated (LDOnline, 2010).

According to the Diagnostic and Statistical Manual of Mental Disorders, there are three broad categories of LD: “[D]isorders of developmental speech and language disorders, academic skills disorders, and a category labeled as ‘other’, for specific developmental skills not otherwise specified.” Each of these then incorporates possibilities for accompanying disorders (DSM-IV, pp 47-48).

The numbers of students who are classified as learning disabled are increasing as the years move forward. According to the United States Census Bureau, based upon their 2002 research report (Censusgov, 2002), “only 30% of special education students will graduate high school, and only 17% will graduate from college.” A statistic as horrid as this implies failure of the educational system, yet it does not clearly define if the responsibility lies with the child or the institution of learning. Inclusion aims to improve the level of academic achievement and social learning for special education and general education students. A projection measure report conducted by LD Online (LDOnline, 2008) states that “successful inclusive practices can lead up to a 25% increase in a learning disabled student’s chance to graduate from high school and move on to college.”

Since the inception of the Individuals with Disabilities Education Act (IDEA) in the 1970s, there has been much debate as to how to effectively educate children with special needs. Some argue that special education students should spend their school days in a special resource room designed specifically for them, while others argue that the best option for special needs students is the process of inclusion, which places the student in the regular education classroom during the entire school day. Proponents of inclusion argue that this adaptation allows the student to socialize with students of the appropriate age level, contributes to reducing the social stigma which accompanies traditional pullout processes, and allows special education students the same educational opportunities as regular education students.

Purpose of the Study

The purpose of this study is to analyze the effects of collaborative teaching on the general education population in relation to academics, behavior, and attendance. Research shows significant data and analysis on the processes, programs, and effects that collaborative teaching and inclusion have on the special education population. However, the research material is lacking when examining how special education services of collaboration affect general education students. This absence of data and research on how collaborative teaching effects the general education population is worthy of research and analysis. Does the process of collaboration between special education and general education teachers hinder or help the learning of general education students? Theoretically, the instructional processes should be offered in association with each other, but in practice, there is not adequate research to determine if this contributory process detracts the general education learner's rate or success of learning. Although data

and statistics show increased performance by special education students in the intellectual, social, and behavioral domains, research fails to confirm this on the general education population in an inclusive setting. Therefore, this study is being conducted to examine the students' affective and intellectual domain within an inclusive setting composed of special education and English language learner students.

Significance of the Study

For many educators, however, the practice of Inclusion remains clouded in controversy (Davis, 1989; Fuchs, Fuchs & Fernstrom, 1993; Klingner, Vaughn, Schumm, Cohen & Forgan, 1998). While much information can be found regarding the apparently favorable impact of inclusion on Students with Disabilities, little research addresses the potentially negative impact on the general education (often referred to as regular education) students. It may be considered socially inappropriate, or politically incorrect, to “question such an important and sensitive topic that emphasizes the needs of the disabled,” and this may help to explain, “the paucity of data due to having to ask the risky questions” (Lewis, 2009).

The inclusive co-teach study was initially developed as a pilot program that high school “A” would conduct through one academic calendar year. School District “A” granted approval for the implementation of a full inclusion program to be developed with the understanding that if the data showed significant gains in regards to student achievement, then the program would be replicated across the district. The idea behind the research study was to close the achievement gap between special education and general education students.

Inclusive practices have always centered on the students with unique needs, whether those children are in special education, limited English proficient, or English language learner programs. A huge issue that has been ignored by researchers is how the majority of the class, which is compiled of regular education students, benefits from such a practice. Are the special education students hindering the teaching and learning that is occurring in these inclusive environments? Are general education students benefiting from the advantage of having two certified educators opposed to one? These are valid questions in assessing the impact that inclusion has on both sets of learners.

Do educators think so little of the process of inclusion that we do not dare ask the full set of questions regarding its impact on the entire range of students? Are we so frightened of the law that teachers feel they cannot challenge the validity of this process? Since special education students are limited to five or six students in a class of twenty-five, are we destroying the integrity of the learning process for general education students, who really represent a much larger percentage of the class? Furthermore, this favoring of the few special education students by being sensitive to their individualized needs could truly put educators in a position where they are that we are unwilling to be concerned about the general education students whose classrooms are being adapted to meet the needs of others. If educators in the classroom are truly committed to the educational experience of all students “teachers must be willing to confront the system and ask the frightening questions regarding the impact of inclusion on all students” (Dupuis, Barclay, Holmes, Platt, Shaha, & Lewis, 2007).

This study aims to clarify questions left unanswered in the research and processes within classrooms of today in terms of the results collaborative teaching has on the

general education population in respect to academic performance, discipline and behavior, and attendance through one school year.

Problem Statement

An inclusive program needs to be thought provoking and thoroughly planned, assessing the learning styles and individualized needs of the students before an improvement in the implementation process is considered. There needs to be a comprehensive brainstorming of ideas and observations from all invested members of the educational system including, but not limited to, central office administration, campus level administration, content area specialists, interventionists, diagnosticians, teachers, parents, and most importantly, students. A campus based needs assessment must be conducted to determine the order of prioritized needs, such as available resources, student population, teacher attrition, and budgeting forecasts. If a campus does not have adequate resources to successfully commence with an abounding inclusion program, then it is highly recommended that the school seek options to obtain the funding before implementation occurs. There are numerous resources that have to be considered for procurement and updates, (technology, staffing, professional development, and strategic planning) and these needs have to be taken into consideration before such a program can exist.

The aforementioned external factors do play an important role in the construction and implementation of an inclusion program, but it is the internal factors that will ultimately determine the overall output of the program's performance and results. Internal factors that need to be taken into consideration when constructing a plan or program involving general education students with those in special education programs

includes: teacher acceptance and receptiveness to feedback, teacher values and beliefs, teacher personalities, the ability of the teacher to work with others, teacher experience and knowledge, teacher willingness and capability, student capability, general and special education student and teacher acceptance, and strategic intervention for progress monitoring, data collection, support facilitation, and collaborative practices that ensure constant learning, input, and growth. If a program is not sturdy and durable in structure, then the general education population may not thrive in this environment as the needs of general education students may be stifled in pacing, rigor, and alterations in curriculum, as we focus more effort on the special education students.

Research Questions

The objectives of the study are the measurements of academic performance, discipline, and attendance through one calendar year of a population of students ranging from ninth to eleventh grade.

1. How do non-disabled students perform academically in a collaborative teaching environment using the method of inclusion in comparison to a traditional non-inclusive learning environment?
2. Does the collaborative teaching inclusion method in a learning environment alter the non-disabled students' socio-emotional state, with emphasis on behavior and discipline, in comparison to a traditional non-inclusive learning environment?
3. Is there a change in class attendance with students in a collaborative teaching inclusion environment in comparison to a traditional non-inclusive learning environment?

CHAPTER TWO

REVIEW OF LITERATURE

Inclusion has been a base model educational strategy that has been used for many years by both public and private schools in integrating varied student populations in a structured educational environment.

The concept of co-teaching derived in American schools and can be traced back to the 1960s when it was popularized as an example of progressive education. In the 1970s, co-teaching was advanced by “legislative school reforms and teachers’ increasing need to diversify instruction for a more diverse student population” (Villa et. al., 2004). Since then, co-teaching has become more refined in its practices, and it has gained an abundant amount of structure in its process of helping to focus on student achievement. In schools that use inclusion methods, special services are received by special education students in general education settings, but “the placement of students with disabilities within these general education classes occurs without appropriately researching whether both sets of students will adapt to the setting, the curriculum, the wide range of materials used, or the various teaching methods that need to be used; little thought is given to whether this may or may not be beneficial” (Liddy & Fennick, 2001). Research suggests that ample planning time and focused strategies need to occur between both the educators of students of general and exceptional student needs. A program of inclusion, if aimed at being successful, must possess educators that are not only knowledgeable about this special education process and its structures, but the teachers must also hold a resolute

desire and passion for servicing all students by being accountable for the academic achievement of each and every student under their care.

Instructional Leadership and its Impact on Teaching and Learning Practices

A consistent problem throughout schools nationwide exists within the realm of administration and the leadership these individuals carry forward on the school campus. What is the actual role of a school principal and how can teachers trust this school leader to impact change and facilitate the teaching and learning that is essential to a school's growth and success? Dr. Timothy Berkey illustrates the differences between managerial and administrative tasks and instructional leadership duties. Berkey (2009) notes that "the majority of all administrators surround themselves with the norms of basic managerial tasks that compound their whole day, without even given the chance to delve into the area of instruction." In Berkey's book, *Improving Your Daily Practice: A Guide for Effective School Leadership*, he explains several processes on how to "identify daily tasks as a principal, how to analyze those tasks, and how to transform those tasks into meaningful forms of leadership that can help teaching and learning at all levels" (Berkey, 2009). Moreover, he states that "passion must be established and made infectious across all staff members, buy-in of a principal's vision must occur, and collaboration must be the forefront of all practices that are carried out in a school institution" (Berkey, 2009).

The journal review on Facilitative Leadership by Shirley Hord (Hord, 1992) shares many commonalities to Berkey and his research in regards to instructional centered administrative leadership. Hord questions what the "actual leadership function is and the distinction between management which educational administrators typically do with reasonable success, and leadership, which educational administrators allegedly do not do,

but should” (Hord, 1992). The research that both Berkey and Hord conducted was centered on moving from traditional practices of basic management of schools and gearing towards being effective and efficient in the instructional learning environment as a leader and innovator for colleagues and staff. Like Berkey, Hord lists several conceptual frameworks that show the representation of change (change meaning the school as a whole focusing on the principal as an instructional leader) across all stakeholders. One six-part framework “focuses on the core of leading effective change which includes: Creating an atmosphere and culture for change, developing and communicating the vision, planning and providing resources, providing training and development, monitoring and checking progress, and continuing to assist others in the process of change” (Hord, 1992). Even though Hord explains the process of cultivating change across all educational professionals, Berkey focuses on the school principal transforming their leadership to help the administrator make those necessary changes in the educational environment.

Berkey stresses the importance of using SMART (Specific, Measurable, Attainable, Realistic, and Time-bound) goals to establish short and long term goals that can be used to shift leadership behaviors toward more effective practices (Berkey, 2009). Similar to the using of the SMART goals, Hord states the importance of effective school leaders using short and long range goals as a guide and tool that can help gauge progress, monitoring, and evaluation of current practices (Hord, 1992).

“Goal setting has yet to become personal, real, and compelling for us in our daily lives in school. As a result, we are missing one of the most powerful tools to help all students achieve. The loss to adults is just as profound: We are missing opportunities to

experience empowerment, efficacy, and what the late Dr. W.E. Deming called ‘joy in work.’ When collectively we share responsibility for goals, the synergy is palpable and self renewing. There is a focused energy that connects us to each other, motivating us to try harder, to go further that we might have gone alone” (Conzemius & O’Neill, 2001).

It is also noted that using some form of assessment tool as feedback can be useful to the growth of an instructional leader. Berkey believes the use of the 360-degree assessment review is highly accurate in determining a leader’s skill-set. The 360-degree feedback assessment is an evaluation method that incorporates feedback from the worker, his/her peers, superiors, subordinates, and customers. Results of these confidential surveys are tabulated and shared with the worker, usually by a manager. Interpretation of the results, trends and themes are discussed as part of the feedback. The primary reason to use this full circle of confidential reviews is to provide the worker with information about his/her performance from multiple perspectives. From this feedback, the worker is able to set goals for self-development which will advance their career and benefit the organization (Linman, 2003). The use of the 360° assessment is one that Berkey finds useful as an evaluation tool because it “paints an overall picture of one’s leadership, yet also provides useful feedback for reaching higher levels of mastery” (Berkey, 2009).

After establishing the assessment tool, the next step in transforming a principal’s leadership is to have the administrator conduct a self audit of leadership skills. This audit should capture several snapshots of daily leadership practices to study habits and make desired changes to improve leadership instructionally and cut down on managerial and superfluous administrative tasks (Berkey, 2009). The audit consists of qualitative and quantitative collective data. The qualitative piece tracks specific tasks performed

throughout the workday while the quantitative portion focuses on the time spent on each task.

Following the leadership audit, the administrator reviews and analyzes his own personal audit. Analyzing data from the leadership audit impacts leadership abilities as this process of self reflection and assessment improves teaching and learning. Berkey provides several documents that are part of a leadership rubric and the rubric's purpose is to help the principal create a strong understanding of leadership components that have a strong influence on teaching and learning. The rubric requires the administrator to rate daily tasks as weak, mild, moderate, and strong; weak having little or no relationship to teaching and learning, and strong having the biggest influence for improvement of teaching and learning (Berkey, 2009).

Once the leadership analysis is complete and has been rated, the real work begins. What has been learned from the self analysis of leadership skills is used to make phase is the leadership transformation. The leadership transformation aids the administrator in restructuring the practices of the leader in ways that are congruent with the vision of the organization. Via this assessment, principals will examine how they can reshape their leadership around collaborative work that impacts curriculum, instruction, and assessment and this action promotes change throughout the educational environment (Berkey, 2009). The leadership transformation plan allows the administrator to choose the tasks that are insignificant, so they can be eliminated, restructured, reassigned, or enhanced. Examples of some tasks that an administrator might eliminate from their workload might include inventory of textbooks and supplies, checking time sheets, holding detentions, and supervising athletic events. If these routine administrative tasks

were eliminated, then more time would be created for the principal to engage in the teaching and learning of his/her campus (Berkey, 2009).

It is of high importance that certain disciplines are established early so strong practices can be put in effect by the time an assistant principal or dean of instruction becomes a school principal. The importance of these trackers and self assessment tools Berkey provides is to help leaders understand their daily role, so they can become an effective and efficient instructional leader who promotes change and is a lead contributor to the teaching and learning that takes place on the campus. Berkey states it is important for principals to learn to say no to things that “hinder the effectiveness of the organization and continue to model their vision; not to just voice it through email, meetings, or newsletters” (Berkey, 2009). Berkey places a lot of emphasis on the creating of a school wide vision that is conducive to the needs of the school culture while getting the schools buy-in and support. Hord shares the same thought on the power and importance of vision. Leaders first encourage participation in vision development and second, help people develop images of how to get there, so that action is directly tied to the vision and ownership is developed (Hord, 1992). This research also says, “A clear vision of the school when the change is successfully implemented, as well as how implementation will occur, needs to be developed among all in the school.” One way leaders allure staff to participate in vision development is through the study of student performance data (Hord, 1992).

Berkey supports that data is necessary to show the staff the reality of the things that must be changed and to convince the staff that there is a need for buy-in to make the change. Berkey and Hord share common perceptions on the components of creating an

atmosphere and culture for change. Vision was already discussed earlier as being one of the top priorities for initiating change, but also setting and shaping expectations, engaging staff in knowledge transfer, observing and coaching the learning process, and the continuing of self monitoring and assessment of one's personal instructional leadership (Berkey, 2009).

Hord believes that proper planning and the providing of resources, proper training and professional development, monitoring and checking progress, and through appropriate coaching and feedback are tools for effective change in a learning environment to take place (Hord, 1992). The need for persons to supply the human interface for the implementation of new knowledge and practices became increasingly clear (Hord, 1992). It is up to the principal to be that individual to provide new knowledge to staff and to facilitate the change process that is constantly evolving as we know it today. Principals are not and cannot be managers of a school institution; school management is no longer comparable to that of business and corporate management. Schools are a unique form of business and it takes a strong leader with a passion for change, a clear vision of what needs to happen, and the courage to stand up to a plethora of critics and saboteurs to do what is right (Berkey, 2009).

Principals' Roles in Collaborative Teaching

The Principal's responsibility as the instructional leader plays a vital role in setting the tone for collaborative teaching practices on a campus. Perhaps one of the most difficult aspects of collaborative teaching, however, is getting the process started. Once a school has committed to develop and implement a collaborative teaching program, there are many issues that need to be addressed. The roles and responsibilities must be

delegated, formal policies must be established, and an organizational framework must be built and maintained. These critical responsibilities are divided between the school's principal, general education teachers, special education teachers, and support staff. In many cases, the principal's attitude towards including students with disabilities sets the tone for the entire school (Daane, Beirne-Smith, & Latham, 2000). Therefore, the principal's responsibilities in devising and implementing a collaborative educational program are many.

In most schools, the principal has the power to make changes and affect the school's overall mood (Brownell & Walther-Thomas, 2002). Without the principal's initiative and continued support, successful and collaborative teaching would not be possible. Before the principal can implement a collaborative teaching model, however, he or she must have the approval and dedication of the teachers and staff as collaboration requires the participation of the whole school.

Dr. Marilyn Friend, an expert in the field of co-teaching, gives suggestions for encouraging collaboration among professionals. First, she emphasizes the fact that collaboration is the new standard in many settings. It is not just an educational term, but part of modern work everywhere. Secondly, collaboration helps schools provide appropriate, fair, and legal educational settings for all students. Co-teaching is one way that schools can provide a student's education in the least restrictive environment, as mandated by IDEA (Dettmer, Thurston, & Dyck, 2005). Last, many schools successfully design their schedules around collaboration. Many middle schools, for example, have developed professional and leadership development teams. If teachers are expected to make substantial changes in their careers, principals must have a rationale to defend this

decision. Marilyn Friend provides these points to support and encourage principals in their decisions to develop collaborative schools (Brownell & Walther-Thomas, 2002).

Today's principals must have adequate knowledge of special education laws, issues, and practices to be successful. They must also be approachable, and have research- and experience-based advice to give teachers and staff who seek it. According to Keefe, Moore, and Duff (2004), collaborative teaching requires knowledge of oneself, one's teaching partner, one's students, and one's trade. Principals must be prepared to guide teachers in acquiring these four types of knowledge. Whether it is making time for personal conversations with each teacher, or providing handbooks or educational videotapes, principals need to be prepared to help the professionals in their schools. Teaching can be frustrating and lonely, and all teachers need the advice of other experienced professionals to overcome the daily challenges they face (Keefe et al., 2004).

Special education teachers are frequently held responsible for updating general educators about hot topics in legislation and practice. In schools where this is the case, the special educator could easily communicate with the staff through a school newsletter. The school newsletter could include a principal's update, exciting news from inclusion classrooms, reminders from general educators, and tips and tricks from special educators. A collaborative newsletter of this type could be distributed to school staff, parents, and other members of the community. It would reflect the school's community efforts in content and form. Including older students in the layout, design, and production of the newsletter would be a great way to model and practice a whole-school model of collaboration.

