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The Impact of Co-Teaching on the Graduation Test Scores of Students with Disabilities

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Abstract

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MA, Louisiana State University, 1997

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

According to the U.S Department of Education, co-teaching is an intervention used to give students with disabilities access to the general education curriculum while in the general education classroom. It's necessary to evaluate the effectiveness of co-teaching as it relates to academic performance. However, there has been a dearth of research on quantitative studies related to co-teaching and their results have been inconclusive. This quantitative study explored whether co-teaching has a positive effect on academic performance compared to collaborative teaching, and adds to the literature in this area that is considered current. On an annual basis from 2002 to 2011, junior and senior students from each school district in Georgia were given the GHSGT. Descriptive statistics were performed on the demographics of the respondents, including gender and ethnicity. The Mann-Whitney U Test was performed to evaluate if there were significant GHSGT mean scores differences between the co-teaching and collaborative class settings. Results indicated that students with disabilities performed better in the collaborative setting in math, English, and writing; and students in the co-teaching setting did not perform better than students in the non co-teaching setting in all subject areas. These results support that co-teaching is not meeting the needs of all students with disabilities (SWD) in this school district. Butts County education professionals may want to use this research to help guide them in designing a special education program that focuses on the needs of the SWD and how to meet those needs. This study contributes to positive social change because it supports previous research that concludes the needs of all SWD are not being met. More research still needs to be conducted to determine how to meet the needs of these students.

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CHAPTER 1: Introduction to the Study

Introduction

Co-teaching is a process that involves two teachers taking on the shared responsibility of classroom instruction (Wilber, 2007). According to the U.S Department of Education (2004), co-teaching is an intervention used to give students with disabilities access to the general education curriculum while in the general education classroom instead of being separated in special education classrooms. This approach to teaching was introduced as a conceptual framework within the progressive movement, which became the "open classroom", a child centered movement of the 1960's (Wilber, 2007). However, co-teaching did not become a widespread educational practice in the United States until after the passage of the Individuals with Disabilities Education Act (IDEA) in 1990, which stipulated that all students must be given the opportunity to be involved with the general education curriculum (U.S. Department of Education, 2004).

After the re-authorization of the Individuals with Disabilities Education Act (IDEA) in 2004, the resulting increase in co-teaching in the classrooms, the limited number of current quantitative studies on co-teaching, and the inconclusive nature of the few quantitative studies that have been done on co-teaching among students with disabilities, it has become necessary to evaluate the effectiveness of co-teaching as it relates to academic performance. Other researchers (Nichols & Nichols, 2010; Zigmond & Magiera, 2001) indicated that more research is needed to determine what affects co-teaching has on academic performance. The researchers sited the increase in the number of co-teaching classrooms in the U.S., along with the need for reliable and consistent

results regarding the effectiveness of co-teaching as reasons for the need for additional research. Hightower (2014) and Walker's (2013) own literature review yielded an additional four quantitative studies on co-teaching conducted from 2013 to 2014. There has also been a significant increase in the prevalence of co-teaching classrooms in the U.S. since the reauthorization of IDEA (Hanover, 2012).

Finally, results from quantitative studies that have assessed the effects of co-teaching for students with disabilities have been inconclusive. Walker (2013) determined in a pretest-posttest design that students' scores did increase from the pre-test to the post-test, but the increase was not statistically significant. Hightower (2014) also found that students with disabilities experienced increases in academic performance, but the increase was not statistically different from the academic performance of students taught in resource classrooms. O'Neal (2013) found that there was no statistically significant difference in academic performance between students who were co-taught and students who were in non –co-taught classrooms. However, Nash-Aurand (2013) found that students in co-taught settings had significantly higher academic performance scores than students in resource settings.

Findings from this research could be used by academic decision makers at the local, state, and federal levels to advocate for the continued or for increasing the use of co-teaching as an instructional delivery method. Results from this study could also be used to further the current knowledge regarding the efficacy of co-teaching related to improving the academic performance of students with special needs.

This chapter is divided into 10 sections. First, the background section will

summarize the research literature and describe the gaps in knowledge in the area of co-teaching and academic performance among students with disabilities. The problem statement section will contain the research problem and summarize evidence of consensus that the problem is current, relevant and significant. The section on the purpose of the study will describe the intent of the study and provide a description of the independent and dependent variables. The next section will contain the research questions and a description of the null and alternative hypothesis. The following section will contain a description of the theoretical framework for the study, and will be followed by sections that present the nature of the study, definition of terms, assumptions, and scope of the study. The final three sections in this chapter will consist of the limitations, significance of the study, and the Chapter 1 summary.

The concept of co-teaching was introduced in seminal work by Cook and Friend (1995). Their goal was to devise co-teaching models that emulated the special education model inside the general classroom. Cook and Friend (1995) introduced five models of co-teaching. Those models included one teaches/one assists, station teaching, parallel teaching, alternating teaching, and team teaching. Bacharach et. al. (2008) added two additional models to the original work of Cook & Friend (1995), which were supplemental teaching and one teach/one observe. The models are all alternative options to the special education model where students are taught outside of the general classroom setting (Cook & Friend, 1995). All of these models will be described in detail in Chapter 2.

The co-teaching model was derived from the need to have SWD remain inside the

general classroom, but also receive the additional assistance they received in the traditional special education classroom (Cook and Friend, 1995). The special education classroom consisted of smaller class sizes with more one-on-one teacher interaction. Several studies have investigated the impact of co-teaching on academic performance. For example, Carter (2007) found that state academic performance scores (i.e. classroom grades) for students who were co-taught increased in some subjects but scores did not change for other subjects. Magiera and Zigmond (2005) found that there were no significant difference in course grades between students who were co-taught and students who were not co-taught. Wischnowski et. al. (2004) saw educational gains in students who were co-taught in their longitudinal study of two years, but they did not have a control group for comparison. So, not having a control group to serve as a comparative baseline was a methodological weakness in their study. Fore et. al., (2008) also found mixed results in their quantitative study where students who were co-taught did not perform any better than students who were not co-taught in math and reading achievement tests, but did perform better in a literature achievement class. Each of the aforementioned studies will be reviewed in more detail in chapter 2.

Problem Statement

Students with disabilities access to the general education curriculum has been a problem for public schools (Hanover, 2012; Nichols & Nichols (2010). According to the seminal work by Wilber (2007), in order to combat this problem, students with disabilities (SWD) should be educated in the least restrictive environment (LRE). The LRE has fewer restrictions for students to be educated with their non-disabled peers.