Collaborative teaching models require a great deal of planning, organization, and dedication. The success of a program requires that administrators, general education teachers, special education teachers, and school support staff all fulfill specific responsibilities. The principal's role in setting up and maintaining a collaborative school is vital, and has many components. The most important thing an administrator can do to ensure the success of a collaborative program is to combine research-based practices with his knowledge of the staff members' personal and professional needs.

Definitions of Inclusion

There are hundreds of definitions for the term inclusion, whether formally published or informally mentioned. Inclusion, as defined by congress:

In 2004, IDEA 1997 was reformed again and renamed by Congress as the Individuals with Disabilities Education Improvement Act, which continues to require school districts to educate children in the least restrictive environment with emphasis on participation in the general education curriculum and a strong preference for regular classroom placement. Inclusion in the regular education setting must consider the preference used in determining the educational placement of children with any disability. Appropriate educational placement in an inclusive setting helps to break down the attitudinal and physical barriers that prevent individuals with disabilities from participating fully in society and affords an opportunity for all students to benefit from interaction and active participation with peers of chronological age, and to learn age-appropriate behavior.

According to the National Professional Development Center on Inclusion, (<http://community.fpg.unc.edu/npdci>) there are ten commonly used definitions for the term inclusion:

- Inclusion, as a value, supports the right of all children, regardless of abilities, to participate actively in natural settings within their communities. Natural settings are those in which the child would spend time had he or she not had a disability (DEC, 1993, p. 1).
- Inclusion is a term used to describe the ideology that each child, to the maximum extent appropriate, should be educated in the school and classroom he or she would otherwise attend. It involves bringing support services to the child, rather than moving the child to the services; it requires only that the child will benefit from being in the class (rather than having to keep up with the other students)(CEC, 2006).
- Young people with Special educational needs being placed in mainstream provision, where there is a commitment to removing all barriers to the full participation of each child as a valued, unique individual (Alliance for Inclusive Education, n.d.).
- Inclusion is a process of identifying, understanding and breaking down the barriers to participation and belonging (Early Childhood Forum, 2003).
- Classroom programs in which children with and without disabilities participate (Odom, 2002, p. 3).

- Inclusion also refers to participation in the broad range of activities that normally occur for typically developing children in their community and culture. (Odom, 2002, p. 3)
- The degree to which children with developmental delays are playing, learning, working, and living with families and friends in their communities (Brown, 1997, p. 7).
- The defining feature of inclusion for young children is the existence of planned participation between children with and without disabilities in the context of children's educational/developmental programs (Guralnick, 2001, p. 3).
- Many professionals, families, and advocates do not limit inclusion to mean involvement only in educational/developmental programs but extend the concept to the participation of children with disabilities and their families in typical activities found in their neighborhoods and communities (Guralnick, 2001, p. 3).
- Inclusion is not a set of strategies or a placement issue. Inclusion is about belonging to a community – a group of friends, a school community, or a neighborhood (Allen & Schwartz, 2001, p. 2).

Historical Perspective on Inclusion

Education became more heterogeneous and compulsory in the late 1920s, but schools still existed that separated and isolated various groups of children that varied from culture, ethnicity, economic background, and intelligence level. It was not until the 1960s when inclusion was first introduced as a system for grouping all children together.

As a result of the Civil Rights Movement of the 1960s, as well as national health and mental health initiatives, American schools exhibited a philosophical shift from

segregating students with special needs to mainstreaming students into the least restrictive environment (LRE) (Fagan & Wise, 1994). According to USLEGAL.com, “Mainstreaming is the practice aimed at providing a positive educational experience for special education students. Through this process, special education students are placed in regular education classrooms for part of the school day. The aim of mainstreaming is to give special education students the opportunity to gain appropriate socialization skills and access to the same education as regular education students, while still allowing them access to resource rooms and special education classrooms (USLEGAL.com; Mainstreaming Law and Legal Definition, n.d.).

In 1975, The Education of All Handicapped Children Act was established which stated that, to the extent possible, handicapped children should be educated with non-handicapped peers. Even though the Act was established to promote inclusion and mainstreaming of handicapped children, the law was still not specific as to how this would be implemented. The Act left the process of mainstreaming students for professionals and educators to make the determination of which students met the necessary standard to qualify to be part of the mainstreaming movement. Through the 80’s, inclusion and mainstreaming remained a broken system which was considered by most to be confusing with some periods of painful trial and error (Meisel, 1986).

In the 1990s, The Education for the Handicapped Act (EHA) (P.L. 94-142), added two major amendments, one including the change of name for the Act itself to the Individuals with Disabilities Education Act.

In 1990, amendments were added to EHA, considerably adding components to the law (P.L. 101-476):

- To rename the EHA as the Individuals with Disabilities Education Act (**IDEA**).
The amendment also replaced the phrase "handicapped child" with "child with a disability"
- To provide Transition Services for students by age 16
- To extend eligibility to children with autism and traumatic brain injury
- To define Assistive Technology Devices and Services for children with disabilities for inclusion in the IEP
- To extend the Least Restrictive Environment (**LRE**) to require the child, to the maximum extent appropriate, be educated with children without disabilities -- in the same class s/he would have been but for the disability

In 1997, amendments further strengthened the rights of students with disabilities (P.L. 105-17):

- To extend **LRE** as an assurance that all students would have "access to the general curriculum"
- To "consider" Assistive Technology Devices and Services on the IEP's of all students. Use of school-purchased AT in a child's home or other settings is required if the child needs access to those devices to receive FAPE
- To include orientation and mobility services to the list of related services for children who are blind or have visual impairments, as well as for other children who may also need instruction in traveling around their school, or to and from school

It was not until legislation tightened the law on special education rights when special needs children were finally starting to be a part of the regular population in

schools. At this juncture in time, that is when the concept of collaborative teaching started to get a lot of attention.

Definitions of Collaborative Teaching

Collaborative teaching is defined as general education and special education teachers both sharing the responsibility for planning, teaching and assessing all students in a general education classroom setting (Fenneck & Liddy, 2001).

Like the sharing of responsibilities between parents or the complementary skills of successful business partners, combining the strengths of general and special educators in the classroom can be deeply beneficial to students and teachers alike. Co-teaching is “an educational approach in which general and special educators work in a coactive coordinated fashion to jointly teach academically and behaviorally heterogeneous student groups in educationally integrated settings” (Bauwens, Hourcade, & Friend, 1989).

Collaborative Teaching and its Process

Special education students benefit by having exposure to highly rigorous content. General education students benefit by having more ways to learn the content. When teachers combine their expertise in content knowledge, learning strategy, and classroom management, more students achieve to higher levels of proficiency. Co-teaching not only aims to effectively and efficiently meet the needs of students in the areas of academics and behavior, but it also sparks a teachers’ commitment to not only working as a collaborative partner, but also developing new capabilities in areas such as creating shared lesson plans, communicating consistently and effectively with fellow teachers and colleagues, and resolving differences in ways that strengthen rather than weaken the

collaborative relationship (Gately & Gately, 2001; Piechura-Couture, Tichenor, Touchton, Macisaac, & Heins, 2006; Rice, Drame, Owens, & Frattura, 2007).

Collaborative teaching is a system that can be highly effective if used strategically and vigilantly. One of the most important components for setting up a collaborative teaching system is teacher personality and beliefs. Pairing teachers based off on skill level, experience, and competence is no longer enough to ensure the model is effective and efficient. Both educators who will be teaching with one another must share the same beliefs towards not only the process, but towards each other's collaborative work in separating the responsibility in the classroom equally so both take ownership of the work to whom they must commit. After the pairing process of teachers in collaborative teaching takes place, it is highly essential for those respective teachers to receive adequate and rigorous preparation and professional development to ensure that both teachers understand their respective roles and responsibilities before, during, and after instruction. It is imperative for teachers to keep up with the ever-changing laws, guidelines, and models of instructional delivery that are aimed at the academic achievement of all students. According to Fennick and Liddy, the third most important phase of the collaborative teaching process is the development and engagement amongst educators in the planning process, such as paired planning, team planning, and interdisciplinary planning (Fenneck & Liddy, 2001).

Teacher Beliefs on Collaborative Teaching

Because a collaborative model is recommended and used in inclusive classrooms, it might be inferred that the interaction of co-teachers has been examined extensively and that the criteria for an ideal model has been defined. Interestingly, the lack of studies and

research proves this to be true as only a few studies have evaluated the current practice of collaborative teaching (Austin, 2001).

Since 1975, public schools have moved from a position recognizing that students with disabilities are entitled to a free and appropriate education with adequate support services to one in which the placement of such students supersedes the concerns about the quality and type of service provided. Inclusion continues to gain momentum in schools and garner popular support from important constituents. Given the importance of the perceptions of the teachers themselves in the assessment of collaborative teaching and its effect on the inclusion process, an examination of the dynamic relationship between these key constituents and their evaluation of the efficacy of co-teaching was both timely and needed (Austin, 2001).

Vance Austin conducted a study in 2001 that was designed to provide information relative to the following questions:

- How do co-teachers perceive their current experience in the classroom?
- What teaching practices do collaborative educators find effective?
- What kind of teacher preparation do co-teachers recommend?
- What school-based supports facilitate collaborative teaching?
- Are students in the inclusive classrooms being adequately prepared both academically and socially, and do they like learning in such an environment? How is this determined?
- Who does more in the collaborative partnership- the special educator or the general educator, or both?

Austin conducted his research on 139 collaborative teachers ranging from Kindergarten to twelfth grade across nine different school districts in New Jersey. All school districts chosen shared similar demographic data and student enrollment counts. Austin used a qualitative instrument, the Semi-Structured Interview: Perceptions of Co-Teaching script was developed, using the Interview Format with Probing Questions model provided by Cox (1996). A key feature of this design was that the interview questions were structured in sets, and each set was developed to examine a particular issue of relevance to the collaborative teaching experience.

The results from Austin's research showed that the majority of collaborative teachers stated that they believed co-teaching contributed positively to the academic development of all their students. The rationale provided by co-teachers in this study in support of this observation included the following factors: the reduced student-teacher ratio, the benefit of another teacher's expertise and viewpoint, the value of remedial strategies and review for all students, and the opportunities for students without disabilities to gain some understanding of the learning difficulties experienced by many students with disabilities. However, the majority of co-teachers felt that the general education co-teacher did the majority of the work in the inclusive classroom. In addition, there was consensus among general education and special education co-teachers that, generally, they worked well together, solicited each-others feedback, and benefited from working together (Austin, 2001).

Aside to the one significant study conducted by Vance Austin on teacher beliefs and perceptions, according to Fattig and Taylor, co-teachers must possess a healthy, positive can-do attitude, must be willing to engage in collaborative meaningful work, and

must believe in the co-teaching model for it to be implemented in an efficient and effective manner (Fattig & Taylor, 2008). Only through positive teacher perceptions and beliefs towards co-teaching will positive relationships and collaborative experiences occur between both educators in the classroom (Beamish, 2007).

Co-Teacher Preparation and Professional Development

Teachers have to be able to transfer what they learn to their students in the classroom to impact student learning; this is a prime component in professional development. Professional development has to be continuous as professionals are expected to be leaders in dispersing new knowledge in the classroom for their personal and students' benefit. The professional development has to contain relevant, meaningful, and practical information to impact the learner. When the adult is satisfied with the learning, the students benefit, too, as this learning is transferred into the classroom. As noted by Natural Allies of the FPG Child Development Institute, professional development must cross sectors in nature, offering collaboration and support across disciplines and roles (FPG Snapshot, 2009). For inclusion to be successful, the professional development has to be varied and geared towards multiple disciplines. The cohesiveness of the instruction, delivery of varying strategies, and the outcome of student learning gives valid evidence of adult learning through professional development. The level of engagement between students and teachers, the level of rigor being implemented on student work, and the outcome of student achievement all show the level of adult learning being transferred towards student learning in the classroom.

Preparation and professional development offer valuable learning opportunities for teachers to gain knowledge about multiple factors and issues that impact student

achievement. The education and training of teachers is therefore, “a crucial element in the modernization of education and training systems”, and “Member States should give high priority to sustaining and improving the quality of teacher education within a career-long perspective” (2007/C 300/07 of 15-11.07).

Other countries have emphasized the importance of ongoing education for teachers with longevity within the profession. Member States in European Education have noted the need for better co-ordination of the various strands of teacher education; for greater incentives for teachers to update their skills throughout their professional lives, and for efforts to ensure that in-service education is responsive to teaching needs in terms of both quality and quantity. Several Member States need not only to attract new people – including suitably qualified people with experience from other professions – into the teaching profession, but also to persuade experienced teachers to remain in the profession rather than retiring early or moving to other professions. A study conducted by the University of Twente in the Netherlands (Teachers’ Professional Development – Europe in International Comparison, 2004) identifies the key components of teacher professional development in the European states. More so, the Member States also recognized areas that need to be strengthened in order for efficient and effective teacher growth are to occur. The following outlines the critical foundation for teacher professional development:

- *Provide a continuum of teacher education:* Ensure that provisions for teachers’ initial education, early career support, and further professional development is coordinated, coherent, adequately resourced and quality assured.

- *Establish professional values:* Encourage all teachers to be reflective practitioners, to be autonomous learners in their own career-long professional development, to engage in research, and to be innovative in developing new knowledge.
- *Contribute to make teaching an attractive profession:* Make the teaching profession a more attractive career choice and ensure that teacher recruitment, placement, retention and mobility policies maximize the quality of a school education.
- *Support teachers:* Ensure that teachers have access to effective early career support (induction) programs at the start of their career, and adequate mentoring support throughout their careers. Encourage and support teachers throughout their careers to review their learning needs and to acquire new knowledge, skills, and competence through formal, informal, and non-formal learning, including exchanges and placements abroad and supporting teacher mobility.
- *Develop high-quality teacher education and continuing professional development which entails the following:*
 1. Improving the supply, quality and verification of teachers' continuous professional development programs, ensuring that teacher education institutions provide coherent, high-quality and relevant teacher education programs which respond effectively to the evolving needs of schools, teachers and society at large;
 2. Promoting, during initial teacher education, early career support and continuous professional development, the acquisition of the competences

that teachers need, such as teaching transversal competences, teaching heterogeneous classes, and collaborating with colleagues and parents (Hendricks, Luyten, Scheerens, Slegers & Steen, 2010)

As mentioned above, professional development is vital, not only for collaborative teachers, but it is essential for all educators. As society changes, the laws, guidelines, standards, and children do as well. Therefore, it is critical that educators stay informed and are always looking for a myriad of opportunities to enrich their professional growth in their practice.

The Collaborative Planning Process

Thoughtful planning, whether conducted independently or with a co-teaching partner, is an integral part of designing effective instruction (Gunter, Estes, & Mintz, 2007). Poorly planned activities rarely end well. Although finding the time to plan may seem impossible, effective co-teachers manage to set aside at least 45 minutes a week for uninterrupted planning (Bos & Vaughn, 2006; Kohler-Evans, 2006). Because shared planning time, especially 45 minutes of it, is often difficult to come by, generating creative, flexible solutions serves both teachers well. This is where technology can come in handy. For example, busy co-teachers who do not have time to meet before, during, or after the school day can use free online interactive videoconferencing (e.g., Skype, SightSpeed, iChat) in the evening or on weekends. If Internet access is a problem, a good old-fashioned telephone or mobile device will suffice. Teachers who have multiple co-teaching partners may find it easier to hold shorter meetings more often. Instead of meeting with each co-teacher for 45 minutes once a week, try penciling in 10 minutes

with each partner four or five times a week. Regardless of the manner in which meetings between co-teachers take place, use the following techniques to get the most out of it.

Because teaching time is by nature student-centered, co-teachers must hold meetings where they can exchange ideas, make decisions, and carry out everyday tasks without interruptions (Dettmer et al., 2005). Although finding times and places to plan together regularly may seem like more work, the benefits of doing so should prove as motivating as they are rejuvenating. Asking administrators to cover your classes once a week to make time for co-planning may be more palatable if there is evidence that the time will be used wisely. Crafting a meeting agenda beforehand is one way to illustrate effective and efficient use of planning time. Meeting agendas also promote joint ownership and action during collaborative planning sessions, helping co-teachers reap the rewards of the positive climate that results (Friend & Cook, 2007). Before every co-teaching meeting, identify the purpose, the goals, and the meeting location. Settle any issues of timing, advanced preparation, and other logistics in advance so that partners can focus the discussion on the matters at hand. Every meeting should result in resolution of at least one issue or completion of the planning of at least one shared item. Guidelines for developing meeting protocols include deciding whether a meeting is needed, preparing and sticking to a written agenda, agreeing on a code of conduct, participating constructively in the dialogue, and evaluating the results (Washington University in St. Louis, n.d.). Because meetings are based on conversation, an effective protocol will include the type or types of talk that will help achieve the identified co-teaching goals. Geller (2006) describes five types of conversation: relationship talk (i.e., sharing personal aspects of one's life), possibility talk (i.e., sharing visions, goals, objectives, or plans),


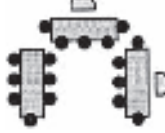

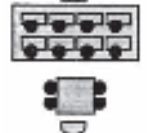


action talk (i.e., discussing behavior-driven tactics to accomplish goals, plans, and visions), opportunity talk (i.e., discussing choices available to meet goals as well as the roles and responsibilities of partners), and follow-up talk (i.e., discussing goal attainment or lack thereof and any changes that need to take place). Each type of talk serves a different purpose and is not mutually exclusive; thus, a meeting agenda may include several, if not all, of the types of talk.

Shared timelines and schedules are a good way to ensure that professionals work in unison in the classroom (Friend & Cook, 2007). Together, map out goals for specific units, months, marking periods, or semesters. Evaluate joint progress by referring regularly to these goals, and make changes as needed. Using visual organizers in this way not only helps coordinate instruction, but it also creates a record of benchmarks that can be used to track students' progress throughout the year and provides a measure of accountability for all teachers involved.

Before creating any concrete co-teaching plans, you must choose a co-teaching model. Although there are many different models that co-teachers can use, deciding in advance can help to clarify the ways in which partners interact in the classroom. Friend and Cook (2007) developed six approaches that can guide effective co-teaching: (a) one teaching, one observing, (b) station teaching, (c) parallel teaching, (d) alternative teaching, (e) teaming, and (f) one teaching, one assisting. Use the one-teaching, one-observing model if collecting academic or behavioral student data is what matters. Try station teaching, where both teachers actively provide instruction while students rotate through preplanned instructional centers or stations, when co-teaching styles differ or if smaller teacher–student ratios are preferred. Opt for parallel teaching, in which the class

is divided into two groups and each co-teacher instructs one group, when both partners possess adequate content knowledge but smaller instructional configurations better meet students' diverse needs. Consider alternative teaching when a small group of students would benefit from instruction that differs from the whole class. Go for teaming when co-teaching partners really hit it off; synergy and parity make or break this approach. Use the one-teaching, one assisting model sparingly, reserving its use primarily for unplanned co-teaching interactions. Each time co-teachers meet, albeit formally or informally, discussion should center on choosing a model or models that support the curriculum, meet diverse student needs, and promote attainment of subject matter or skills. More thorough descriptions, examples, and straightforward illustrations of these approaches can be found on the DVD *The Power of Two* (Friend, Burrello, & Burrello, 2005) or in Friend and Cook's (2007) textbook, *Interactions: Collaboration skills for school professionals*. After reviewing the models and making a selection, decide as a team how to put them into action. Approaching co-teaching situations with well-developed instructional plans ensures that classroom interactions between the partners are as satisfying as they are successful. The planning format that is best for co-teaching can differ from standard lesson plan templates in important ways, including space in which to describe shared goals and areas that formalize work flow patterns and divisions of responsibility. Select or develop a lesson plan form designed specifically for co-teaching, being sure to incorporate the co-teaching models. Keefe, Moore, and Duff (2004) designed a template many co-teachers find helpful. Moore and Duff adapted lesson plan templates by inserting visual symbols to represent Friend and Cook's (2007) different co-teaching models and adding the key words *beginning*, *middle*, and *end* to the rows under

the column titled Lesson Elements (see Figure 1 for a sample plan). As can be seen in Figure 1, these adaptations prompt co-teaching partners to consider how their roles and responsibilities should change throughout the lesson.

Collaborative Planning Form Subject: _____		Period(s): _____		Prepared by: _____	
Teach/Observe	Stations	Parallel	Alternative	Team	Teach/Assist
					

Lesson Overview:
Reading Comprehension
Skills With Problem Solving
Steps to Story Problem Solving

Tasks to be Completed	Co-Teaching Model	Special Educator's Role/Responsibilities	General Educator's Role & Responsibilities
1. Anticipatory Set: a) Class <i>Whip Around</i> b) Beginning <i>Ticket Check-in</i>	1. Teach/ Observe	1a) Lead class <i>Whip Around</i> discussion 1b) Present <i>Ticket In</i>	1a) Observe <i>Whip Around</i> 1b) Observe <i>Ticket In</i>
2. Direct Instruction a) 3 digit subtraction b) Story problem	2. Parallel Teaching	2a) Review subtraction with 3 digits (remind to start in one's place) 2b) Model working story problem	2a) Review subtraction with 3 digits (remind to start in one's place) 2b) Model working story problem
3. Guided Practice a) Story problem	3. Parallel Teaching	3a) Guide students through a problem as a group	3a) Guide students through a problem as a group
4. Independent Practice a) Story problem	4. Parallel Teaching	4a) Assign independent problem (provide assistance as needed)	4a) Assign independent problem (provide assistance as needed)
5. Closure a) Review story problem steps b) <i>Free-flow writing</i> : What have they learned? How has it helped?	5. Teach/Observe	5a) Observe review of steps 5b) Observe <i>Free-flow writing</i>	5a) Teach new word problem to whole group while reviewing steps 5b) Lead <i>Free-flow writing</i>
Criteria for student success	Co-Teaching Model	Special Educator's Role & Responsibilities	General Educator's Role & Responsibilities
1) All students participate in classroom anticipatory set activities	1) Teach Observe	1) Assign students check, check plus, or check minus for <i>Ticket In</i>	1) Monitor and record students' behavior during <i>Whip Around</i> discussion
2) All students participate in story problem discussions and problem solving	2) Parallel Teaching	2) Grade independent story problem using story problem rubric	2) Grade independent story problem using story problem rubric
3) All students engage in <i>Free-flow Writing</i>	3) Teach/Observe	3) Monitor and record student behavior and engagement during <i>Free-flow writing</i>	3) Grade <i>Free-flow writing</i> with check, check plus, or check minus Monitor and record student behavior and engagement during <i>Free-flow writing</i>
Learning Strategies (Evidence based): High Access	Co-Teaching Model	Special Educator's Role & Responsibilities	General Educator's Role & Responsibilities
1) Instructional Strategies	1) Teach/Observe	1a) <i>Ticket In</i> 1b) <i>Whip Around</i>	1a) Observe <i>Whip Around</i> 1b) Observe <i>Ticket In</i>
2) High Access instructional Strategies	2) Parallel Teaching	2a) Open ended Discussion-Group 2b) <i>Thumbs up</i> 2c) Reciprocal Teaching	2a) Open ended Discussion-Group 2b) <i>Thumbs up</i> 2c) Reciprocal Teaching
3) High Access instructional Strategies	3) Teach/Observe	3a) Observe <i>Free-flow writing</i> 3b) Observe <i>Thumbs up</i>	3a) Lead <i>Free-flow writing</i> 3b) Lead <i>Thumbs up</i>
Strategies to implement positive behavior support (Evidence based classroom behavior management):	Co-Teaching Model	Special Educator's Role & Responsibilities	General Educator's Role & Responsibilities
1) SRR Dollars	Parallel Teaching Teach/Observe Assist	1a) Observe <i>Safety, Respect, Responsibility</i> b) Provide clearly stated expectations c) Assist with stating expectations	1a) Observe <i>Safety, Respect, Responsibility</i> b) Provide clearly stated expectations c) Assist with stating expectations
2) 4:1 Ratio	Parallel Teaching Teach/Observe Assist	2) Deliver 4:1 Ratio	2) Deliver 4:1 Ratio
3) Participation Folder	Teach/Observe	3) Assist in implementation participation folder	3) Assist in implementation participation folder

Adapted from "The four 'knows' of collaborative teaching," by E. Keefe, V. Moore, & F. Duff, 2004, *Teaching Exceptional Children*, 36, pp. 36-42; and from *Interactions: Collaboration for School Professionals* (5th ed.), by M. Friend & L. Cook, Boston: Allyn & Bacon. Copyright 2006 by Pearson Education. Reprinted by permission of the publisher.
 Best practice content reflected in the adapted lesson plan drawn from Feldman, K., & Denti, L. (2004). High-access instruction: Practical strategies to increase active learning in diverse classrooms. *Focus on Exceptional Children*, 36 (4), 1-12; from Elbow, P. (1986) *Embracing Contraries: Explorations in Teaching and Learning*. NY: Oxford University Press; and, from Sugai, G., & Horner, R. (2002). The evolution of discipline practices: Schoolwide positive behavioral supports. *Child & Family Behavior Therapy*, 24 (1-2), 23-50.

Figure 1. Co-Teaching Planning Form.

Finding Time for Collaboration

According to Friend and Cook (2007), most professionals express concern about the time needed to form collaborative working relationships with their colleagues, particularly for activities such as co-teaching. They also worry about setting realistic expectations regarding time for collaboration. Although there is no secret to enable you to make more minutes in the day, these are some of the ways professionals are making the most of the time they do have available:

1. Have two classes team to release one teacher (e.g., two fourth grades, a third grade and a fifth grade).
2. Use other adults to help cover classes, and include principals, assistant principals, counselors, social workers, volunteers, paraprofessionals, psychologists, and supervisors. Of course, be sure to follow local policies on who can supervise groups of students.
3. Find funds for substitute teachers as varied sources include grants from your state or local foundations, parent-teacher organizations, and disability advocacy groups.
4. Find “volunteer” substitutes such as retired teachers, members of social or civic organizations, teacher trainees from local universities.
5. Use instructionally relevant videotapes or other programs supervised by part of the staff to release the other part of the staff for planning.
6. When school-based staff development sessions are scheduled, arrange for them to begin late or conclude early with the saved time being used to collaboration (Friend & Cook, 2004).

Co-Teaching Effects on Special Education Students

Some published research provides rich descriptions of what co-teaching looks like when it is implemented in elementary and secondary classrooms, often concluding that teachers adopt a particular arrangement such as the team teaching arrangement and use it exclusively. Some researchers have collected interview or focus group data from parents, teachers, and students and report generally high levels of satisfaction among all constituents once a co-teaching model has been implemented.

A search was conducted for research articles published within the last 20 years in referenced journals that compared teachers' instructional practices, student engagement rates, and student academic progress in co-taught classrooms with those in alternative special education service delivery models. Only four articles were found in which the effectiveness of co-teaching was measured empirically and compared statistically with a control condition. Three of these reported on studies conducted in elementary schools, and one on a study conducted in a high school.

Elementary Level

- Bear and Proctor (1990) studied the achievement gains of 47 third graders with high-incidence disabilities taught in Team Approach to Mastery (TAM) classrooms, compared to the gains shown by 31 students with high-incidence disabilities served in resource rooms. In TAM classrooms, students with high-incidence disabilities are taught together with non-disabled peers for 100% of the school day, at the ratio of approximately one student with disabilities to every three without disabilities. Two teachers, one certified in general education, the other in special education, jointly provide instruction to all students in the same classroom. The researcher used scores from the

Comprehensive Test of Basic Skills, available in students' permanent records, to show that achievement gains of students with disabilities in TAM classes were consistently greater than (in math) or equal to (in reading) the gains made by students in the resource room. They concluded that TAM classrooms are "at least as effective" as resource rooms.

- Schulte, Osborne, and McKinney (1990) randomly assigned students with learning disabilities in grades 1 to 4 to one of three service delivery models: one period of resource room services per day (n=19), consultative services to the general education teacher who had students with disabilities in his/her class (n=14), and consultative services with co-teaching (n=19). They measured students' academic progress using both standardized achievement tests in reading writing, and mathematics, and a criterion-referenced reading measure. Like Bear and Proctor, Schulte and her colleagues found that consultation plus co-teaching was "as effective as" the other service delivery models in producing academic gains."

- Marston (1996) compared reading progress of elementary students with high-incidence disabilities served in inclusion-only (n=33), pull-out only (n=171), and combined (n=36) service delivery models. In inclusion-only models, students with disabilities were provided all their IEP services in the general education classroom through co-teaching. In pull-out only, all special education services were delivered in a resource room. The combined model included pullout resource room services and co-teaching provided jointly by the general and special education teacher in the general education classroom. By comparing curriculum-based measures taken in fall and spring, Marston demonstrated that reading progress of students served in the combined model was significantly greater than that of students served in either the inclusion-only (co-

teaching) or pull-out only models. Once again, co-teaching was ‘as effective as’ resource in producing reading growth, but this study also showed the value-added of combining both co-teaching and pull-out service delivery systems.

High School Level

- Boudah and colleagues (1997) studied the effects of co-teaching (referred to as collaborative instruction) on the performance of high school students with disabilities on content subject quizzes and test scores. They found that the performance of students with high-incidence disabilities (n=16) actually worsened during the experimental, co-teaching treatment.

Furthermore, even with two teachers in the room, students in co-taught settings were only minimally engaged in instructional tasks. “Despite the current and growing popularity of co-teaching, research on student outcomes in this service delivery model is very limited. Only four studies could be found. In the three elementary studies co-teaching was just as effective in producing academic gains as resource room instruction or consultation with the general education teacher; in the high school study, students’ quiz and exam grades actually worsened during the co-teaching experiment. If the goal of co-teaching is to allow students with high-incidence disabilities to access the general education curriculum and to ‘do no harm’ to them in terms of academic achievement, then the three elementary studies provide modest support for a co-teaching model in elementary schools. If the goal, however, is to achieve greater academic gains than have been traditionally achieved in a resource program, then co-teaching has not yet proved itself useful. Furthermore, the research suggests that the prevailing assumptions about the

effectiveness and usefulness of co-teaching for students with disabilities in inclusive classrooms need to be re-examined” (Zigmond & Magiera, 2001).

The research base on the effectiveness of co-teaching is woefully inadequate. While there are many resources available to tell practitioners how to do it, there is virtually no convincing data that tells practitioners that it is worth doing. Research is still needed to determine whether students with disabilities experience a wider range of instructional alternatives in co-taught classes than would be possible in a class taught by just one teacher; whether their participation and engagement levels increase in co-taught classes; and whether co-teaching enhances performance outcomes for students with disabilities. Co-teaching is left to be decided by individual research and beliefs on its effectiveness, but the research to date does not suggest any academic advantages to the co-teaching model (Zigmond & Magiera, 2001).

Despite the lack of research based evidence on the overall effectiveness of the co-teaching model for special education students, I have found through my research that the effect is quite grand for a controlled study group of 30 students ranging from a variety of disabilities. This research study, although it is centered on the effects of the non-disabled student population, showed significant gains in academic achievement which includes both cycle grades and standardized assessment scores. The data also shows the significant decrease in absenteeism and disciplinary infractions.

Co-Teaching Effects on General Education Students

Even if inclusion of special education students is morally right, some educators and the public sector have questioned whether this approach is the best for regular education students (Hines and Johnson 1996). Researchers (Logan, et al., 1995; Staub &

Peck, 1995) have concluded that the inclusion of special students created a caring and accepting community of learners as well as improved student learning for non-disabled peers. Farlow (1996) discussed a case study in which the peer assistant of an adolescent with Down's syndrome was previously failing social studies, but after tutoring the student with the disability, the assistant's grades also increased.

Staub and Peck (1995) identified five outcomes of inclusion for non-disabled students: (1) reduced fear of human differences accompanied by increased awareness, (2) growth in social cognition, (3) improvements in self-concept, (4) development of personal principles, and (5) warm and caring friendships. A common concern of parents of non-disabled students is, "Will non-disabled children lose teacher time and attention?" as a result of inclusion. A study by Hollowood, Salisbury, Rainforth, and Palomboro (1994) indicated that the presence of students with severe disabilities had no effect on levels of allocated or engaged time. They also reported that time lost to interruptions of instruction was not significantly different between inclusive and non-inclusive classrooms.

Summary

Outside of the positive social affects inclusive co-teaching has on non-disabled students, there is a significant lack of research referring to the effects on academic achievement, discipline, and student attendance on non-disabled students who are housed in classrooms with co-teach models. This population of students continues to be isolated from studies, and research as the primary focus on co-teaching is, and always has been, on the special education student population.

The literature reviewed on inclusion and co-teaching suggests that there is a noteworthy lack of focus in relation to non-disabled students in inclusive, co-teach settings. In fact, the present researcher could not locate a single concrete study, or any data in reference to the academic achievement and behavior of non-disabled students. Seventy percent of all research centered on co-teaching specifically targets the methods and design of the program itself (as described in this chapter) and not on the student outcomes. This chapter has reviewed the literature and has confirmed that little research has been conducted regarding non-disabled student outcomes, in the areas of academic achievement, student discipline, and student absenteeism, in an inclusive co-teach environment. The next chapter describes the methodology used to address the research question: How does collaborative teaching in an all inclusive setting effect the non-disabled student population in the areas of academics, attendance, and discipline?" The subtopics of the chapter will be: (1) Introduction, (2) Research Design, (3) Participants, (4) Instrumentation, and (5) Data collection Procedures.

CHAPTER THREE

METHODOLOGY

An Overview

This chapter's purpose is to explain the methodology used in this archival record study. The content of this chapter consists of a description of how and why the data were collected, strategies used to ensure validity of the data, and an analysis of the data and applications taken while conducting this study.

The strategies used in the collection and interpretation include location where the data were collected, identification and cataloguing of the statistics, analysis of data and use of a critical view to determine authenticity, along with interpretation of relevance. The collection of data in its proper state is critical to the success of the archival study. Validation must occur in an ongoing fashion to ensure proper applications are used in gathering the data and methods must eliminate controversies or errors.

The exchange of information between researcher and participants requires analytical collaboration. There must be uniformity in aligning the way data are collected and transposed into the study. Preservation of all data is important to understanding the complete, meaningful context of the material that is to be examined.

Research Design

The current project was designed as an archival record study that answered questions on several levels. This study was designed to see if non-disabled students were affected positively or negatively by the process of being educated within inclusion classes. In this research design, the data from the same group of non-disabled students

was examined in various areas (academics, behavior, and attendance). Semester grades, state standardized achievement assessments, daily attendance (number absences) and disciplinary referrals were collected from students who had been identified as non-disabled students enrolled in an inclusive setting in a high school in a large, urban school district in Houston, Texas. These non-disabled students consisted of fifteen (15) sophomores and fifteen (15) juniors. Data were collected from the school year 2008-2009, when the non-disabled students were not exposed to a co-teaching environment. The same data were collected from the same set of non-disabled students during the 2009-2010 school year when they were in a co-teaching environment. First, Repeated-Measures Analyses of Variance (ANOVA) were conducted to determine: (1) significant differences between without co-teaching and with co-teaching environment; (2) significant differences between groups of non-disabled students; and (3) significant differences between interactions of co-teaching (with and without) and groups on non-disabled students' academics, behavior and attendance. Secondly, Chi-Square Tests were used to validate the results of the Repeated-Measures ANOVA. Thirdly, Paired-Sample T-Tests were used as Post-Hoc tests on the results of the Repeated-Measures ANOVA showing significant differences. These analyses permitted each domain to be addressed separately in order to determine differences among the three comparative groups across two years worth of data.