These fewer restriction provides SWD greater access to the general education curriculum. Co-teaching is one avenue or intervention to allow SWD to access the general education curriculum in the LRE (Wilbur, 2007). Based on a review of the literature by the author of this current study, co-teaching appears to be a response to the implementation of IDEA to include special education students into the general education setting. There have been very few studies that have quantitatively examined the effect of co-teaching on academic performance. Additionally, of the studies that have been conducted, only a handful were performed in the last five years and those studied have been theses and dissertations (Hightower, 2014). In addition, results from the few quantitative studies relating to co-teaching and its impact on academic performance have been inconclusive (Hightower, 2014; Nash-Aurand, 2013; O'Neal, 2013, Walker, 2013). With the re-authorization of the Individuals with Disabilities Education Act (IDEA) in 2004 and the development of several different co-teaching models, it's necessary to evaluate the effectiveness of co-teaching as it relates to academic performance. This study will explore whether co-teaching has a positive effect on academic performance compared to collaborative teaching, and add to the body of literature in this area, as there is no published research on collaboration as defined in this study.

Purpose of the Study

The purpose of this quantitative, archival study is to determine if there are significant differences in academic achievement between special education students who are taught in co-teaching and collaborative teaching settings. With the collaborative setting, the special education teacher must be in the general classroom at last 50% of the

time (Debra Patterson, Personal Communication, 2006; Hightower, 2014). However, for co-teaching the special education teacher must be in the general classroom at last 80% of the time (Debra Patterson, Personal Communication, 2006; IDEA, 2004; Hightower, 2014). The independent variable in this study will be classroom setting, and there will be two classroom settings: co-teaching and collaborative teaching. The dependent variable will be the percentage of student in each classroom setting who pass the Georgia High School Graduation (GHSG) Test during the years 2002 to 2011. This time period was chosen because after 2011, it was not mandatory that all students take the GHSG. Therefore, the sample population after 2011 is different from the sample population between 2002 and 2011. Additionally, SWD and SWOD will be compared on mean scores of the Georgia High School Graduation Test. The independent variable in this analysis will be student disability status, where the two categories are students without a disability (SWOD) and students with a disability (SWD).

Research Question(s) and Hypothesis

R1. What are the differences in the mean scores on the GHSGT for SWD who were taught in co-teaching (academic testing years 2007-2011) academic classes compared to those SWD who were taught in collaborative classes (academic testing years 2002-2007)?

$H_0$1: There is no statistically significant difference in the mean score on the GHSGT between SWD who were taught in co-teaching classrooms (academic years 2007-2011) and SWD who were taught in collaborative classrooms (academic testing years 2002-2007).

H_a1: There is a statistically significant difference in the mean score on the GHSGT between SWD who were taught in co-teaching classrooms (academic years 2007-2011) and SWD who were taught in collaborative classrooms (academic testing years 2002-2007).

R2. Is there a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in a non co-teaching class settings?

H_02: There is no significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in non co-teaching class settings.

H_a2: There is a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in non co-teaching class settings.

Theoretical Foundation for Study

Progressivism is the guiding theoretical foundation for this study. Progressivism posits that progress and individuality are fundamental to one's education (Knoester, 2012). Meaning, there is respect for diversity of culture, ideas, abilities, needs, and interests, and that these various diversities should be embraced in the mainstream classroom. Under the progressive educational theory, students would not be separated out of the classroom because they were different in culture, ideas, ability, needs, or interests (Knoester, 2012). John Dewey started the progressive education movement back in the 1830's. Dewey's educational theory is to be distinguished from the traditional Euro-

American curricula of the 19th century, which was rooted in the classical preparation of the University (Electronic Encyclopedia of Chicago, 2005). Because the traditional Euro-American curriculum focused on University preparation, the mainstream classroom was geared toward providing a curriculum that prepared individuals for college. The curriculum suited the needs of individuals who had interests and abilities that would lead to them going to college. All other students either dropped out of school or were moved outside of the mainstream classroom to receive remedial assistance (Electronic Encyclopedia of Chicago, 2005).

The concept of co-teaching evolved from the reintroduction of the Progressive Movement in the form of the open classroom movement of the 1960's (Electronic Encyclopedia of Chicago, 2005). Co-teaching addresses the first of Dewey's elements essential to Progressivism, that is diversity of culture, ideas, abilities, needs, and interests should be embraced in the mainstream classroom. Co-teaching enables teachers to diversify or differentiate the classroom instruction. Differentiation is the philosophy of giving students different paths to learning based on their readiness levels (Ellis, Gable, & Gregg, 2008). Thus, co-teachers are able to give individual students what they need to be successful learners. This is what Dewey sought through his philosophy of embracing diversity of culture, ideas, needs, and interests. With the increase of co-teaching classrooms, Progressivism is at a high point currently.

Nature of the Study

This quantitative study will utilize a cross-sectional, archival design to assess whether there are significant differences in academic achievement among SWD in the

co-teaching and collaborative classroom settings. The utilization of the cross-sectional design is consistent with previous research studies that have advanced knowledge in this area. These include studies by Walker, (2013), O'Neal, (2013), Hightower, (2014), and Nash-Aurand, (2013). Cross-sectional designs are observational in nature as there is no manipulation of the study environment. Instead differences are observed and recorded as they exist between groups. In this example, the co-teaching and collaborative classrooms were not randomly assigned or manipulated and are simply being observed.

The independent variable in this study will be classroom setting. There will be two levels of classroom setting: co-teaching and collaborative teaching. Classroom setting will be a nominal variable as the numbers assigned to the two groups will only serve as labels. The dependent variable will be mean scores on the Georgia High School Graduation Test (GHSGT) from 2002 to 2011. These mean scores will include those from the five subtests, which are English Language Arts, Social Studies, Science, Math, and Writing. The dependent variable, GHSGT mean scores, will be a ratio variable as the mean scores are continuous and have an absolute 0 point. Given that the dependent variable, GHSGT mean scores, is continuous and the independent variable, classroom setting, is categorical, an analysis of variance will be utilized to analyse the data. The sampling frame will consist of the entire sample of high school juniors and seniors who attended Jackson High School between 2002 and 2011. The students must have been in co-teaching and or collaborative teaching settings, and they must have taken the GHSGT.

Definitions

Assessment. Assessment consists of the evaluation of a student's achievement.

For the purpose of this study assessment refers to a standardized (norm-referenced) test and these two terms are used interchangeably (Sattler, 2008).

Collaborative teaching. This is under the umbrella of inclusion and is an intervention used to give students with disabilities access to the general education curriculum while in the general education setting. This involves the addition of a second teacher, usually a special education teacher, to the classroom, but only up to 50% of the class time (personal contact D. Patterson, 2007), (Parkay, 2012).

Co-teaching. Co-teaching, which is also under the umbrella of inclusion, is an intervention used to give students with disabilities access to the general education curriculum while in the general education classroom. This involves the addition of a second teacher, usually a special education teacher, in the classroom for at least 80% of the time (Cooke & Friend, 1995).

Criterion-Referenced Competency Tests (CRCT). A CRCT is a standardized test that compares what an individual knows to a defined body of content (Hambleton, 2009). The standardized assessment typically measures the students' acquired skills at specific grade levels based on specific content guidelines. The GHSGT is a CRCT that is based on the Georgia *Pro*fessional Standards (GPS) (Georgia Department of Education, 2008).