Sample

This archival study was comprised of a randomly selected sample of non-disabled students, who are not listed as students with special needs or as English Language Learners (ELL), in a high school inclusive setting located within this large urban school

district in Houston, Texas. The school selected was composed of a total of 1300 students in which 66% of the population was Hispanic and 27% was African-American. The school selected was also listed as 89% economically disadvantaged (on free and reduced lunch due to qualifying with limited economic earnings) and 73% “at-risk” (TEA AEIS, 2009). The district of the selected school for study is comprised of 202,000 students in which 62% are Hispanic and 27% African-American. The Urban school district is also listed as 79% economically disadvantaged and 63% “at-risk” (TEA AEIS, 2009). It is evident when examining the data provided that the high school selected and its district are comparable in demographic figures. See Figure 2:

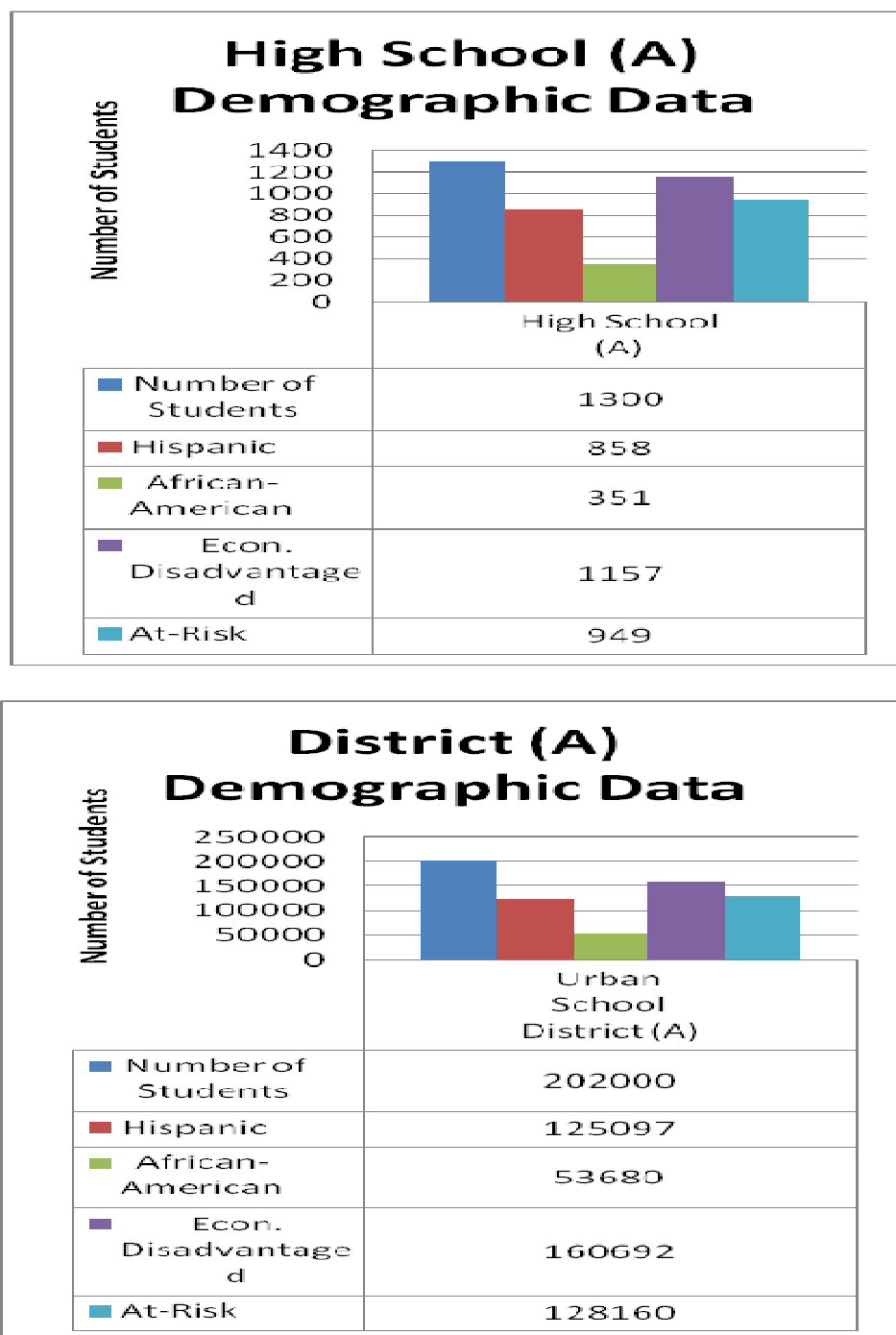


Figure 2. High School and School District Demographic Data.

The district's databases (Chancery) were used to identify those students in tenth-through eleventh-grade who qualified as non-disabled according to IDEA and TEA guidelines. This resulted in a final sample of 30 students (N=30). In general, students were being analyzed across two grade levels, with each receiving services in a traditional, homogeneous classroom setting the preceding year. The study is comprised of a random sample of students (N=15) listed in the tenth grade and a random sample of students (N=15) listed in the eleventh grade analyzing data trends from one year to the next.

For each child identified in the study, an assessment folder was created by the campus. The assessment folder contained all necessary documentation regarding each specific child. Every assessment folder was selected and actively updated throughout the academic calendar year for analysis to determine progress and to compare that progress to the previous year's data in the areas of academics, discipline, and attendance.

Procedures

After receiving permission from the Committee on Human Subjects and from central office personnel of the district, including the Special Education Director, Executive Principal, Campus Principal, and the Regional Superintendent, archival data were collected from the academic cumulative folders of children who had been targeted for the case study. Participants' cumulative folders were examined to analyze the most recent testing results, grades, attendance records, and disciplinary infractions from the previous year. The cumulative folders were housed on the campus within the respective administrative office, according to district policy. Assessment information was contained within the Texas Assessment of Knowledge and Skills Evaluation report, also known as the TAKS Assessment, which is given at the end of every school calendar year. Prior to

data collection, a list of names and identification numbers for the students who met the study criteria was compiled.

Archival test results were recorded from the folders using the data collection form. District identification numbers for the students were recorded on the form in order to ensure confidentiality. The data collection form was designed to record information documenting the identification criteria for each student that was selected for the study group.

Three employees on the campus, the author of the study and two other individuals collected the data for the study. The two employees were the Instructional Specialist and Co-Teacher from the Special Education Department. Data collectors were instructed regarding the confidentiality of the records. No identifying information on the data collection forms was allowed, beyond the students' district identification number.

The Regional Superintendent, Executive Principal, and the Regional Special Education Director were contacted and consulted in order to establish specific district procedures. The days and hours for data collection were mutually agreeable times as arranged by the Regional District Office. Target days and times for data collection were left to be determined by the author of the study and his research team.

A training meeting was conducted for the researcher to explain policies and procedures pertaining to the study. Training meeting content included instructions pertaining to procedures for the collection and handling of student data according to district policy. On the first day of data collection, the data collectors were expected to adhere to these security procedures. Data collectors were provided with binders that contained blank forms.

In order to ensure inter-rater agreement among the data collectors, ten practice folders were completed in a group meeting. Inter-rater agreement at the level of 100% was attained for the initial training of data collectors. When the practice run was completed, data collectors checked all thirty folders of student data included in the study in order to ensure consistency. Training the data collectors, combined with checking their results, insured inter-rater agreement. This maintained consistency and increased the integrity of the research study.

The results of the data collection were used to compile a database that was centrally located on the campus's common drive folder that contained all recorded information for all subjects. A basic database and spreadsheet program were used to track, monitor, and analyze all collected data. By identifying the effects of collaborative instructional delivery formats and academic accommodations for all children within the co-teaching learning environment, practitioners could begin to address appropriate ways to impact this specific population of children in the current school systems.

Measures

Participants who were placed in a collaborative instructional setting were identified at random. The participants who were identified to be part of the study were in a traditional, one teacher instructional program setting the previous school year and would be compared from one school year to the next year (2008-2009 to 2009-2010) in the following areas:

1. Academic Achievement: Cycle and semester grades from the designated school years, along with TAKS scores from these same years.
2. Discipline: Student disciplinary infractions from the

designated school years.

3. **Attendance:** Student absenteeism from the same school years.

Second, the use of cross-sectional surveys will help with the comprehension of student reflective feedback in regards to the inclusive co-teach learning environment.

Student samples will be randomly selected from high school students who took a course(s) in an inclusive co-teach classroom environment. Third, a cross-sectional survey will be conducted and examined to help analyze the personal beliefs and values of collaborative teaching to the teachers involved in the inclusion process for the specific, representative sample of students. This second set of research questions is descriptive in nature and uses non-experimental survey research methods:

- a. What are the thoughts and feelings of general education students on being integrated with special education students in a collaborative teaching inclusion environment?
- b. What are the feelings and views of collaborative teachers in respect to inclusion and the effects it has on the general education population?

The Likert scale was used to frame the questions on both the student and teacher surveys.

The purpose of this study is to analyze the effects of collaborative teaching on the general education populations as it relates to academics, behavior, and attendance. The study also attempts to gain valuable insight and personal perspective from both educators and students about the co-teach system and its effect on education as a whole. This

subject is extremely relevant in public schools today, and educators are concerned about the impact it has on disabled and non-disabled populations' learning.

The Texas Assessment of Knowledge and Skills (TAKS) test is the assessment that will be used in comparing student learning as determined in assessment scores from the 2008 - 2009 school year (also referred to TAKS 2009) to the 2009 - 2010 school year (also known as TAKS 2010). Therefore, no score manipulation was required by the researcher.

Data Analyses

Classification and selection. The study's investigational purpose is to answer several research questions. One purpose of the study is to answer the question: what is the effect of collaborative teaching on the general education student population in the areas of academics, discipline, and attendance? The researcher also reported a snapshot of the results from an undefined group of special education students (special education students that were not in the specified classes) that emerged in the study. The data collected and analyzed from this additional group will be reported in the appendix section of the thesis.

An Excel spreadsheet was the collection tool created to establish the collection of the students' assignments through the progression of the study. The Statistical Package for Social Sciences (SPSS) software will be used to analyze the data. A t-Test analysis will be conducted to determine the statistically significant difference between students grouped in a non-inclusive one teacher setting compared to students grouped in an all-inclusive co-teacher setting within three specific levels. A level was defined as a student's demonstrating actions within the defined criteria:

Academic Achievement: Four cycle grades and TAKS Assessment performance through two calendar years.

Discipline: Disciplinary infractions accrued through two calendar years.

Attendance: Absences accrued through two calendar years.

All recorded data were updated weekly onto the Excel spreadsheet data collection tool. Upon completion of the collection of the data, the figures were then entered into the a statistical package software for further analysis.

Quantitative Research Questions

Specifically, the following three research questions were tested:

1. What is the effect on student academic achievement on non-disabled students who are grouped in an inclusive instructional setting?
2. What is the effect on student discipline on non-disabled students who are grouped in an inclusive instructional setting?
3. What is the effect on non-disabled student absenteeism on students who are grouped in an inclusive instructional setting?

Control Variables

Several variables were controlled in this study. Each participant's identification as a child with a learning disability (based on TEA guidelines) was controlled by using only existing eligible folders at the time data collection began. Numbers were assigned in lieu of student names in order to protect anonymity. A learning disability, for the purposes of this study, was defined as a significant discrepancy between intellectual functioning and achievement of more than one standard deviation. The grade level and

age of participants were controlled through the selection of children in tenth through eleventh grade (ages 15 through 17). The ethnicity included Caucasian, African American, Hispanic, Asian, and Native American students. Any other ethnicity noted was coded as "Other." Ethnic diversity and socio-economic status were controlled through the selection of students from the districts' population that represented a diverse sample reflective of an average in the state population. Students identified as other health impaired, speech impaired, orthopedically handicapped, visually impaired, or auditory impaired without the identification of a learning disability were excluded from the data. This controlled the type of disability that was selected for use in the study by focusing on the inclusion of those students who qualify for services as a student with a learning disability only (label of LD).

Various data collection techniques were used including observations, administration of written questionnaires, and focus group discussions. Key informants familiar with the students in the class (teachers) also provided information. Preliminary surveys from archival data were used as a collection tool, and will be balanced using a Likert scale. Research techniques were sensitive to biased information that could be provided based upon human behavior, including attitudes and opinions. Specific, clear, questions were written and queried, eliminating leading phrases, while logical order of questioning was maintained to limit biased responses from the respondents. Qualitative questioning were used rather than Quantitative research techniques to not limit answers to those that could only be covered and delivered in a numerical expression. Data will be presented in the form of charts and graphs. Chapter four will cover in depth the questions that were queried of participating teachers and students involved in the study.

Repeated-measures-ANOVA was used in this study since sample members have been matched according to some important characteristic (without co-teaching and with co-teaching on the same set of students in two different years). Here, matched sets of sample members were generated, with each set having the same number of members and each member of a set being exposed to a different random level of a factor or set of factors.

MANOVA vs. Repeated-Measures-ANOVA

For both, sample members (students) are measured on several occasions, or trials, but in the repeated measures design, each trial represents the measurement of the same characteristic (for example, grade) under a different condition (without Co-Teaching and with Co-teaching). In contrast, for the multivariate design, each trial represents the measurement of a different characteristic (for example, grade on year one and End-of-Course Test result on the next).

In this study, Repeated Measures ANOVA was used to determine significant differences on within-subjects-factors (without co-teaching and with co-teaching, i.e. similar to paired T-Test) and significant differences on between-subjects-factors (sophomores v. juniors) and the interaction between within-subjects-factors (without and with Co-teaching) and between-subjects-factors (sophomores v. juniors).

The Chi-square tests were then used to test the null hypotheses of the proportion of those showing no improvements (values = 1) is the same the proportion of those showing with improvement (values = 2).

In order to use Chi-square tests in the study, a new set of variables for each variable in the area of attendance, discipline, and academic performance were created

consisting of only two values (i.e. a value of 1 is assigned to a new variable, say, `cdiffabs` if the number of absences in the previous year (no co-teaching) is greater than or equal to the next year (with co-teaching) – this value is equivalent to no improvement; a value of 2 is assigned if there was a decrease in the number of absences).

CHAPTER FOUR

RESULTS

Research Questions and Repeated Measures Analysis Of Variance

The focus of the study addressed the three research questions concerning the effect of collaborative teaching on the general education student population in the areas of academics, discipline, and attendance. The following table shows the number of respondents, minimum and maximum values, means and standard deviations of the variables in the study.

Table 4.1

Descriptive Statistics of Attendance, Discipline and Academic Performance of Respondents

Variables	N	Without Co-Teaching			With Co-Teaching		
		Min	Max	Mean	Min	Max	Mean
Attendance (Absences)	30	.13	7.25	3.06	.13	6.38	2.34
Discipline (Referrals)	30	0	13	1.73	0	9	1.03
Grades							
-English	30	71.50	89.25	80.88	71.50	92.50	82.77
-Math	30	70.50	95.00	81.72	61.75	95.75	82.42
-Science	30	57.50	85.50	76.96	73.25	94.00	81.94
-GPA	30	68.50	86.25	79.85	72	91	82.38
TAKS							
-ELA	30	1730	2333	2136.30	2036	2329	2224.93
-Math	30	1852	2298	2092.13	1936	2401	2186.33

Average number of absences of all respondents ranges from 0.13 to 7.25 on the first year (without co-teaching) and from 0.13 to 6.38 on the second year (with co-teaching). Mean GPA (three subjects – English, Math and Science) of the non-disabled students is 79.85 without co-teaching and 82.38 with co-teaching. Mean scaled score in TAKS ELA without co-teaching is 2136.30 and 2224.93 with co-teaching.

In this study, Repeated Measures Analyses of Variance (ANOVA) were used to determine significant differences between collaborative teaching environments (without

co-teaching and with co-teaching); between groups from which the non-disabled students were chosen (sophomore vs. junior) and interaction effects between the collaborative teaching environments (without and with co-teaching) within the two different groups.

Table 4.2 provides the summary of the results of the Repeated Measures ANOVA.

Table 4.2

Summary Results of the Repeated-Measures ANOVA

Characteristics/Areas	Significance Level (p)		
	Co-Teaching	Co-teaching*Grp	Grp
Attendance (Absences)	0.026*	0.024*	0.311ns
Discipline (Referrals)	0.031*	0.246ns	0.912ns
Grades			
- English	0.112ns	0.109ns	0.543ns
- Math	0.601ns	0.033*	0.962ns
- Science	0.000*	0.840ns	0.580ns
- GPA	0.004*	0.060ns	0.662ns
TAKS			
- ELA	0.001*	0.505ns	0.778ns
- Math	0.000*	0.011*	0.316ns

* - Differences are statistically significant ($\alpha = 0.05$)

ns – Differences are not significant

Results shown in Table 4.2 on the effects of co-teaching on the different areas under study indicate significant differences between without co-teaching and with co-teaching on non-disabled students' TAKS performances in Math and ELA. On academic grades, results show no significant differences between without co-teaching and with co-teaching on non-disabled students' grades in English and Math. However, significant differences were observed on their grades in Science and average grades (English, Math and Science). In addition, Table 4.2 illustrates significant differences between without co-teaching and with co-teaching on non-disabled students' behavior (disciplinary referrals). Significant differences were also observed in the area of attendance (number of absences). As discussed later in this chapter, Post-hoc analyses on these results showing significant differences revealed which of the two teaching environment showed improved performance.

The results illustrated in Table 4.2 also indicate that the group alone from which the respondents came from has no significant impact on the areas (academics, behavior and attendance) under study.

However, on the interaction between co-teaching and group effects, significant differences were observed in the areas of attendance ($p = 0.024$), Mathematics grades ($p = 0.033$), and TAKS Math scores ($p = 0.011$). These indicate that the effect of the group from which the non-disabled students came from depends on the co-teaching environment (without and with co-teaching) and vice versa in the areas of attendance, Mathematics Grades and TAKS Math. The rest of the areas show no significant differences in interaction effects.

Table 4.3

Pairwise Comparison of Means on the Interaction between Co-teaching and Grp (TAKS Math).

Co-Teaching	Group Means		Mean Difference	Std	Sig (p)	
	Soph	Junior	(Soph – Junior)	Error		
Without	2105.533	2078.733	26.800	44.704	0.554	ns
With	2139.600	2233.067	-93.467	33.075	0.009	*

ns – Not Significant

* - Significant (alpha = 0.05)

Based on the table above, sophomore and junior respondents have no significant differences on their TAKS Math scores in the classroom without co-teaching. There is, however, a significant difference between the two on TAKS Math in the classroom with co-teaching. Juniors are showing higher TAKS Math scores.

Table 4.4

Pairwise Comparison of Means on the Interaction between Co-teaching and Grp (Attendance).