General Education. It "is the curriculum designed for all children which is meant to meet state standards, or if adopted, the Common Core State Standards" (specialed.about.com). It is the type of education all students should be provided. General education is interchangeable with regular education.

Georgia High School Graduation Tests (GHSGT). The GHSGT is an assessment

given to high school juniors that covers the content standards as defined by the Georgia Performance Standards (GPS). The content of the GHSGT is derived from subjects and materials covered during the freshman, sophomore, and junior years. The five subtests include the following subject areas: writing, English, math, science, and social studies. It was implemented in 2002 (Georgia Department of Education, 2008).

Highly qualified. A teacher who has received full state certification or a teacher who is in the process of receiving full state certification, which may include earning a bachelor's degree and/or passing of tests in area of competence. (Using Title I as a Model for Reform, www2.ed.gov, slide 25 & 26).

IEP. An Individualized Education Program or IEP is written for students who have been diagnosed with a disability and have been subsequently placed in a special education program. An IEP delineates any and all modifications and accommodations required for a student to be successful in school (U.S. Department of Education, 2004). The IEP is mandated by IDEA (2004) and includes present level of performance, student's strengths and weaknesses, impact of disability on learning, goals and/or objectives, and modifications and accommodations.

Inclusion resource. As used in Butts County, classroom setting in which special education students are placed who cannot perform on par in a general education setting. The grading system and curriculum are the same as that in the general education setting (personal contact D. Patterson, 2007).

Non co-teaching. As used in this study, non co-teaching is a general education classroom without any special education teacher support. (Cooke & Friend, 1995).

Norm-referenced test. A test that compares how a student performs with that of a sample of similar students (Cohen & Spenciner, 2010).

Special Education. The IDEA, defines special education as: "Specially designed instruction, at no cost to parents, to meet the unique needs of a child with a disability" (Individuals with Disabilities Education Improvement Act, 2004 part 300 A, 300.39 B). The role of special education is to ensure that needed additional services, supports, programs, specialized placements or environments are provided to students who qualify for such services (2004).

Students with Disabilities (SWD). In this study SWD will be special need students. The special needs may include any of the following: specific learning disabilities (SLD), learning Disabilities (LD), Emotional Behavior Disorders (EBD), Other Health Impaired (OHI), Autism Spectrum Disorders (ASD), Mild Intellectual Disability (MID), Vision Impaired (VI), Hearing Impaired (HI), and Orthopedically Impaired (OI) (Butts County School District, www.butts.k12.ga.us). The SWD who participate in the GHSGT must have an IQ of 60 or higher. Students who have an IQ below 60 participate in the Georgia Alternative Assessment (GAA) (Georgia Department of Education, 2008).

Student Achievement. Refers to the progress made on the GHSGT, that is, whether the student passed the GHSGT. Passing the GHSGT and the required high school classes ensures that the student will graduate from high school. As for the schools, the aggregated results of each schools students' GHSGT is part of the Adequate Yearly Progress Report (AYP). The data derived from the GHSGT include nominal,

ordinal, and ratio scale data in all subject areas (*NCLB*, 2001).

Standardized tests. A test/assessment that is normed on a given population and the score relates to how well the student did as compared to the normed group (Georgia Department of Education, 2008). For the GHSGT, the normed population is students who took the test in the state of Georgia.

Title I. Derives from the Elementary & Secondary Education Act. It ensures that all disadvantaged students and all students have a fair and equal opportunity to obtain a high quality education (U.S. Department of Education, 2004).

Assumptions

There are several assumptions that are made in conducting this study. First, it is assumed that the students who took the GHSGT gave their best effort to do well on the test. Second, it is also assumed that the test taking conditions did not in any way impair the students' ability to put forth their best effort on the test. Third, it is assumed that the GHSGT is a valid and reliable measure of achievement for students in general education and for students with learning disabilities. Relating to both co-teaching and collaborative teaching, it is assumed that they are both effective means of teaching students who are learning disabled, and that these approaches are affective enough to have an impact on academic achievement. Finally, there are assumption related to the accuracy and completeness of the data on the GHGST.

Scope and Delimitations

The scope of this study includes junior and senior students from a single high school located in a middle GA county southeast of Atlanta, and uses the GHSGT as the

measure of academic achievement. The study is delimited by this research design. Meaning, junior and senior high school students at other schools in Georgia and outside of Georgia were excluded for convenience and logistical reasons. Focusing on more than one school would have required multiple levels of approval (local, county, and state), and therefore would have significantly extended the time and logistical requirements for the study. As a result of this exclusion, the findings may not generalize to the larger population of SWD students in Georgia. Again, findings may only generalize to like populations; classroom settings that utilize the Progressive framework of inclusion where SWD are educated within the general classroom setting.

Limitations

This study is limited by the population of the study, the instrument used to measure academic performance, the use of archival data, and by the quantitative statistical approach. First, the study population is specifically targeted. The sample will consist of students from one high school in one county in Georgia. This limits the generalizability of findings from the study. Second, the GHSGT, the measure of academic performance, is only used in Georgia. Therefore, the generalizability of achievement findings to other students outside of Georgia will be limited. Other states may use different graduation tests, and the test content may not be parallel to the content of the GHGST.

The use of archival data also poses limitations for the results. First, information that could be useful to the researcher could be missing or the data could not be representative of the population (Leedy et al., 2013). The second limitation for archival

data is experimenter bias (Leedy et al., 2013). The bias may take the form of the inclusion of data or results that support the researchers' expectations. Finally, the quantitative design does not allow for detailed description of findings in the study, but instead focuses on statistical analysis of data to test hypothesis. Essentially, quantitative statistical analyses typically tell you what is occurring, but does not have the depth typically associated with qualitative research to tell why things have occurred (Leedy et al., (2013).

The limitations of the data are inherent in the data that must be used to address the questions asked. Thus, these limitations cannot be ameliorated but must be kept in mind when analyzing the data. The limitations concerning the sample population has been discussed above in the Scope and Delimitation section.

Significance

This study is significant because of the possible impact in three areas. First, the findings from the study could be used to advocate for the continued or for increasing the use of co-teaching as an instructional delivery method. Second, this study's results could provide evidence for the previously stated assumption that co-teaching is an effective approach for teaching SWD. If this is true the use co-teaching or collaborative teaching could be made to improve academic performance among SWD. Finally, results from this study could also be used to further the current knowledge regarding the efficacy of co-teaching related to academic performance among SWD. Assisting in academic decision making, establishing the effectiveness of co-teaching adding to the current body of knowledge regarding the effectiveness of co-teaching among students with disabilities

are both examples of the study being used for positive social change.

Summary

The goal of Cook and Friend (1995) was to devise co-teaching models that emulated the special education model inside the general classroom. Therefore, they constructed five models of co-teaching. There has also been a significant increase in the prevalence of co-teaching classrooms in the U.S. since the reauthorization of IDEA (Hanover, 2012). There have been very few studies that have quantitatively examined the effect of co-teaching on academic performance. The purpose of the study is to determine if there are significant differences in academic performance, measured by the GHSGT, between students with disabilities who were taught in co-teaching and collaborative classroom settings. This chapter presented the following issues related to the study: background of the study, problem statement, purpose of the study, research questions and hypotheses, theoretical framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, and significance. Chapter 2 will present a review of literature related to the study topic.

Chapter 2: Literature Review

Introduction

Students with disabilities access to the general education curriculum has been a problem for public schools (Hanover, 2012; Nichols & Nichols (2010). According to the seminal work by Wilber (2007), in order to combat this problem, students with disabilities (SWD) should be educated in the least restrictive environment (LRE). The LRE has fewer restrictions for SWD so they may be educated with their non-disabled peers. These fewer restriction thus provides SWD greater access to the general education curriculum. The purpose of this literature review is to discuss previous research on the effects of co-teaching and on the academic performance of SWD. This chapter provides a summary on the history of special education laws, practices, and interventions, specifically those on the different co-teaching models.

The re-authorization of the Individuals with Disabilities Education Act (IDEA) in 2004 emphasized the idea of having co-teaching models. Therefore, it is necessary to evaluate the effectiveness of co-teaching as it relates to academic performance. This study seeks to explore whether co-teaching has an effect on academic performance compared to collaborative teaching among SWD. This study also seeks to add to the literature in this area. The purpose of this quantitative study is to determine if there are significant differences in academic achievement between SWD who were taught in co-teaching classrooms when compared to SWD who were taught in collaborative teaching classrooms.

Literature Search Strategy

For the purposes of this literature review, a search was conducted primarily using the EBSCO host Research Database found on the Walden University website. I began the literature search with global terms such as quantitative, co-teaching, collaborative teaching, and/or inclusion. I found many articles, books summaries, and presentations on the models of co-teaching, teacher personalities, how to initiate co-teaching into the school, work sessions for teachers, and classes on how to co-teach. Next, I conducted a narrower search using effects of co-teaching, collaborative teaching and/or inclusion. This search resulted in a few articles being found. I conducted a search using the term co-teaching model which led to many articles on how to do co-teaching. The following is a summary of what was found.

I conducted an additional search using Google scholar. The search criteria were inclusion, co-teaching, collaboration, quantitative research. Of the first 30 articles retrieved there was only one quantitative article. The other 29 articles were written on a variety of topics about inclusion, co-teaching, and collaboration and qualitative research articles. From the abstracts of these articles, I determined that the articles were about classroom management (Rytivaara, 2012; McCray, Butler, & Bettini, 2014), teacher preparation and professional development (Strieker, Logan, & Kuhel, 2012; Pancsofar, & Petroff, 2013; Hudson, 2014), team approaches (Pugach & Winn, 2011; Tremblay, 2013), collaborative models of instruction (Solis,Vaughn, & Swanso, 2012; Lindeman, & Magiera, 2014; Murawski, & Goodwin, 2014), tools and strategies to make co-teaching work (Williams, 2012; Brown, Howerter, & Morgan, 2013; Strogilos, & Tragoulia,

2013), principal views on co-teaching (Murray, 2012), evaluation and supervision of co-teaching (Kamens, Susko, & Elliott, 2013), implementation of co-teaching models (Gurgur, & Uzuner, 2011; Takala,& Uusitalo-Malmivaara, 2012; Mastropieri, Scruggs, Guckert, Thompson, & Weiss, 2013; Kamens, Susko, & Elliott, 2013; Rivera, McMahon, & Keys, 2014; Murawski, & Goodwin, 2014;), teacher beliefs about inclusion (Pappamihiel, 2012; Kiely, Brownell, Lauterbach, & Benedict, 2015), general education teacher perceptions (Elliott, 2014), teacher needs to introducing co-teaching models (Pancsofar, & Petroff, 2013; Murawski, & Goodwin, 2014), collaboration between special education and general education teachers (van Garderen, Stormont, & Goel, 2012; Strogilos, & Tragoulia, 2013; Pratt, 2014; McCray, Butler, & Bettini, 2014), how to make inclusion work (Ferguson, & Wilson, 2011; Williams, 2012; Ehren, & Little, 2014), and how the number of adults in a classroom impact instruction (Sweigart, & Landrum, 2015). The general views from qualitative articles on co-teaching are mostly positive. For example, teachers, students, and parents like inclusion practices even when there are issues with implementation, planning time, and training/teacher preparation.

History of Special Education

In 1884, the National Association of Education (now the National Education Association or NEA), held a conference in Madison, Wisconsin. The main purpose of this conference was to increase membership. The Association had constant poverty and modest membership, so the president, Thomas W. Bricknell, used his own money to travel and promote the organization and its host city of Madison. The strategy worked as the conference drew more than 5,000 attendees (NEA, 2006). It was at this conference

that Alexander Graham Bell introduced the term, special education. He was trying to form a new professional group whose focus was on the education of children who were deaf. The focus of the group eventually extended to include individuals who were blind, and to provide “education of backward and feeble-minded children" (National Education Association, 1898, pp. 1031-1033).

The 1960’s brought about numerous changes in education and educating persons with disabilities and to educating those who were considered economically disadvantaged as well. Two major laws were passed in 1958 that paved the way for the educational reforms of the 1960’s. These reforms included expanded funding for children who were deaf by allowing funding for captioned films (Dettmer et al., 2009). The reforms also supported expanded service training for teachers of mentally retarded children. President John Fitzgerald Kennedy (JFK) came into office in 1961 (eHow, 2014). The education of special education students were important to JFK and upon his entrance into office, he authorized the establishment of a Panel on Retardation (eHow, 2014). The purpose of the 26 member panel was to conduct an intensive search for solutions to the problems experienced by people with mental retardation. In 1963, Public Law 88-156 was passed as part of the Social Security Act, which provided funding for special education students (eHow, 2014). The Elementary and Secondary Education Act or Public Law 89-10 (ESEA) of 1965 was another law that addressed the needs of special education students by providing additional funding for programs and research that focused on students with disabilities (SWD).

There were two landmark court cases in the early 1970’s that contributed to

expanding a free and appropriate education (FAPE) to students with disabilities. The Pennsylvania Association for Retarded Children v. Commonwealth of Pennsylvania in 1971 and Mills v. Board of Education of the District of Columbia in 1972, were landmark cases which were used as the precedent for establishing that "the responsibility of States and local school districts to educate individuals with disabilities is derived from the equal protection clause of the Fourteenth Amendment of the United States Constitution" (US Department of Education, 1995, p. 1). In 1973, the Section 504 amendment of the Rehabilitation Act came into effect. It was the "civil rights declaration of the handicapped," which ensured equal access to education for SWD (Yell, Rodgers, & Rodgers, 1998, n.p.). In1975, Congress discovered that more than half of all handicapped children in the United States did not receive appropriate educational services under FAPE, Sec. 3(b)(3). Thus, Public Law 94-142, also known as the Education for All Handicapped Children Act (EAHCA) was enacted in 1975 to rectify this situation by requiring that all students with disabilities receive a FAPE and by providing funding to help cover the costs of special education programs (ERIC, 2003). The EAHCA was revamped in 1990 to become the Individuals with Disabilities Education Act (IDEA) that focused more on the individual rather than the disability. The new law required that students were to be educated in the Least Restrictive Environment (LRE). It was during the 1990's that the concept of co-teaching was introduced (Dettmer et al., 2009; Bell, 2013). Co-teaching included one regular education teacher as the content specialist and one special education teacher as the pedagogy expert (Wilber, 2007). The IDEA was reauthorized in 1995 and again in 2004. The updated, 2004,

version included a section for individuals 2 years old and under.