Co-Teaching	Group Means		Mean Difference	Std	Sig (p)	
	Soph	Junior	(Soph - Junior)	Error		
Without	2.967	3.15	-0.183	0.444	0.772	Ns
With	2.975	1.7	1.275	0.42	0.041	*

ns - Not Significant

* - Significant (alpha = 0.05)

Based on the table above, sophomore and junior respondents have no significant differences on their attendance (number of absences) in the classroom with no co-teaching. There is, however, a significant difference between them on attendance (number of absences) in the classroom with co-teaching. Juniors are showing less number of absences.

Chi-Square Test Analysis

The Chi-Square Tests of Goodness of Fit were also used in this study to further supplement the results of the Repeated-Measures ANOVA. Figure 3 below shows the summary of the tests.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of cdiffabs occur with equal probabilities.	One-Sample Chi-Square Test	.715	Retain the null hypothesis.
2	The categories of cdiffref occur with equal probabilities.	One-Sample Chi-Square Test	.003	Reject the null hypothesis.
3	The categories of cdiffgrdeng occur with equal probabilities.	One-Sample Chi-Square Test	.273	Retain the null hypothesis.
4	The categories of cdiffgrdmath occur with equal probabilities.	One-Sample Chi-Square Test	.465	Retain the null hypothesis.
5	The categories of cdiffgrdsci occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
6	The categories of cdiffgrdavg occur with equal probabilities.	One-Sample Chi-Square Test	.028	Reject the null hypothesis.
7	The categories of cdifftaksla occur with equal probabilities.	One-Sample Chi-Square Test	.001	Reject the null hypothesis.
8	The categories of cdifftaksmath occur with equal probabilities.	One-Sample Chi-Square Test	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 3. Chi-Square Test Results.

The test results (shown in Figure 3) indicate that no significant differences were observed between the performance of non-disabled students without co-teaching and with co-teaching in terms of academic performance (English grades and Math grades) and attendance (number of absences). However, significant improvements were observed in the areas of TAKS performance in English Language Arts/Reading and Math, grades in Science and overall GPA and discipline (number of referrals). These results concur with the results of the Repeated-Measures ANOVA in this chapter with the exception of student absenteeism.

Post-Hoc Tests using Paired Sample T-Tests

Pairwise comparisons of means on the areas showing significant differences in the Repeated-Measures ANOVA were done using Pared-Sample T-Tests. Table 4.5 summarizes the results of paired sample T-Tests on the three focus areas of the study.

Table 4.5

Summary of Paired T-Test Results on the Three Focus Areas of the Study.

Variable(Pair)	T-Value	Sig (p)
Attendance (Absences)	2.185	0.037 *
Discipline (Referrals)	2.249	0.032 *
Grades		
-English	1.595	0.122 Ns
-Math	0.496	0.624 Ns
-Science	5.164	0.000 *
-GPA	3.032	0.005 *
TAKS		
-ELA	3.558	0.001 *
-Math	3.881	0.001 *

* = Significant $\alpha = 0.05$. ns = Not significant.

Academic Data Analysis; Grades

Mathematics, English Language Arts, and Science were the three content areas that were examined in the research study. Student grades were compared from one academic calendar year of not having a collaborative teacher to the following academic calendar year with having a collaborative teacher. Each student received four cycle grades throughout the academic calendar year in each specific content area.

Mathematics Data Analysis; Grades

The data shows that there is no significant difference between Mathematics grades of non-disabled students without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.624$).

Figure 4 illustrates the means of the Mathematics grades of the respondents.

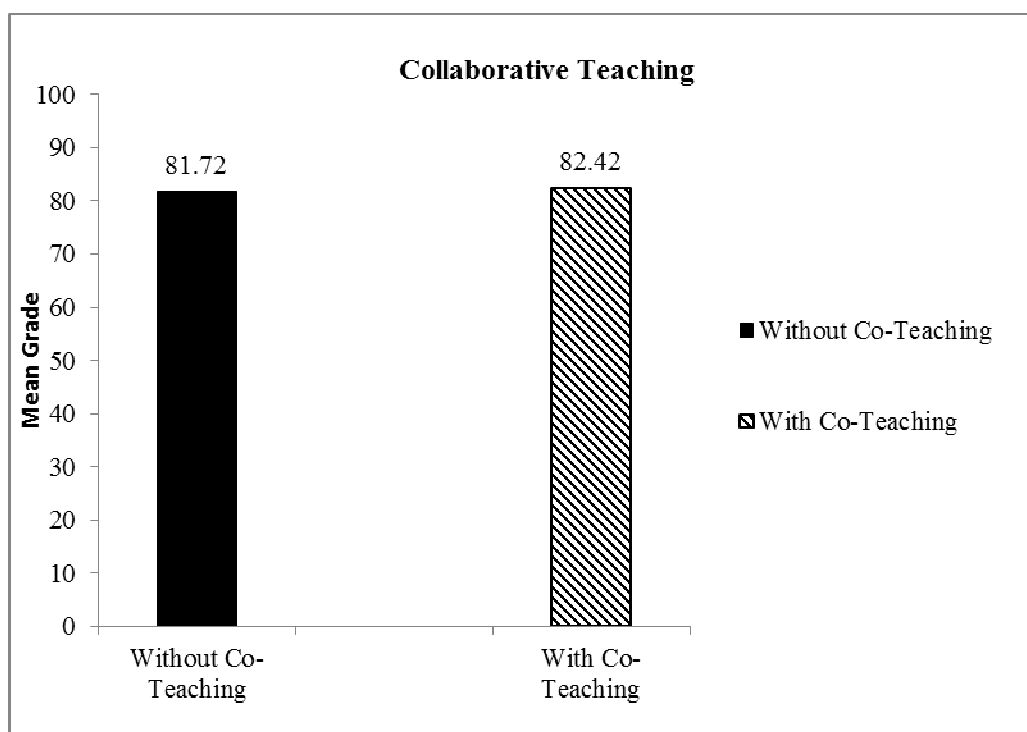


Figure 4. Means of Mathematics Grades of Non-Disabled Students without Co-Teaching and With Co-Teaching.

English Language Arts Data Analysis; Grades

The results show that there is no significant difference between the grades for English Language Arts without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.122$).

The mean 80.88 for without co-teaching is not significantly lower than the mean of 82.77 for with co-teaching. Figure 5 illustrates the English Language Arts means of the respondents.

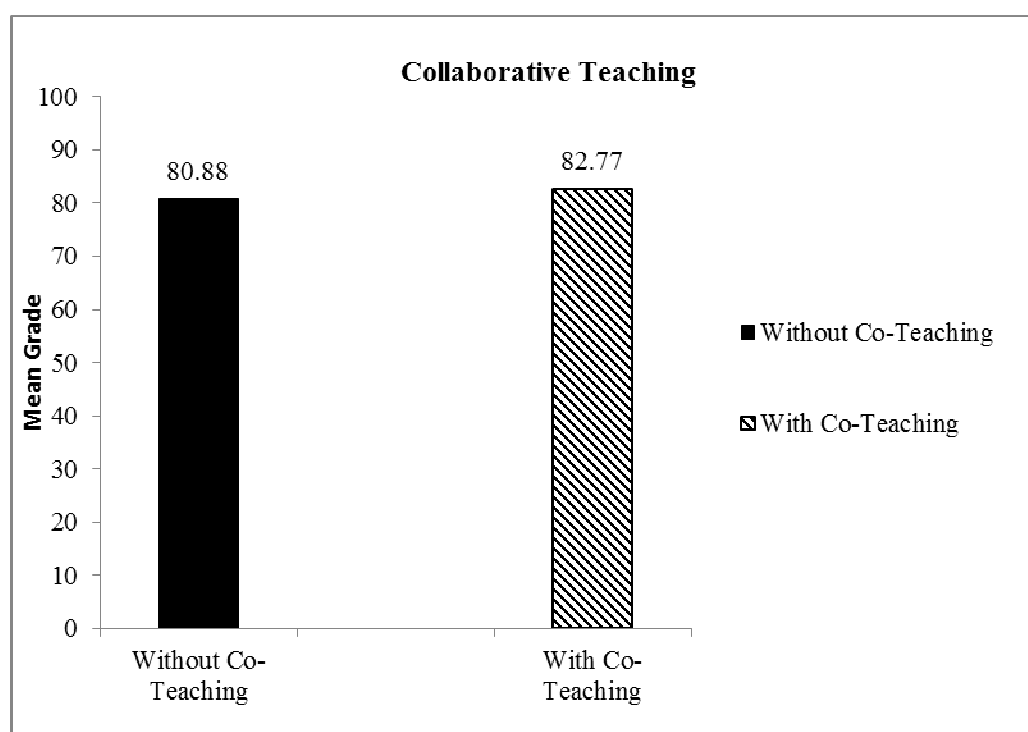


Figure 5. Means of English Grades of Non-Disabled Students without Co-Teaching and With Co-Teaching.

Science Data Analysis; Grades

The results show that there is a significant difference between grades for Science without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.000$). This indicates that the mean Science grade of 81.94 for with co-teaching is significantly higher than the mean

Science grade of 76.96 for without Co-teaching. Figure 6 illustrates the chart of the two Science grades.

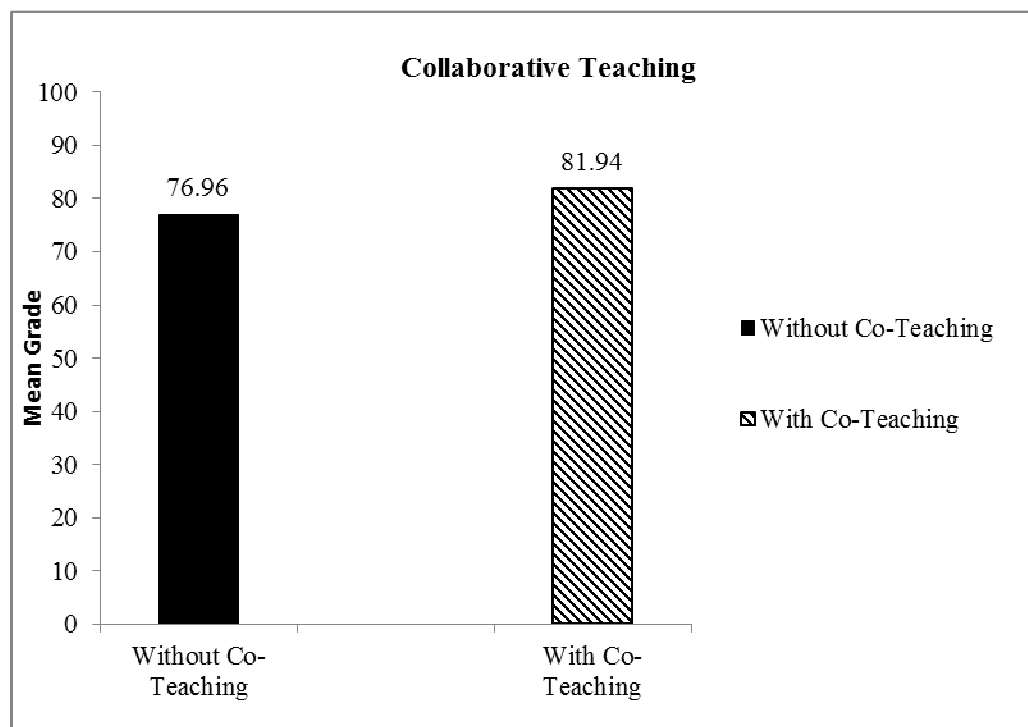


Figure 6. Means of Science Grades of Non-Disabled Students without Co-Teaching and With Co-Teaching

Cumulative Grade Point Average Data Analysis

The results show that there is a significant difference between the cumulative grade point average (GPA) for all three content areas without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.005$). The data indicate that the mean cumulative GPA for all three content areas of 82.3 for with co-teaching is significantly higher than that of without co-teaching (mean = 79.85). Figure 7 illustrates the mean grade point average of the two factors.

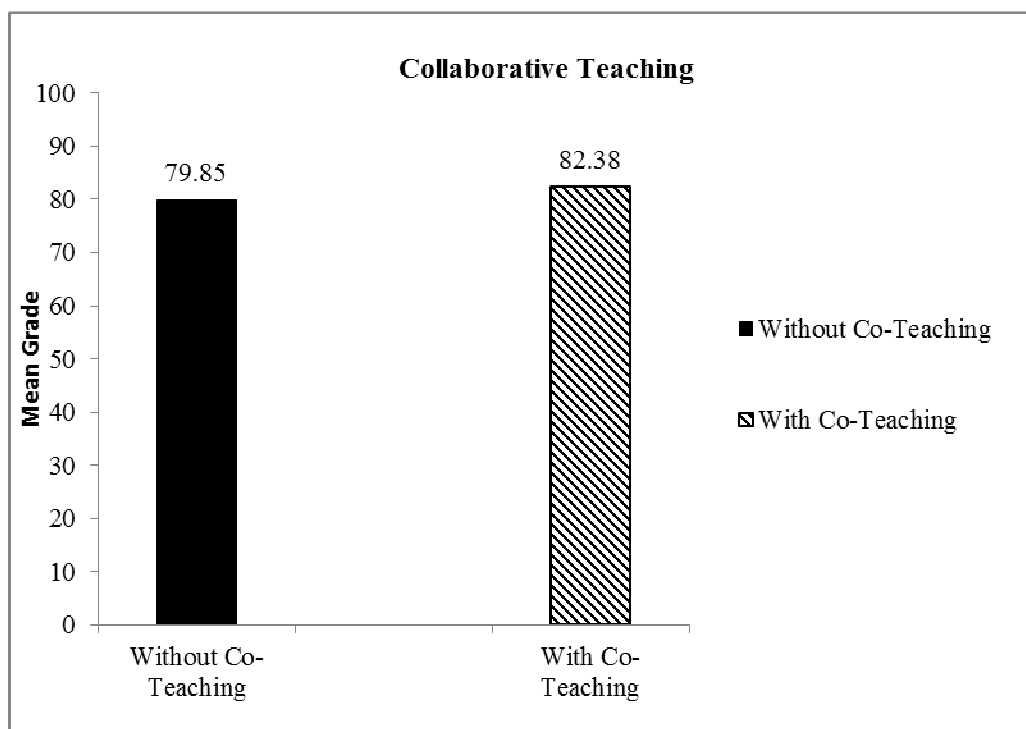


Figure 7. Means of Cumulative GPA of Non-Disabled Students without Co-Teaching and with Co-Teaching.

Academic Data Analysis; TAKS Assessment Scores

Mathematics data analysis; TAKS scores. The T-Test results show that there is a significant difference between TAKS scores for Mathematics without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.001$). Figure 8 illustrates the means of the scaled scores for Mathematics TAKS on the two collaborative teaching environments. Results indicate that the mean scaled scores for TAKS Mathematics in an environment with co-teaching are significantly higher than that of without co-teaching.

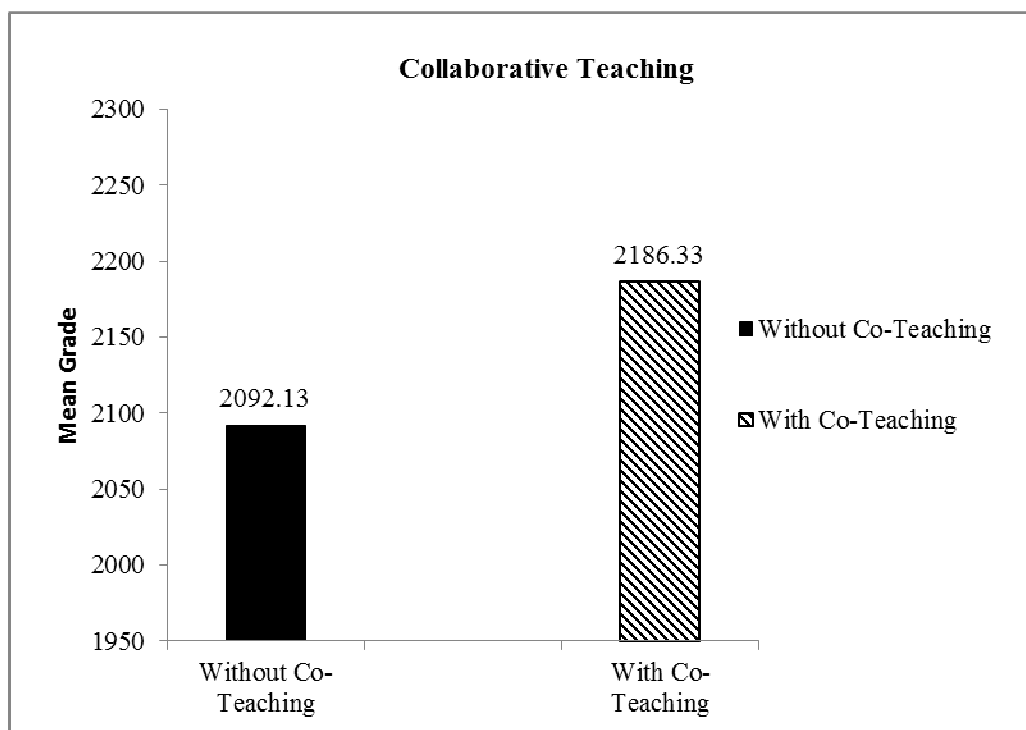


Figure 8. Means of TAKS Math Scaled Score of Non-Disabled Students without Co-Teaching and with Co-Teaching.

English Language Arts/Reading Data Analysis; Taks Scores

The results show that there is a significant difference between TAKS scores for English Language Arts/Reading without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.001$). Figure 9 illustrates the means of the scaled scores for English Language Arts/Reading TAKS on the two collaborative teaching environments. Results indicate that the mean scaled scores for TAKS English Language Arts in an environment with co-teaching (2224.93) are significantly higher than that of without co-teaching (2136.30).