Theoretical Foundation

Progressivism

The concept of co-teaching evolved from the reintroduction of the Progressive movement in the 1960's (Electronic Encyclopedia of Chicago, 2005). Progressivism is the guiding conceptual framework for this study. It states that progress and individuality are fundamental to one's education (Knoester, 2012). Progressivism theorizes that there is respect for diversity of culture, ideas, abilities, needs, and interests, and that ~~that~~ participation in the affairs in the community for the common good are encouraged. John Dewey, the father of the Progressive movement, believed that students should learn through action and being involved in the process that would yield the end product. The use of hands-on projects should be emphasized so learning could take place instead of just memorization (Knoll, 2009).

Co-teaching addresses the first of Dewey's elements essential to Progressivism. Co-teaching enables teachers to diversify or differentiate the classroom instruction. Differentiation is the philosophy of giving students different paths to learning based on their readiness levels (Ellis, Gable, & Gregg, 2008), the term in current use in education rather than diversify. Thus, the co-teachers are able to give individual students what s/he needs to be successful with his/her learning as what Dewey sought.

Co-teaching Model

Co-teaching and collaborative teaching have been defined in Chapter 1. Nonetheless, I want to reiterate a brief description here. With co-teaching, a regular

education teacher and a special education teacher working together in the classroom for the entire class period to meet the needs of all the students in the classroom. Another form of inclusion in the classroom is collaborative teaching. Collaborative teaching consists of a regular education teacher and a special education teacher working together in the classroom. The special education teacher is present in the classroom for a portion (50%) of the period to meet the needs of all the students in the classroom.

There are seven different co-teaching strategies that Cook and Friend (1995) described. There is the one teach, one observe strategy where one teacher has primary instructional responsibilities while the other gathers specific observational information the students or the instructing teacher. A second strategy, which is an extension of the one teach, one observe strategy, is one teach, one drift. With this strategy, one teacher has instructional responsibilities, while the other assists students with their work, monitors behaviors, and correct assignments. Another strategy is station teaching, where the co-teaching pair divides instructional content into parts. Each teacher instructs one of the groups. Groups then rotate or spend a designated amount of time at each station. Parallel teaching is a strategy where each teacher instructs half the class on the same instructional material. The major benefit of this strategy is the reduction of student to teacher ratio. There is also team teaching, where well planned team taught lessons, exhibit an invisible flow of instruction with no prescribed division in authority. Both teachers are actively involved in the lesson, where there is no clearly defined leader from the students' perspective. Finally, there is the supplemental co-teaching strategy allows one teacher to work with students at their expected grade level, while the other teacher

works with those students who need the information and/or materials extended or remediated. The supplemental co-teaching strategy is most commonly used when a general classroom teacher and special education teacher are in the room together to assist SWD (Bell, 2013; Hanover, 2012).

In summary, co-teaching and collaborative teaching are both inclusive forms of instruction that allow SWD to learn with in the mainstream classroom. Cook and Friend (1995) identified seven different co-teaching strategies. Of the seven strategies the supplemental co-teaching strategy is most commonly used when a general classroom teacher and special education teacher are in the room together to assist SWD (Hanover, 2012; Bell, 2013).

Research on the Effects of Co-teaching on Academic Achievement

Several studies have investigated the impact of co-teaching on the academic performance of students. However, the results of the quantitative studies relating to academic performance have been inconclusive (Hightower, 2014; Nash-Aurand, 2013; O'Neal, 2013, Walker, 2013). Below is a summary of the studies that relate to co-teaching with SWD. The studies are presented in chronological order from oldest to most recent.

Schults, Osborne, and McKinney (1990) randomly assigned 67 SWD grades 1 to 4 to four different delivery models. The purpose of the study was to examine if there were significant differences in achievement test score among the four different delivery models. The delivery models were consultation (n=14), consultation and direct services (a co-teaching model as the consultant provides some direct instruction in the classroom)

(*n*=19), one class period of resource (n=19), and two class periods of resource (*n*=15). The Woodcock-Johnson Tests of Achievement were used as pre- and post-test assessments. The subtests given to the students included reading, writing, and math. The statistical method used to analyze the scores was ANOVA. The students assigned to the two class periods of resource saw significant improvement from pre-test to post-test scores on all three tests. Additionally the students in the other three settings also demonstrated pre-test post-test gains. Thus, students in all delivery models demonstrated statistically significant gains from pre-test to post-test scores.

Bear and Proctor (1990) evaluated the academic performance 78 third grade SWD. Forty-seven of those students learned in a co-taught classroom with their non-disabled peers. They were in a Team Approach to Mastery (TAM) classroom. Performance was measured using the Comprehensive Test of Basic Skills (a standardized test). Results from the data analysis indicated that non-disabled students in the integrated TAM group made significantly greater gains than both non-disabled students taught in regular classrooms and disabled students taught in the co-teaching TAM classroom. However, the only area of gains that disabled students in the TAM classroom made were in math. The authors concluded that there were no statistically significant differences in academic performance between the students with disabilities who were taught in the TAM classrooms and those who were taught in the resource setting.

Marston (1996) assessed the reading progress of 240 elementary school students taught in co-teaching only (*n*=33), pull out only (students sent to the resource room for service) (*n*=171), and combined teaching methods (the use of both teaching modes)

(*n*=36). Data from curriculum based measures were taken in the fall and spring. The data revealed that students taught in the combined setting showed significantly greater reading progress than both students served in co-teaching only and resource only classrooms. However, there were no significant differences in academic performance between the co-students taught in teaching only and resource only settings.

Boudah, Schumacher, and Deshler (1997) investigated the effects of co-teaching at the high school level. They looked at student performance in the following areas: classroom engagement, mastery of strategic skills, and pre- and post-tests related to classroom content (ex. Math, Science, and English). The ANOVA procedure was used to analyze the results of the skills and performance for 16 students with disabilities. The authors discovered that there were no significant differences in pre-test and post-test scores on strategic skills, classroom content mastery, and classroom engagement. The authors reviewed subject area quizzes and tests scores and discovered that student performance actually worsened. In addition, they also discovered that even with two teachers in the classroom, student engagement was only minimal so, off-task behavior was still a problem.

Klinger et. al. (1998) examined the academic progress made by three groups of 3rd to 6th grade students; those with LD, those without LD who were low to average achieving, and those without LD who were high achieving. Student achievement was measured with pre- and post-test scores used from the following standardized tests: the Basic Academic Skills Samples for reading, the Mathematics Concept and Application Tests for math, the Kaufman Test of Educational Achievement, and Qualitative Reading

Inventory. A series of t-tests were used to assess whether the academic gains made over the year were statistically significant. Results showed that the low to average achieving students and high achieving students made statistically significant gains in both reading and math, while the LD students only made gains in reading. However, students' who were poor readers made no gains over the year. The researcher's determined that full-time general education placement with a special education co-teacher supported gains in reading for LD students, but such instruction was not adequate for improving the academic performance of the LD group of students who were poor readers.

Rea, McLaughlin, and Walter-Thomas (2002) investigated the academic performance data for all 8th grade students with LD from two different middle schools from the same district. Comparisons were made between LD students in a pull-out program and those in an inclusion (co-teaching) setting. The Iowa Test of Basic Skills (ITBS), the Literacy Passport Test (LPT), and course grades were used to determine academic achievement. The authors also investigated disruptive classroom behavior and the number of days students missed from school. The authors discovered no statistically significant differences in standardized test scores between students in the pull-out program and the students in the inclusion setting for reading, writing, and mathematics. However, course grades were statistically better for students in the co-teaching setting than for students in the pull-out setting. In addition, there were no additional behavioral issues documented. Also, students in the inclusion setting missed statistically fewer days of school.

Wischnowski, Salmon, and Eaton (2004) conducted a study to (a) describe the

development and implementation of a school district's approach to (a) co-teaching in fulfilling IDEA requirements in the elementary and middle school, and (b) describe an evaluation method used by the district to address the effects of co-teaching on students, teachers, and parents. The study lasted two years and evaluated student achievement, application of classroom and test modifications, behavioural referrals, student self-concept, as well as teacher and parent satisfaction. Results indicated support for the benefits of co-teaching. That is, findings revealed a reduction in behavioural referrals and an increase in self-concept surveys. Results from the state test enticed the researchers to surmise that SWD instructed "in co-taught classrooms achieved acceptable scores qualifying them for the next grade level" (Wischnowski et. al., 2004, n.p.). The school district also administered the *Kaufmann Test of Educational Achievement* (*KTEA*) at the start of the study and then again at the conclusion of the study. Data from the two tests (state test, and the KTEA) indicated that SWD demonstrated appropriate gains during this time. Meaning at the end of the study the students scored significantly better on the KTEA and state test than at the beginning of the study – they demonstrated growth in their learning.

Magiera and Zigmond (2005) explored the impact of co-teaching instruction with middle school SWD to determine whether the instructional experience students received with co-teaching improved their academic achievement. The findings revealed that there were no statistically significant differences in overall academic achievement of the students based on class grades. The authors were also interested in reviewing the conditions in the co-taught class such as time spent with each teacher. They determined

that general education teachers spent less time with the special education students when the special education teacher was present. However, the special education students received more individual instruction when the special education teacher was present. They discovered that whole group instruction was practiced 60% of the time, while 30% of the time students worked alone, and 10% of the time students worked in small groups. The students were on task 80% of the time, and participation did not vary whether there were two teachers in the classroom or one.

Idol (2006) qualitatively evaluated the special education services in a large metropolitan area, which included four elementary schools, two middle schools, and two high schools. Idol (2006) gathered data from staff, regular education teachers, special education teachers, aides, and administrators regarding their perceptions of special education through interviews. This evaluation included the interview of teachers, who predicted that state wide test scores would not be affected by SWD being present in the general education classroom. The contextual analysis of the interview among the respondents revealed that there was a prevailing belief that overall student performance on the state wide tests were not impacted by the inclusion of SWD. That is, the prevailing opinion was that overall test scores did not increase nor decrease prior to the inclusion of SWD.

This proposed study will be similar to a study conducted by Carter (2007). However, Carter's study was situated in a different county in Georgia. The county was a bedroom community located between Atlanta and Athens, Georgia. The County contained a great deal of ethnic diversity, and the county did not have any Title 1 schools.

Carter's research also made use of historic data, GHSGT scores, from the county schools. Results from Carter's study (2007) where a one-way ANOVA tests were conducted, revealed that test scores for SWD students who were co-taught increased significantly more in English Language Arts and Social Studies respectively. Science test scores increased a minute amount and math scores stayed the same. Carter concluded that the results from the study were inconclusive (Carter, 2007), as there were significant increases in English Language Arts and Social Studies test scores, but not in Science and math test scores.

Fore, Hagan-Burke, Burke, Boon, and Smith (2008) assessed the impact of inclusive (co-teaching) versus non-inclusive class room placements in relation to the academic performance of students who were severely learning disabled (SLD) in secondary content area class rooms. The content area included mathematics and literature. The students were evaluated using the Multilevel Academic Survey Test (MAST). Achievement test scores for 57 students with SLD in an inclusive setting were compared to the achievement test scores of students in a non-inclusive setting. For the reading and mathematics achievement tests, results of the comparison revealed that there were no statistically significant differences between the scores of students in the inclusive classroom and the students in the non-inclusive classroom. However, in the literature achievement class, the students in the inclusive setting did perform significantly better. The authors attested that further research needs to be completed to determine the efficacy of co-teaching as their results were mixed.

Lemle (2010) examined a sample of published historic data of Georgia Criterion

Referenced Competency Test (CRCT) scores of 5th graders from a metropolitan district and compared the scores of general education students to the scores of special education students who were co-taught. The author used aggregated data from the CRCT in five academic areas (English/language arts, reading, math, science, and social studies). Lemle discovered that SWD who were co-taught scored significantly higher in English/language arts, reading, and social studies than general education students who were not co-taught. However, there were no statistically significant differences between the two groups of students for scores in math and science.

Walker (2013) conducted action research using a pretest posttest design with 15 fourth graders with learning disabilities from a Georgia elementary school. The independent variable was time where time 1 was pretest scores before inclusion and time 2 was posttest scores after inclusion. The dependent variable was the CRCT and reading and math scores. The students spent the year in an inclusion, co-teaching setting. Paired sample *t*-tests were conducted to compare the math and reading scores, while one sample chi square tests were used for pass/fail rate on the CRCT. Walker's action research determined that the students' scores in the inclusion setting did not change significantly from the pretest to the posttest math and reading scores. The author hypothesized that the lack of a significant change could have been the result of a small sample size.

O'Neal (2013) analyzed archival standardized test score data for 784 SWD students from a Missouri middle school. The independent variable was the type of special education model used, while the dependent variable was scores on the standardized communication arts test. The author performed a limited mixed effects model (LMM)

test to determine if the students' test scores were higher in the co-taught setting than the non co-teaching setting. While the data did indicate the students' scores from the co-taught setting were slightly higher on the communication arts test, the difference in scores from the pretest and posttests between students in the co-teaching setting and students in the non co-teaching setting were not statistically significant. One limitation of the O'Neal (2013) study was that it did not address how the students performed on the standardized tests for the other academic areas.