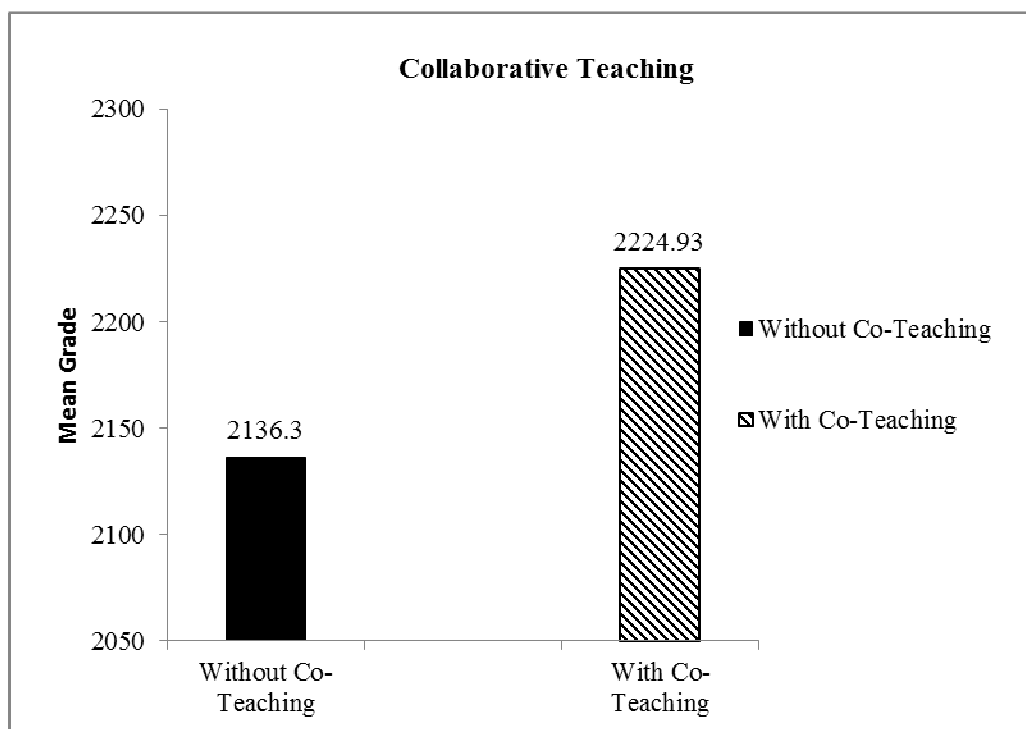


Figure 9. Means of TAKS ELA Scaled Score of Non-Disabled Students Without Co-Teaching and With Co-Teaching.

Discipline Data Analysis

Student behavior was the second focus that was examined in the research study. Student behavior was calculated by the number of disciplinary infractions a student accrued in one academic calendar year of not having a collaborative teacher to the following academic calendar year with having a collaborative teacher.

The T-Test results show that there is a significant difference between disciplinary infractions without co-teaching and with co-teaching at $\alpha=0.05$ ($P=0.032$). Figure 10 illustrates the mean number of infractions (referrals) on the two collaborative teaching environments (without and with co-teaching). This indicates that the mean number of

infractions of 1.03 with co-teaching is significantly lower than that of without co-teaching (1.73).

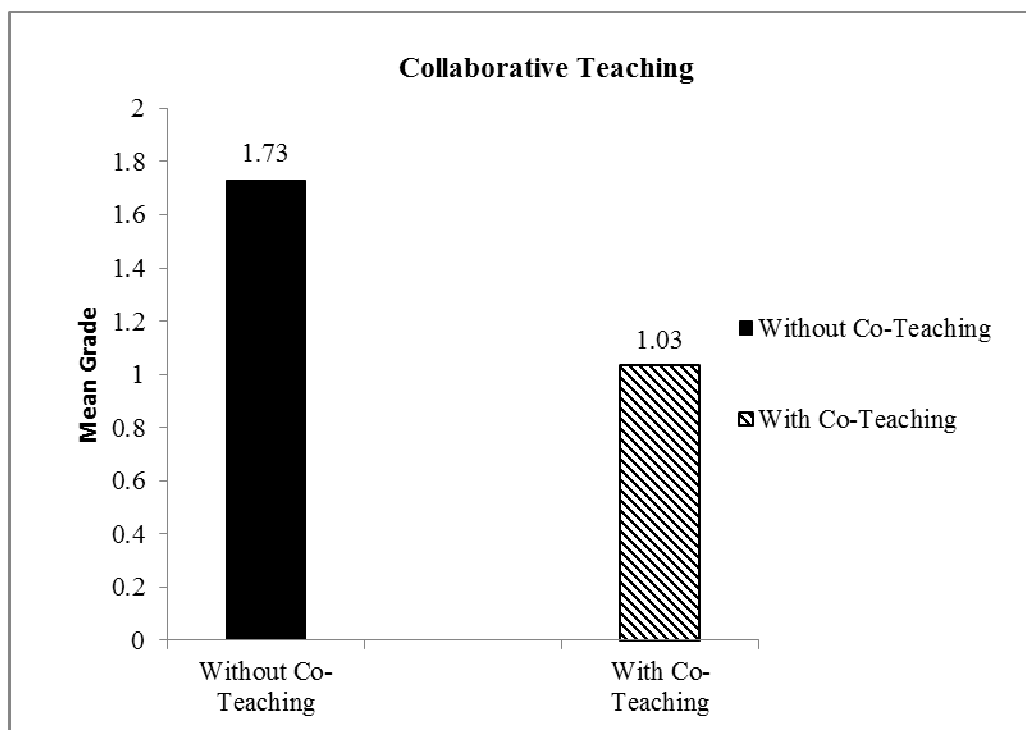


Figure 10. Means of Number of Disciplinary Referrals of Non-Disabled Students without Co-Teaching and with Co-Teaching

Attendance Data Analysis

Student attendance was the third focus that was examined in the research study. Student attendance was calculated by the number of absences a student accrued in one academic calendar year of not having a collaborative teacher to the following academic calendar year with having a collaborative teacher.

The T-Test results show that there is a significant difference between student absenteeism in a classroom without co-teaching and with co-teaching at $\alpha=0.05$

($P=0.037$). Figure 11 illustrates the mean number of absences on the two collaborative teaching environments (without and with co-teaching). This indicates that the mean number of absences of 2.34 with co-teaching is significantly lower than that of without co-teaching (3.05).

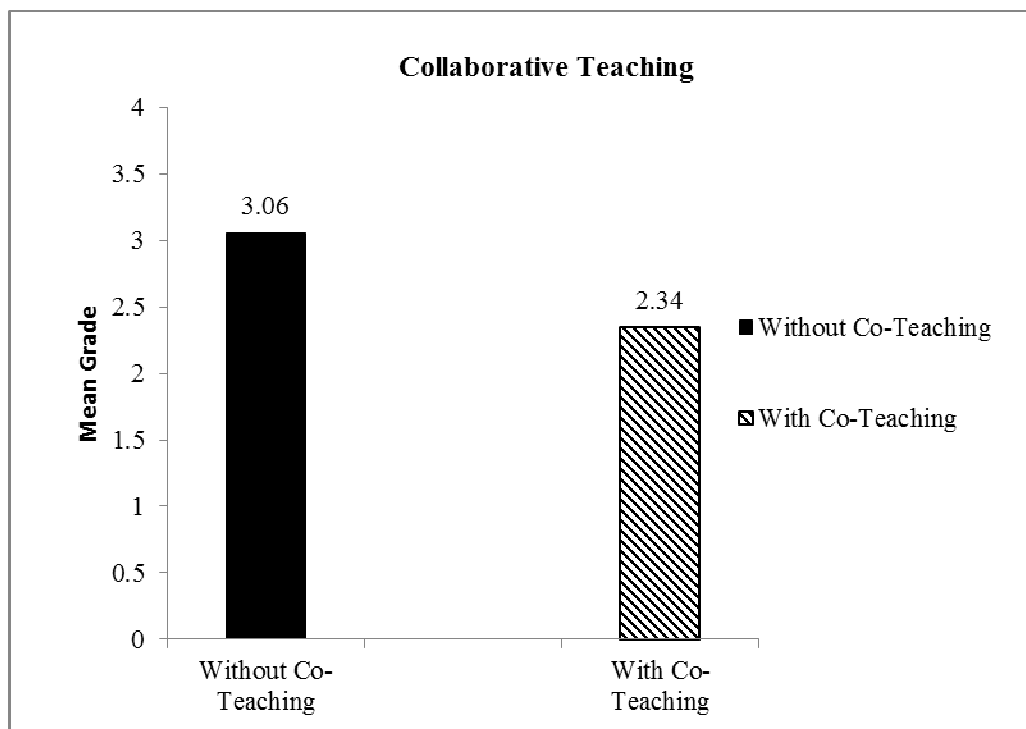


Figure 11. Means of Number of Absences of Non-Disabled Students without Co-Teaching and with Co-Teaching.

CHAPTER FOUR

DISCUSSION

Since the inception of the Individuals with Disabilities Education Act (IDEA) in the 1970s, there has been much debate as to how to effectively educate children with special needs. Some argue that special education students should spend their school days in a special resource room designed specifically for them, while others argue that the best option for special needs students is the process of inclusion, which places the student in the regular education classroom during the entire school day. Proponents of inclusion argue that this adaptation allows the student to socialize with students of the appropriate age level, contributes to reducing the social stigma which accompanies traditional pullout processes, and allows special education students the same educational opportunities as regular education students.

The purpose of this study is to analyze the effects of collaborative teaching on the general education population in relation to academics, behavior, and attendance. Research shows significant data and analysis on the processes, programs, and effects that collaborative teaching and inclusion have on the special education population. However, the research material is lacking when examining how special education services of collaboration affect general education students. This absence of data and research on how collaborative teaching effects the general education population is worthy of research and analysis. Does the process of collaboration between special education and general education teachers hinder or help the learning of general education students?

Theoretically, the instructional processes should be offered in association with each other, but in practice, there is not adequate research to determine if this contributory process detracts the general education learner's rate or success of learning. Although data and statistics show increased performance by special education students in the intellectual, social, and behavioral domains, research fails to confirm this on the general education population in an inclusive setting. Therefore, this study is being conducted to examine the general education students' affective and intellectual domain within an inclusive setting composed of special education and English language learner students.

There were eight specific areas that were focused upon in this study: Academics (grades for Math, grades for English Language Arts, grades for Science, cumulative grade point average, TAKS Math assessment, and the TAKS English Language Arts/Reading assessment), Discipline (number of disciplinary infractions), and Attendance (number of absences).

This study observed the eight areas across a two year period for two different study groups (9th-10th grade students and 10th – 11th grade students). There were fifteen students who were tracked starting in the 9th grade in a traditional non collaborative teaching environment and then moving forth onto the 10th grade into a collaborative teaching environment. The other group of fifteen students was tracked in the 10th grade in a traditional non collaborative teaching environment and then moving forth onto the 11th grade into a collaborative teaching environment.

A variety of test measures were used in order to ensure the authenticity and the accuracy of the results from the research study. Because this study is unique in its focus

and findings, the committee suggested multiple measures to be used in determining and cross checking the findings and results. A Paired Sample T-Test Analysis was used to determine if there were any significant differences in the areas of academics, discipline, and attendance. Chi-Square tests of goodness-fit were also used to validate the results of the T-Tests. Repeated Measures ANOVA was used to determine the effect of the groups on the performance of students academically (grades and TAKS), attendance (number of absences) and discipline (number of referrals) and its interaction with collaborative teaching.

Academics

In response to the first research question that assessed differences in the academic domain, the study found no statistically significant differences in the cycle grades of students for Mathematics and English Language Arts. However, the study found statistically significant differences in the cycle grades of students for Science, cumulative grade point averages, and TAKS Math and ELA/Reading assessment scores. Even though the study found two areas within the academic domain that had no significant differences, there were still incremental gains in both areas as shown in chapter 4.

It is interesting to note that students made considerable gains in Science (cycle grades) with co-teaching opposed to a single teacher environment. In Texas, yet alone the nation, Science has shown to be one of the weakest performing areas amongst urban public school students. According to an article written by Joanne Jacobs and Drop-Out Nation, 44% of public school students scored below basic in science on the 2009 National Assessment of Educational Progress. That is 15 percentage points below the

already abysmal science illiteracy rate of 29 percent nationwide. Fifty six percent of eighth-graders in big cities are scoring below basic in science. One out of every three students nationwide is scoring below basic in science. Two out of every three African-American students and half of Latinos scored below basic (Drop-Out Nation, 2011). The co-teach model may be worth considering in order to help improve the academic achievement level in Science for students in urban public schools.

Discipline

In response to the second research question that assessed differences in the discipline domain, the study found statistically significant differences in the number of disciplinary infractions committed by students. Disciplinary referrals reduced by 40% when students were in the collaborative teaching environment opposed to the traditional non collaborative teaching environment.

As discussed earlier, researchers (Logan, et al., 1995; Staub & Peck, 1995) have concluded that the inclusion of special education students created a caring and accepting community of learners as well as improved student learning for non-disabled peers. Staub and Peck (1995) identified five outcomes of inclusion for non-disabled students: (1) reduced fear of human differences accompanied by increased awareness, (2) growth in social cognition, (3) improvements in self-concept, (4) development of personal principles, and (5) warm and caring friendships. The literature cited supports the findings and results in the discipline domain of the research study.

Attendance

In response to the third research question that assessed differences in the attendance domain, the study found statistically significant differences in the number of absences amongst students. Student absenteeism reduced by 30% when students were in the collaborative teaching environment opposed to the traditional non collaborative teaching environment.

Absenteeism is detrimental to students' achievement, promotion, graduation, self-esteem, and employment potential. Clearly, students who miss school fall behind their peers in the classroom. This, in turn, leads to low self-esteem and increases the likelihood that at-risk students will drop out of school. According to Kid Source Online, truancy has been labeled one of the top ten major problems in this country's schools, negatively affecting the future of our youth. In fact, absentee rates have reached as high as 30 percent in some cities. The statistics speak for themselves.

- In New York City, about 150,000 out of 1,000,000 students are absent daily. School officials are unsure what portion of the absences are legitimately excusable.
- The Los Angeles Unified School District reports that 10 percent of its students are absent each day. A mere half of these students return with written excuses.
- Detroit's forty public school attendance officers investigated 66,440 truant complaints during the 1994-95 school year (Ingersoll and LeBoeuf 1997; Kid Source Online, 2000).

The school that was examined in this study is no stranger to being a part of the mentioned statistics above. According to the Houston Chronicle, High School “A” has been known as being a *Drop-Out Factory* in years past because of its ongoing drop-out rate and high amount of student absenteeism. In one year, the drop-out rate was diminished in half as student attendance was significantly higher. Not saying that the co-teach model was solely responsible for the school’s improvement, but it played a critical role in that process.

Conclusions

Recommendations. Recommendations are based on the literature review and the results from this research. In this archival record study, 30 high school students were included in the analysis of the data.

One limitation of the current study is the relatively small sample size (N=30). There is very little consistency in the professional literature regarding adequate sample size for determining statistically significant differences. Yet, Cochran (1963) suggests that a sample size less than 100 is deemed to be inadequate. The small sample size also limited the number of parameters that the researcher could investigate in terms of differences in student performance based on student demographic variables. Future investigations in determining statistically significant differences in student performance by demographic variables should aim to collect larger samples.

For many educators the practice of Inclusion remains clouded in controversy (Davis, 1989; Fuchs, Fuchs & Fernstrom, 1993; Klingner, Vaughn, Schumm, Cohen & Forgan, 1998). While much information can be found regarding the apparently favorable impact of inclusion on Students with Disabilities, little research addresses the potentially

negative impact on the general education (often referred to as regular education) students. It may be considered socially inappropriate, or politically incorrect, to “question such an important and sensitive topic that emphasizes the needs of the disabled,” and this may help to explain,” the paucity of data due to having to ask the risky questions” (Lewis, 2009).

The inclusive co-teach study was initially developed as a pilot program that high school “A” would conduct through one academic calendar year. School District “A” granted approval for the implementation of a full inclusion program to be developed with the understanding that if the data showed significant gains in regards to student achievement, then the program would be replicated across the district. The idea behind the research study was to close the achievement gap between special education and general education students. The research shows significant gains; therefore the replication of such a program would be highly advantageous for District “A”. The analysis from this research shows that both populations increased their academic performance significantly. These gains were seen in a high poverty and low socio-economic underperforming comprehensive high school with a diverse student population.

The inclusive co-teach model can be valuable to all educational settings composed of a variety of diverse learners. The co-teach model will help urban, suburban, and rural schools (1) increase the level of academic achievement, (2) decrease disciplinary infractions, and (3) decrease student absenteeism.

Implications for Further Research

The findings from this study have implications that may prove interesting for further research. The researcher's suggestions for further research include:

1. Expand the study to more than one urban comprehensive high school in order to increase the sample size.
2. Conduct the study in an urban school setting as well as a suburban school setting to compare the differences in student outcomes.
3. Expand the study to elementary, middle, and high schools in order to determine the impact within one school district.
4. Conduct a qualitative study with students to gain their perceptions of how the co-teach model impacted their academics, behavior, and attendance.
5. Conduct a qualitative study with teachers to gain their perceptions of how the co-teach model increased their effectiveness as an educator.
6. Expand the study to determine the impact of the co-teach model on academic performance of non-disabled students in comparison to students with disabilities.

Summary

When revisiting the purpose of the present study, the goal was to attain a deeper understanding of the co-teaching model and to assess its effectiveness across the general education student population in the areas of academics, discipline, and attendance.

Quantitative methods were used to examine group differences using a statistical analysis for each of the three domains. A major finding was that, across all three areas, the

collaborative teaching environment had a positive effect on the general education student population in the areas of academics, discipline, and attendance.

In order to determine if the co-teach model is conducive to learning for general education students, it was necessary to examine the different areas that have the most impact on student performance. Numerous studies indicate the effects of co-teaching, whether negative or positive for the special education population, but few fail to include the outcomes for the general education student population. The lack of research and focus is an enigma due to the fact that in the majority of all co-teaching classes there will always be a larger population of general education students than special education students. There is a significant importance of increasing the academic achievement of special education students, and there is no doubt that co-teaching may be the answer, but it has to be taken into consideration too that one cannot simply put more focus on one group more than the other. The general education student population demands the same amount of focus and attention in order to be successful, especially in an urban setting. This population of students continues to be isolated from studies, and research as the primary focus on co-teaching is, and always has been, on the special education student population. This study shows that a collaborative teaching system (if properly constructed and implemented) can have significant results for the general education student population in an urban public school setting.

The present study helped to gain an initial understanding of co-teaching practices and its outcomes on the general education student population who were integrated in a learning environment with special education students functioning at different intellectual levels. Making generalized statements about appropriateness of differentiated

instructional methods and successful delivery formats, amongst other factors, is simply not within the scope of this study. Student and teacher surveys were conducted to gain a deeper understanding of the perceptions from the students and teachers in regards to the co-teaching model. Further research is needed to answer the multitude of questions that this initial study has suggested for future exploration.

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APPENDIX A

COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS



UNIVERSITY of HOUSTON

COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS

April 18, 2011

Mr. Kregg Cuellar
c/o Dr. Cameron White
Curriculum and Instruction

Dear Mr. Cuellar:

Based upon your request for exempt status, an administrative review of your research proposal entitled "The Effect of collaborative Teaching on the general Education Student Population: A Case Study" was conducted on April 11, 2011.

At that time, your request for exemption under **category 4** was approved pending modification of your proposed procedures/documents.

The changes you have made adequately respond to the identified contingencies. As long as you continue using procedures described in this project, you do not have to reapply for review.* Any modification of this approved protocol will require review and further approval. Please contact me to ascertain the appropriate mechanism.

If you have any questions, please contact Alicia Vargas at (713) 743-9215.

Sincerely yours,

A handwritten signature in cursive script that reads "Enrique Valdez, Jr.".

Enrique Valdez, Jr.
Research, Research Compliance

*Approvals for exempt protocols will be valid for 5 years beyond the approval date. Approval for this project will expire **March 1, 2016**. If the project is completed prior to this date, a final report should be filed to close the protocol. If the project will continue after this date, you will need to reapply for approval if you wish to avoid an interruption of your data collection.

Protocol Number: 11338-EX

APPENDIX B
STUDENT AND TEACHER SURVEY

Student Survey Integrated Co-Teaching 2009-2010

Student Survey

High School "A" wants to hear from our students. We want to know how you feel about being in a co-teach class with 2 teachers.

As you complete this survey think about all of the co-teach classes in which you have 2 teachers.

1. I enjoy having 2 teachers in my co-teaching classes.

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

2. I feel like I learn more with having 2 teachers in the classroom.

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

3. I get more help in my co-teaching classes than in my classes taught by just 1 teacher.

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

4. All students are treated as equals in my co-teaching classes.

- Strongly Agree
- Agree
- Neutral

- Disagree
- Strongly Disagree

5. I like the variety of activities the teachers use in these classes.

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

6. The class is better behaved when there are 2 teachers.

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

7. I think I learn much more when I have 2 teachers.

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

8. I don't think it made a difference in my learning having two teachers in the classroom.

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

9. I would like all content classes to have 2 teachers.

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

10. I feel comfortable working with both teachers in the classroom.

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

Teacher Survey Integrated Co-Teaching 2009-2010

Teacher Survey

High School "A" wants to hear from our teachers. We want to know how you feel about teaching a co-teach class.

- 1. I believe that the co-teach model in my classroom is effective.**
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

- 2. Collaboration (planning and preparation) between the general education teacher and special education is very productive and effective.**
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

- 3. The students' performance has improved as a result of having 2 teachers in the classroom.**
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

- 4. I believe the current co-teach model needs to be modified.**
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

5. The teachers get all the support they need.

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

6. I believe the co-teach model should continue.

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

7. The strategies being implemented in the co-teach class are very effective.

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

8. I believe the co-teach class has bridged the gap between the general education and special education teachers.

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

9. I would love to teach another co-teach class.

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

10. The communication between the general education teacher and the special education teacher is good.

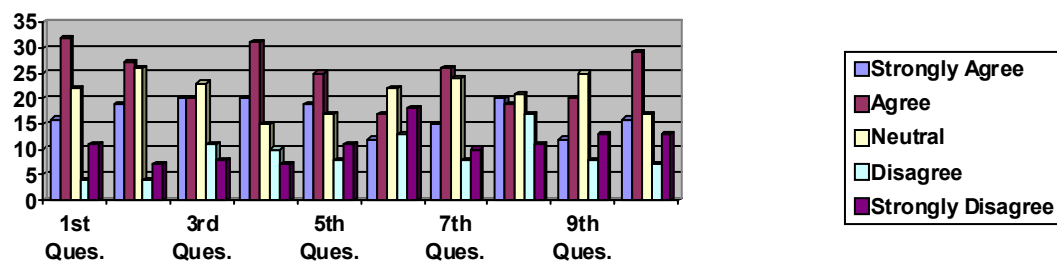
- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

11. I have great respect for my co- teacher.

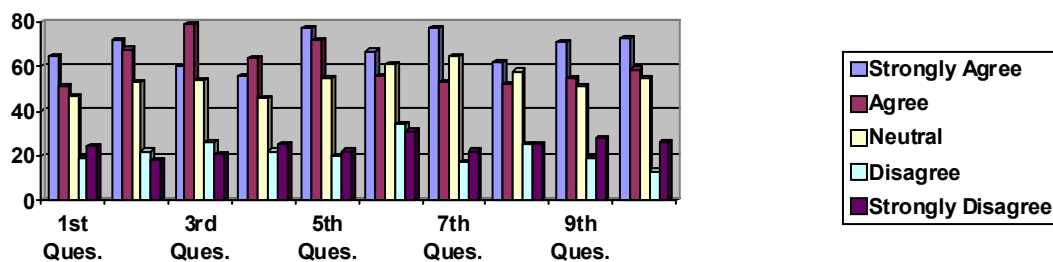
- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

What recommendations would you suggest to improve the co-teach model.

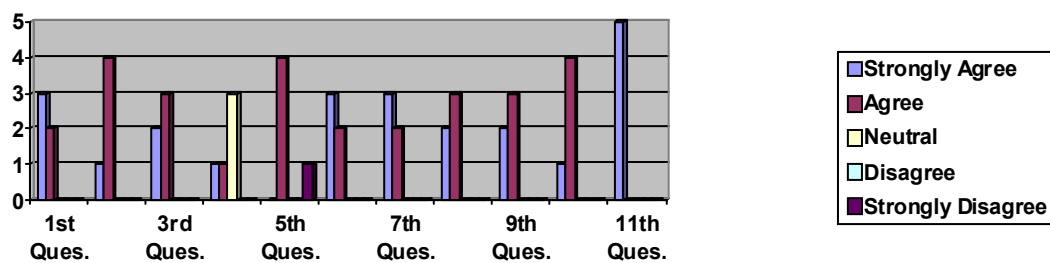
Special Education Student Survey Response



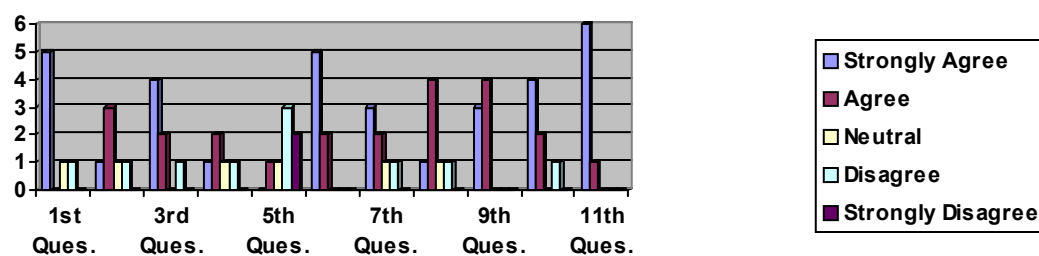
General Education Student Survey Response



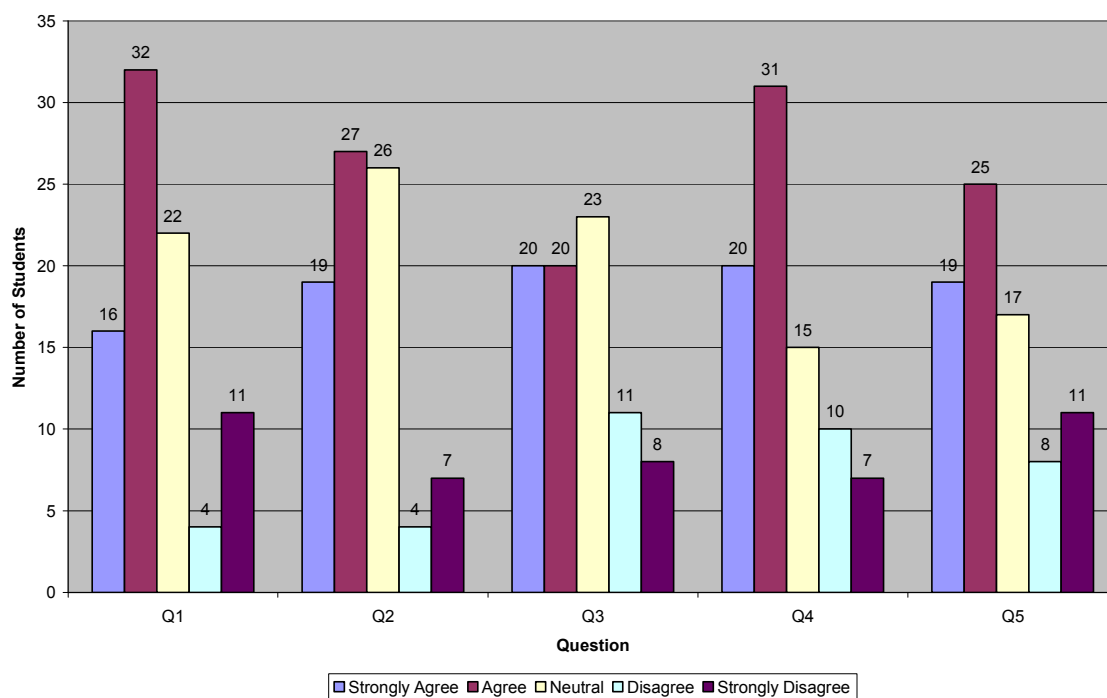
Special Education Teacher Survey Response



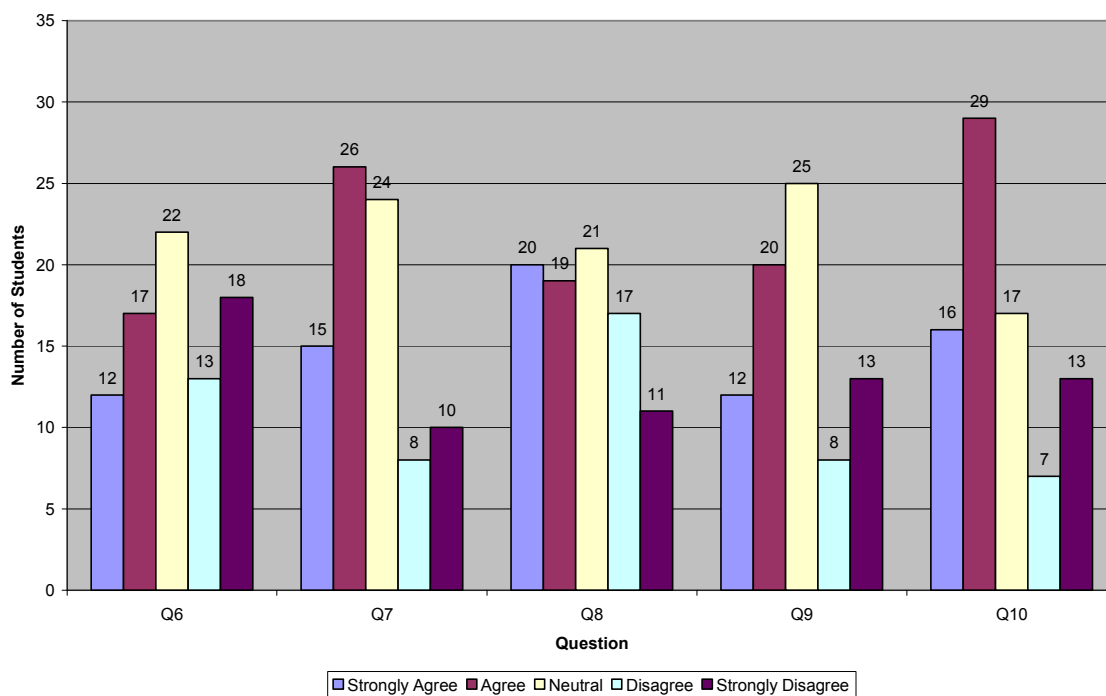
General Education Teacher Survey Response



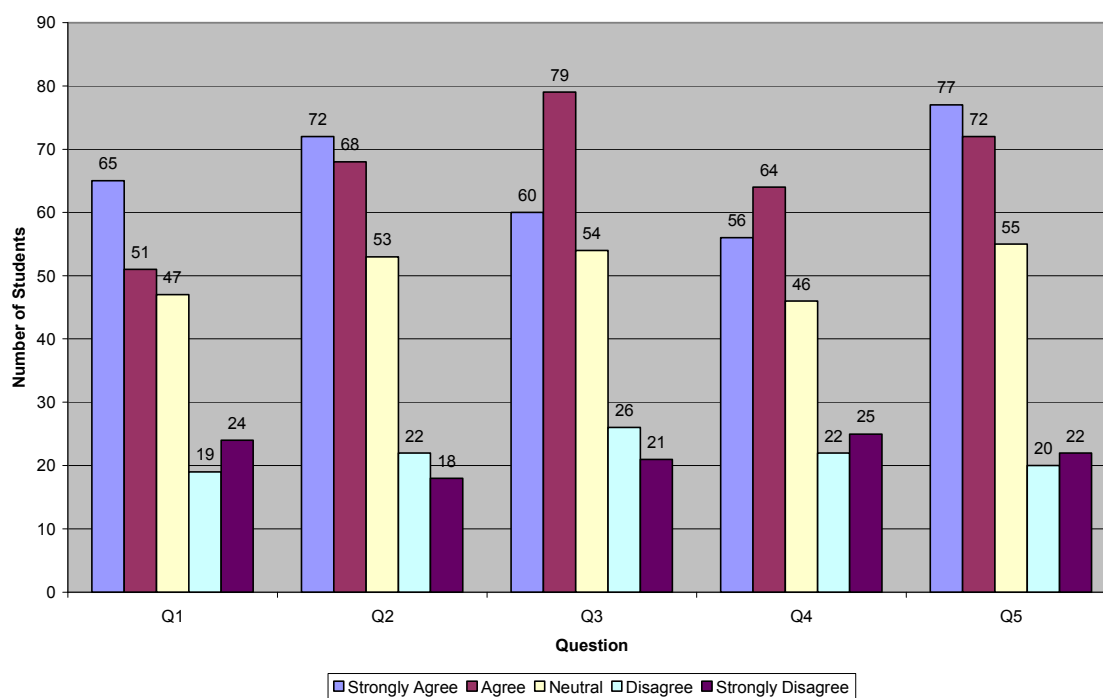
Special Education Students Responses on Questions 1-5



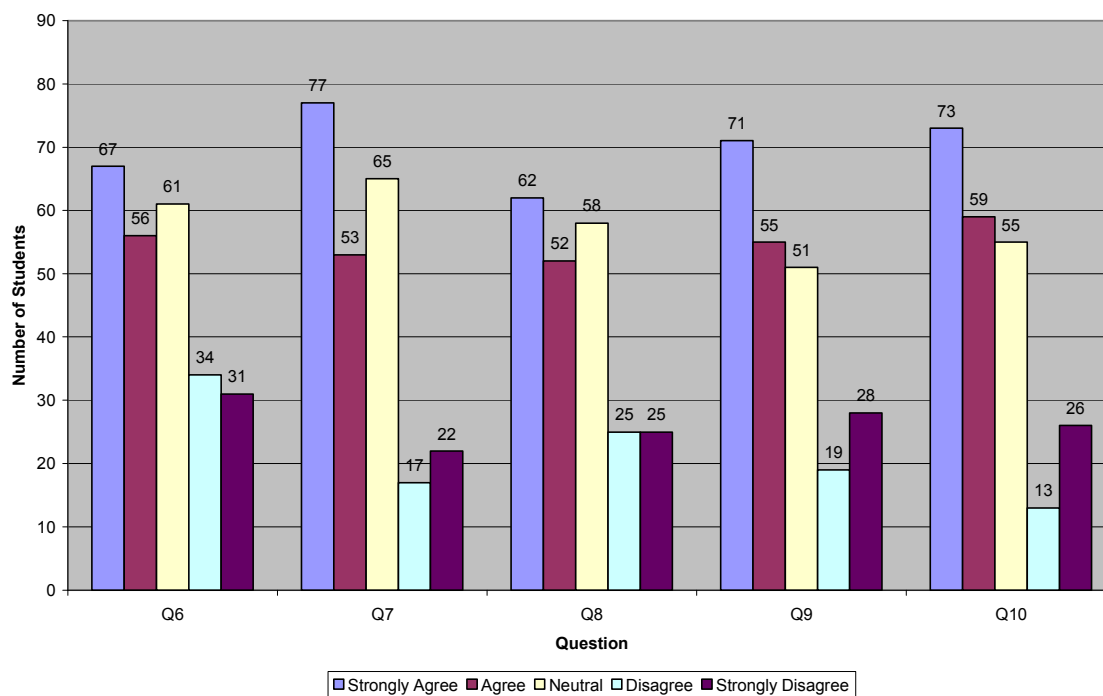
Special Education Students Responses on Questions 6-10