Nash-Aurand (2013) analyzed Georgia Math II scores from the EOCT for 145 high schools SWD from four large suburban schools in Northeast Georgia. Math I scores were used as a covariate to control for differences in math ability between the groups. The study was a causal-comparative study that compared the performance of SWD in co-taught classes and to the performance of SWD in a resource setting. The independent variable was the type of special education model used, while the dependent variable was the Math II EOCT. Data were analyzed using ANCOVA. The results indicated that co-teaching had a minute effect in influencing math outcomes. The average math scores for SWD who were in the co-taught setting were 2.14 points higher than the scores of students in a resource setting. A question not addressed by this research is how the students performed on the standardized tests for the other academic areas.

Bell (2013) analyzed Communication Arts and Math MAP, State of Missouri Standardized Test scores, among 803 3rd and 4th grade students before and after the implementation of co-teaching in a Midwestern School District. Bell used a *t*-test to compare scores from the year prior to the implementation of co-teaching to the scores

obtained after the year that co-teaching was implemented. Bell (2013) discovered that there were not statistically significant differences between the MAP scores for the students with disabilities who were taught using co-teaching methods and those that were taught using traditional methods.

Hightower (2014) used a comparative research design to analyze CRCT test scores for two groups of SWD from four title 1 elementary schools from middle Georgia. The two groups consisted of 3rd to 4th graders and 4th to 5th graders who were taught in co-taught and resource settings. The independent variable was the type of special education model used, while the dependent variable was the CRCT math and reading scores. The scores used were given in the spring of 2011. The results revealed that math and reading scores for SWD in the co-teaching setting when compared to the scores of SWD in the resource taught setting were not statistically significant. The author of this study indicated that more quantitative research needs to be completed and additional grade levels studied.

Summary

Of the studies previously reviewed, the results were generally inconclusive. From 1990 to 2013, three studies revealed that academic achievement gains were significantly better in co-teaching classroom settings with SWD compared to traditional resource settings. Five studies provided mixed results where there were significantly greater academic achievement gains for SWD in co-teaching classrooms in some content areas, but not in others. However, there were 8 studies where the results indicated that there were no statistically significant differences between the co-teaching and traditional

resource classrooms. The proposed study differs from previous studies in that the comparison will be between the academic performance of SWD who are taught in co-teaching and collaborative teaching classroom settings. The methodology for the current study will be reviewed in detail in Chapter 3.

Chapter 3: Method

Introduction

There have been very few studies that have quantitatively examined the effect of co-teaching on academic performance. Additionally, of the studies that have been conducted, only one was performed in the past 5 years (Lemle, 2010). The results of the quantitative studies relating to academic performance have been inconclusive (Carter, 2007; Fore et al., 2008; Wischnowski et al., 2004). With the re-authorization of the Individuals with Disabilities Education Act (IDEA) in 2004 and the development of several different co-teaching models, it's necessary to evaluate the effectiveness of co-teaching as it relates to academic performance. This study seeks to definitively explore whether co-teaching has a positive effect on academic performance, and add to the literature in this area that was considered current.

The purpose of this quantitative study is to determine if there was a significant difference in academic achievement between co-teaching and non-co-teaching students. This chapter includes an explanation of the research design and rationale, followed by a description of the research population, sampling procedures, procedures for recruitment, and data collection. The instruments used in the study will also be reviewed in detail, along with data analysis procedures, threats to validity, and ethical concerns.

Research Design and Rationale

In this study, the independent, nominal variable was classroom setting, where there were two setting options, co-teaching and collaboration. With collaboration, the special education teacher must be in the general classroom at last 50% of the time (Debra

Patterson, Personal Communication, 2006). However, for co-teaching the special education teacher must be in the general classroom at last 80% (Debra Patterson, Personal Communication, 2006; IDEA, 2004). Classroom setting was the independent, nominal variable, as the numbers assigned to the two groups serve as labels. The dependent variable was the scores on the Georgia High School Graduation (GHSG) Test from 2002 to 2011. These scores will include the scores for the five subtests, which were English Language Arts, Social Studies, Science, Math, and Writing. The dependent variable was a ratio variable as the scores were continuous and have an absolute 0 point.

This study utilized a quantitative, cross-sectional, archival research design to determine whether there were statistically significant differences in academic achievement between SWD whom were taught in co-teaching or collaborative teaching classrooms. The utilization of the cross-sectional design was consistent with previous research studies that have advanced knowledge in this area including Walker (2013), O'Neal (2013), Hightower (2014), and Nash-Aurand (2013).

Cross-sectional research designs have three distinctive features, which include (a) no time dimension, (b) a reliance on existing differences rather than change following intervention; and, (c) groups were selected based on existing differences rather than random allocation (Hall, 2008). As the research questions aimed to determine if there were a significant difference in academic achievement between the co-teaching classroom setting and collaboration teaching classroom setting, the quantitative research design was the only design that can effectively examine this question in a meaningful manner.

Methodology

Population

The test scores for this study included students from Jackson High School in Butts County, Georgia. This was a historically rural county that has experienced urban sprawl. Many residents in the county have had family in the county or area for more than 100 years. The county was poor, with many of the residence in the low socioeconomic status and over 50% of students receiving free and reduced fee lunches. The schools in the district, including the high school, were Title I Schools due to the number of students on free and reduced fee lunches. Title I Schools receive additional federal funding because of the low socioeconomic status. The school district is about 50/50 African-American and Caucasian. In addition, approximately 1% of the population consists of English as Second Language (ESL) students comprised of Hispanic, Asian, and other ethnic groups. This leaves the percentage of African Americans and Caucasians at approximately 49.5% each. About 13% of the students in the district have an Individual Education Plan (IEP), usually designated for students in special education classes. The national average was only about 5%. The school district also has had a high dropout rate compared to the national average (NCES, 2010). For example, for the 2007-2008 school year the graduation rate for Jackson High school was 67% with a dropout rate of 33%, while for the same time period, the national dropout rate was 25% overall.

Sampling and Sampling Procedures

The sampling frame consisted of the entire sample of high school juniors and seniors who attended Jackson High School between 2002 and 2011, who were in co-

teaching and collaboration teaching settings and had GHSGT scores. Based on standard reporting procedures, if a class had fewer than 10 students, GHSGT scores were not reported. The data to that were used for this study were archival, publicly accessible data on the report card for the district/county from the Georgia Department of Education website. This archival data were extracted for the district/county from the Georgia Department of Education Governor's Office of Student Achievement website (http://gosa.georgia.gov/report-card) and available to anyone who visits the site. For access to archival data pre 2010, a form had to be completed requesting the data and the reason for the request given. This form was processed and the scores were emailed to the requestor.