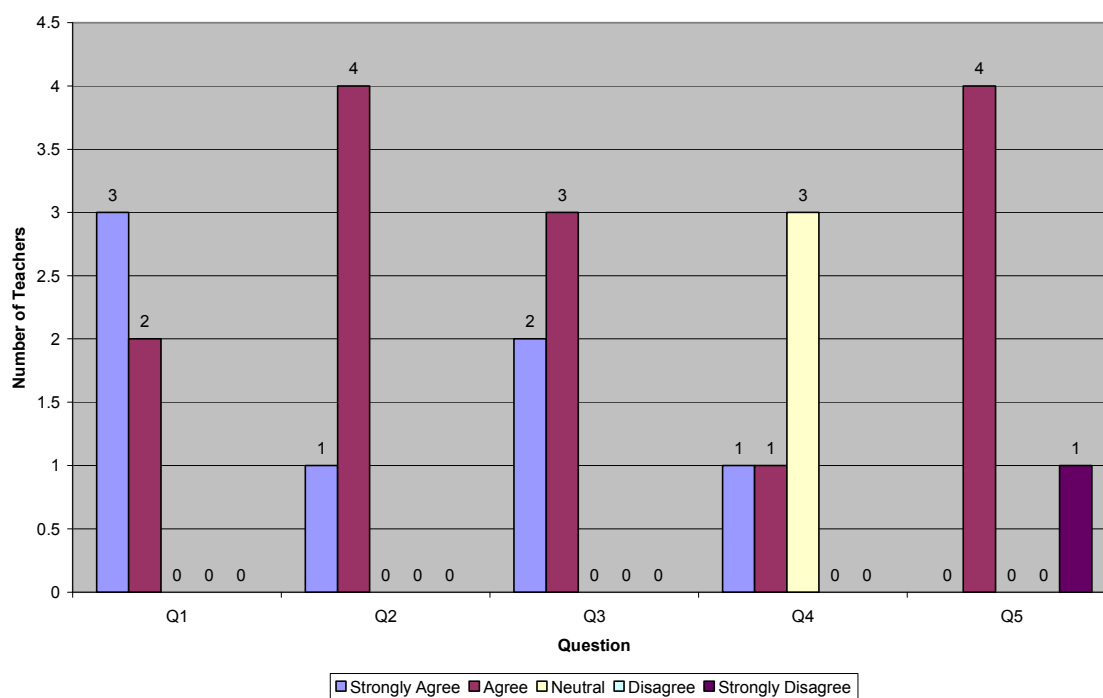
General Education Students Responses on Qestions 1-5



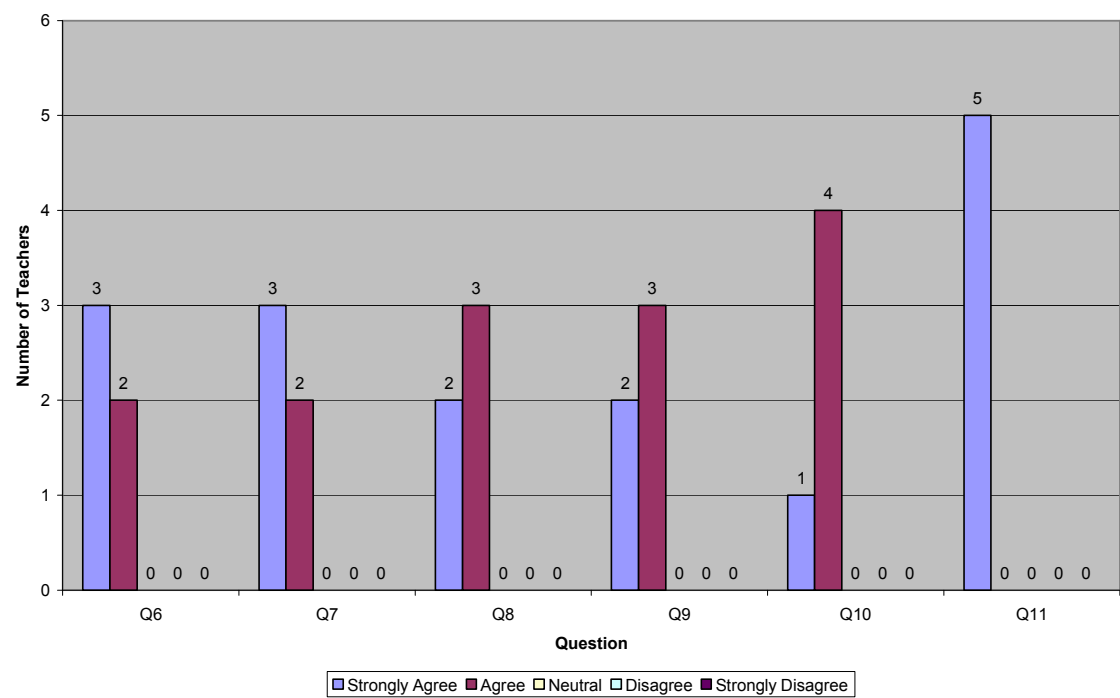
General Education Students Responses on Questions 6-10



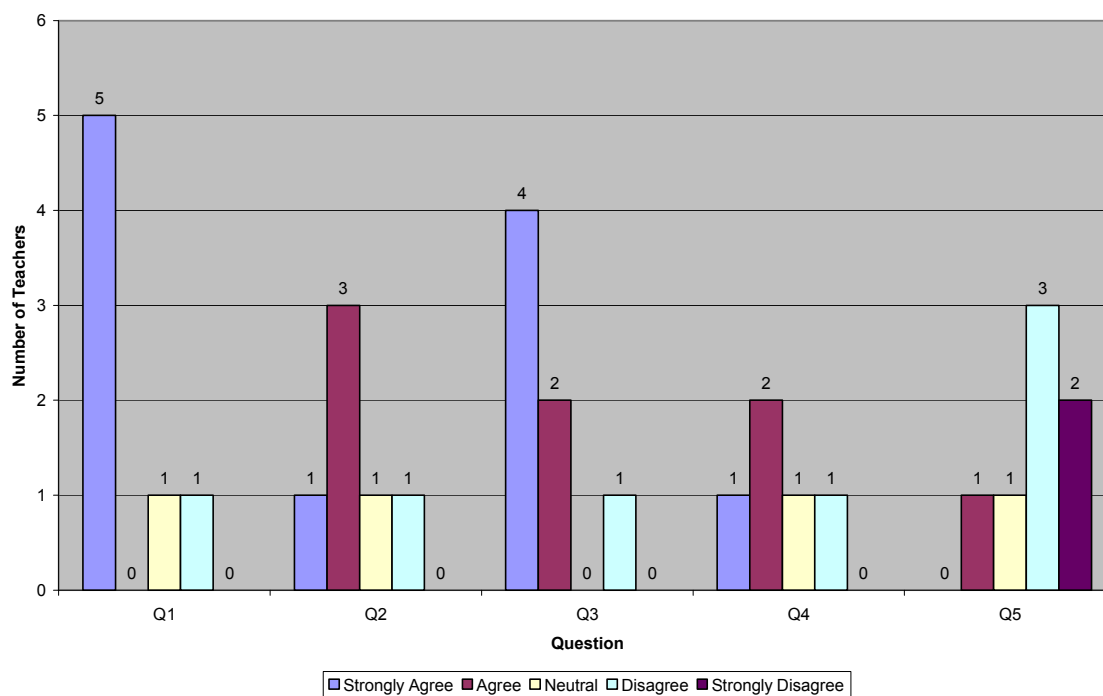
Special Education Teachers Responses on Questions 1-5



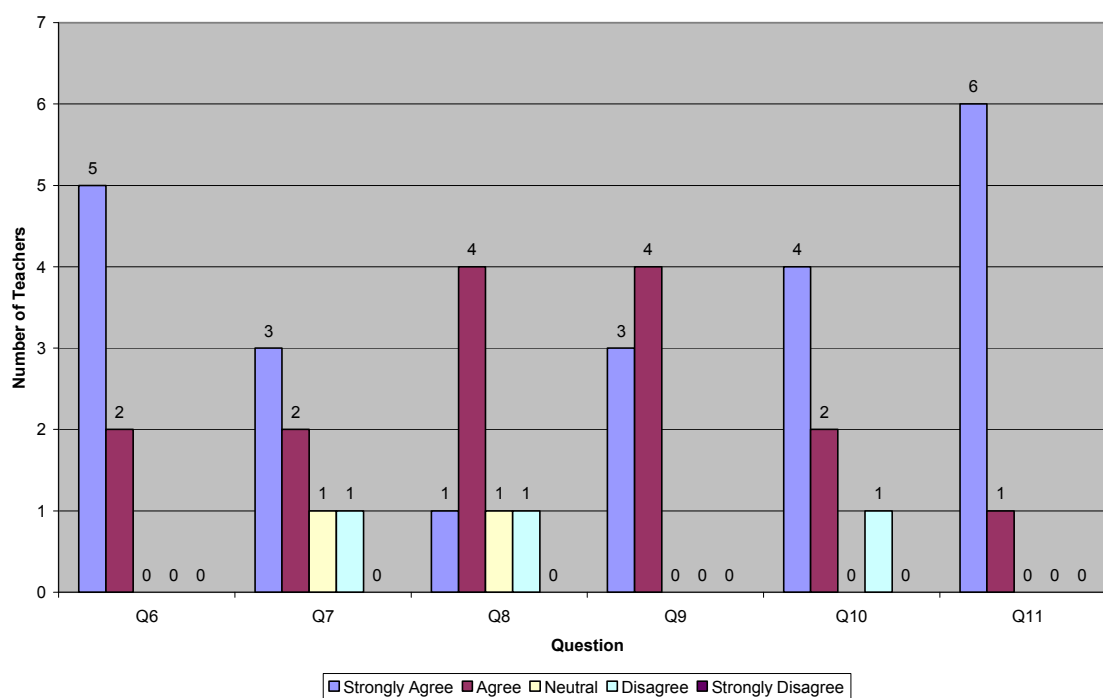
Special Education Teachers Responses on Questions 6-11



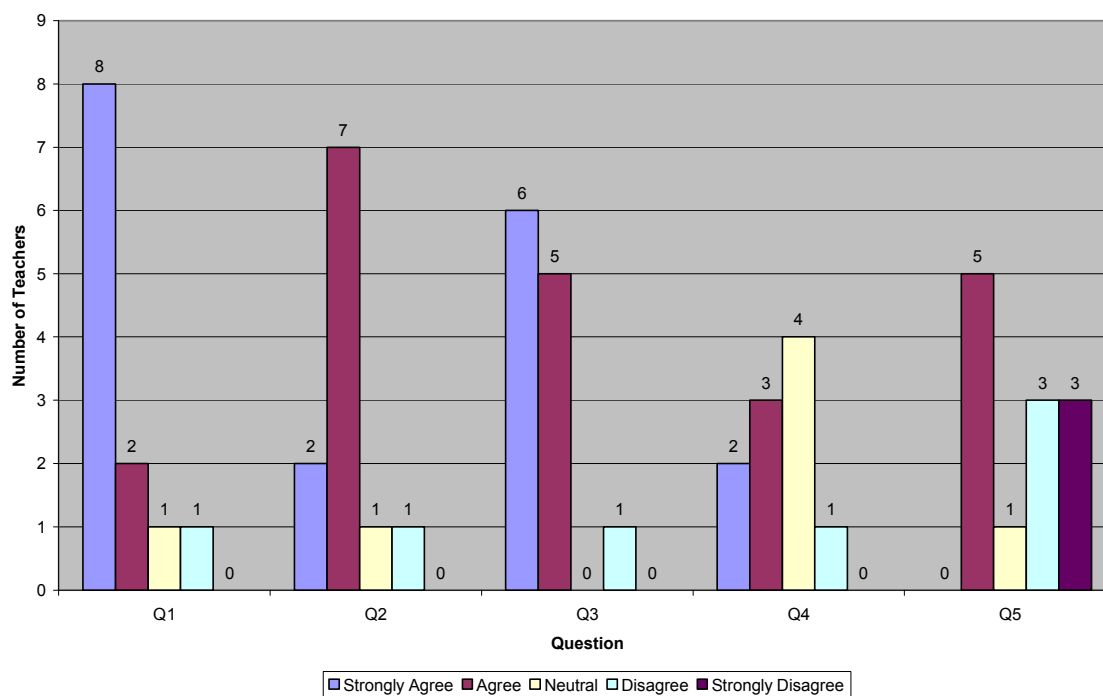
General Education Teachers Responses on Questions 1-5



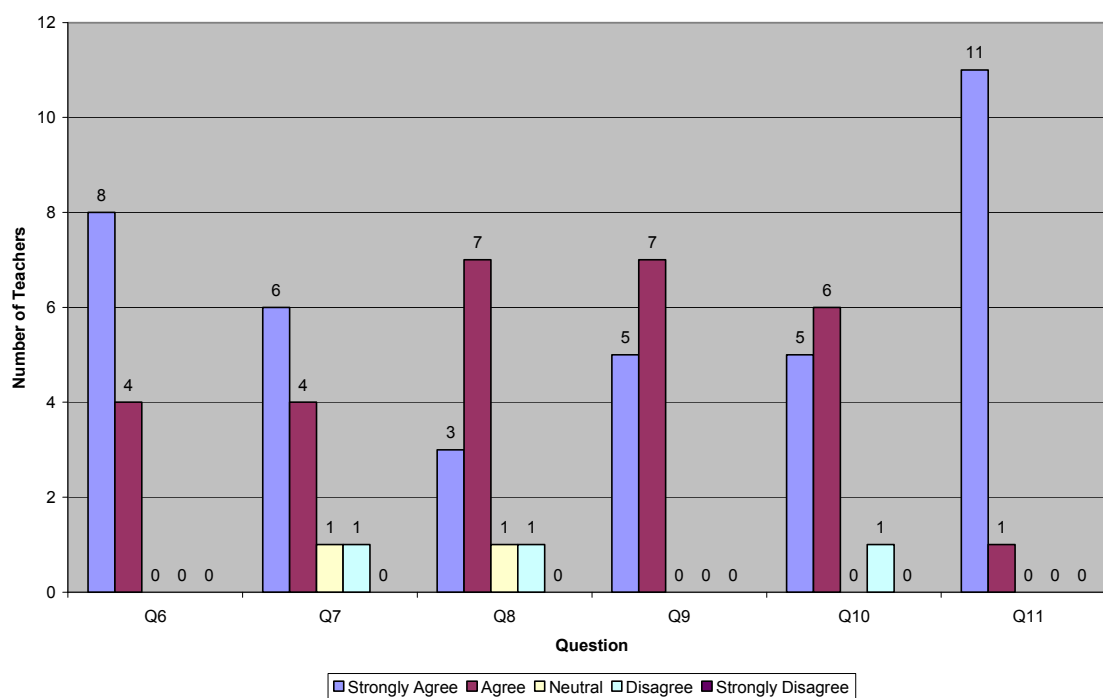
General Education Teachers Responses on Questions 6-11



Teachers (Combined) Responses on Questions 1-5



Teachers (Combined) Responses on Questions 6-11



APPENDIX C
SPSS OUTPUTS (STATISTICAL ANALYSES)

T-Test

Notes

Output Created		19-Apr-2011 13:02:42
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data	30
	File	
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST PAIRS=Absb4 refb4 grdengb4 grdmathb4 grdscib4 grdavgb4 takselab4 taksmathb4 WITH Absaf refaf grdengaf grdmathaf grdsciaf grdavgaf takselaaaf taksmathaf (PAIRED) /CRITERIA=CI(.9500) /MISSING=ANALYSIS.
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.032

[DataSet2]

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Absb4	3.0583	30	1.69072	.30868
	Absaf	2.3375	30	1.72493	.31493
Pair 2	refb4	1.73	30	3.028	.553
	refaf	1.03	30	1.956	.357
Pair 3	grdengb4	80.8833	30	4.55225	.83112
	grdengaf	82.7667	30	5.61246	1.02469
Pair 4	grdmathb4	81.7167	30	6.42454	1.17296
	grdmathaf	82.4167	30	7.19355	1.31336
Pair 5	grdscib4	76.9583	30	6.18434	1.12910
	grdsciaf	81.942	30	5.5296	1.0096
Pair 6	grdavgb4	79.8527777777	30	4.46654675455	.815476137206
		7780		2145	567
	grdavqaf	82.38	30	5.141	.939
Pair 7	takselab4	2136.30	30	125.003	22.822
	takselaaf	2224.93	30	74.979	13.689
Pair 8	taksmathb4	2092.13	30	121.067	22.104
	taksmathaf	2186.33	30	100.900	18.422

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Absb4 & Absaf	30	.440	.015
Pair 2	refb4 & refaf	30	.852	.000
Pair 3	grdengb4 & grdengaf	30	.203	.281
Pair 4	grdmathb4 & grdmathaf	30	.359	.052
Pair 5	grdscib4 & grdsciaf	30	.598	.000
Pair 6	grdavgb4 & grdavqaf	30	.558	.001
Pair 7	takselab4 & takselaaf	30	.140	.460
Pair 8	taksmathb4 & taksmathaf	30	.293	.116

Paired Samples Test

		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean
Pair 1	Absb4 - Absaf	.72083	1.80716	.32994
Pair 2	refb4 - refaf	.700	1.705	.311
Pair 3	grdengb4 - grdengaf	-1.88333	6.46834	1.18095
Pair 4	grdmathb4 - grdmathaf	-.70000	7.73773	1.41271
Pair 5	grdscib4 - grdsciaf	-4.98333	5.28536	.96497
Pair 6	grdavgb4 - grdavgaf	-	4.55568638257	.831750732217
		2.52222222222	1498	840
		2212		
Pair 7	takselab4 - takselaaaf	-88.633	136.462	24.914
Pair 8	taksmathb4 - taksmathaf	-94.200	132.930	24.270

Paired Samples Test

		Paired Differences		t
		95% Confidence Interval of the Difference		
		Lower	Upper	
Pair 1	Absb4 - Absaf	.04603	1.39564	2.185
Pair 2	refb4 - refaf	.063	1.337	2.249
Pair 3	grdengb4 - grdengaf	-4.29865	.53198	-1.595
Pair 4	grdmathb4 - grdmathaf	-3.58931	2.18931	-.496
Pair 5	grdscib4 - grdsciaf	-6.95692	-3.00975	-5.164
Pair 6	grdavgb4 - grdavgaf	-	-	-3.032
		4.22334347461	.821100969824	
		9550	873	
Pair 7	takselab4 - takselaaaf	-139.589	-37.677	-3.558
Pair 8	taksmathb4 - taksmathaf	-143.837	-44.563	-3.881

Paired Samples Test

		df	Sig. (2-tailed)
Pair 1	Absb4 - Absaf	29	.037
Pair 2	refb4 - refaf	29	.032
Pair 3	grdengb4 - grdengaf	29	.122
Pair 4	grdmathb4 - grdmathaf	29	.624
Pair 5	grdscib4 - grdsciaf	29	.000
Pair 6	grdavqb4 - grdavqaf	29	.005
Pair 7	takselab4 - takselaf	29	.001
Pair 8	taksmathb4 - taksmathaf	29	.001

APPENDIX D

CO-TEACHING SPECIAL EDUCATION STUDENT OUTCOMES

Co-Teaching Special Education Student Outcomes