Procedures for Recruitment, Participation, and Data Collection

The GHSGT was administered during the same week in April throughout the state, and writing was administered early during the school year in October. All students were allowed 3 hours to complete each of the subject matter topics. Students with disabilities were given additional time up to the entire day to complete the subject matter GHSGT exam. Each subject matter topic was administered on a separate day. Although students were allowed to take the GHSGT exams as many times as needed to pass, only results from the first attempt were used for reporting purposes.

Data Collection

On an annual basis from 2002 to 2011, junior and senior students from each school district in Georgia were given the GHSGT as a mandatory requirement. There was no mandatory administration of the GHSGT after the 2010-2011 school-years. The state

then compiled the results and made them available to the public via the Georgia Department of Education web site. The data were downloaded from the web site in the form of an excel file. The data file only contains information pertaining to gender, ethnicity, test scores, and an indication of the type of classroom setting. Thus, there was no issue with confidentiality. The link to download the data is as follows: http://gosa.georgia.gov/report-card.

Instrumentation and Operationalization of Constructs

The dependent variable was student achievement, as measured by the GHSGT scores. The independent variables were co-teaching, collaboration, and non-co-teaching classes. Co-teaching was an intervention used to give students with disabilities access to the general education curriculum while in the general education classroom. This involved the addition of a second teacher, either a special education teacher or special education paraprofessional, in the classroom for at least 80% of the time (Cooke & Friend, 1995). Collaboration was an intervention used to give students with disabilities access to the general education curriculum while in the general education setting. This involved the addition of a second teacher, usually a special education teacher, to the classroom, but only up to 50% of the class time (personal contact D. Patterson, 2007). Non-co-teaching was the basic general education class with no special education teacher support. The GHSGT consists of subject area tests in English Language Arts, Math, Science, Social Studies, and Writing. Thus, the data that were collected for this study were only for the years that records for the GHSGT were kept, which includes the years 2002-2011. This time period was chosen because after the 2010-2011 school-year, it was not mandatory

that all student take the HSGT.

Validity and Reliability. The Georgia state legislature identified the purpose of the GHSGT as a measure of how well students mastered the curriculum standards. Aside from measuring this mastery, the GHSGT was also designed to identify where students needed improvements. The development of the test included the mandated curriculum, but it also relied on the inclusion of educators in the development process. The test items were written by professional assessment specialists that were specific to Georgia. Once written, they were then reviewed by a review committee who were authorized to accept, reject, or revise the test items. Field tests, or trial runs, of the test items were conducted by adding the items to an already accepted GHSGT that was to be given. These items were not counted against the students. The performance data on these field tests were analyzed by another committee used to determine if the question item was to be used on an upcoming GHSGT. (Assessment and Accountability Brief, 2002 & 2011) The GHSGT was determined to be a valid instrument according to the Assessment and Accountability Brief, because it assesses what it was intended to assess – student mastery of the Georgia content standards.

There were two reliability markers identified by the State of Georgia for the GHSGT. These were: (a) Cronbach's alpha reliability coefficient; and (b) the standard error of measurement (SEM). Cronbach's alpha measures internal consistency, which was how closely two tests measure the same construct. Alpha coefficients of 0.8 or higher are considered the standard for acceptable reliability (Filed, 2012; Hair et al., 2012; Pallantm 2012). The GHSGT produced reliability coefficients ranging from 0.85

to 0.94 (Assessment and Accountability Brief 2002 & 2011). The SEM refers to the standard deviation of the test scores attained by a group of students on a single test or the measure of the spread of scores between students. No score range explanation was provided. (Assessment and Accountability Brief 2002 & 2011). The GHSGT was deemed to be reliable according to the Assessment and Accountability Brief, because the assessment provides consistent results.

Data Analysis Plan

SPSS statistical software version 19 was used to analyze the data. Because the data were imported from the Georgia Education Department web site, only data screening were conducted. Descriptive statistics were performed to screen the data for missing values and data errors. The Mann-Whitney U test was used because the sample size was very small (10). According to many authors (Field, 2012; Hair et al., 2012; Pallant, 2012), non-parametric tests, like the Mann-Whitney U test are used when sample sizes are small, typically less than 30. The Mann-Whitney U test was used to compare means not ratios (Field, 2012). The Shapiro-Wilk test was used to measure normality. The plots of the standardized residuals and the standardized predicted values were used to assess linearity, and Levene's test of Homogeneity of variance was used to assess homogeneity of variance. The Mann-Whitney U procedure was performed to evaluate if there were significant GHSGT mean scores differences among SWD in co-teaching and collaborative class settings. If the p value of the Mann-Whitney U test were less than 0.05, then there were significant differences between the groups and the null hypothesis was rejected. Finally, the effect size measure, r, is a measure of the magnitude of the

difference between the two groups (Field, 2012; Pallant, 2012). Values of 0.1 were considered a small difference/effect, 0.3 was considered a moderate difference/effect, and 0.5 and higher were considered large difference/effect (Cohen, 1988). The equation for r is Z, a value produced by the Mann-Whitney U test, divided by the square root of N, where N was the total number of cases. The Mann-Whitney U test was conducted to evaluate the following research questions:

R1. What were the differences in the mean score on the GHSGT for SWD who were taught in co-teaching (academic testing years 2007-2011) academic classes compared to those SWD who were taught in collaborative classes (academic testing years 2002-2007)?

$H_0$1: There were no statistically significant difference in the mean score on the GHSGT between SWD who were taught in co-teaching classrooms (academic years 2007-2011) and SWD who were taught in collaborative classrooms (academic testing years 2002-2007).

H_a1: There was a statistically significant difference in the mean score on the GHSGT between SWD who were taught in co-teaching classrooms (academic years 2007-2011) and SWD who were taught in collaborative classrooms (academic testing years 2002-2007).

R2. Was there a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in a non-co-teaching class settings?

$H_0$2: There was no significant difference in subtest GHSGT mean scores between

students who were in a co-teaching class settings and students who were in non-co-teaching class settings.

H_a2: There was a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in non-co-teaching class settings.

Threats to Validity. A convenience sampling approach was a possible threat to validity. Convenience samples may not be representative of the overall population (Fässler, Meissner, Schneider, & Linde, 2010). To lessen the effect of the convenience sampling approach, statistical tests that rely on population estimates such as means or proportions will not be used. Instead, tests using multiple regression coefficients, which were less subject to bias, were used (Field, 2012).

Ethical Procedures. This study was conducted based upon permission granted and the ethical standards indicated by the Walden University (IRB). Following the standards of the Walden University (IRB) will ensure the ethical protection of all research participants. However, as this study was using archival published and publicly accessible data, IRB and informed consent were not relevant. According to NIH Office for Human Research Protections Department of Health and Human Services Guidance on Research Involving Coded Private Information or Biological Specimens, research was exempt when "research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources were publicly available or if the information was recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects" (pg5).

Thus this study was exempt according to NIH guidelines and IRB approval was not required. No deception or coercion was involved in this research and anonymity was insured as there were no personally identifiable information collected because this data was archival and there was no identifiable information. Additionally, there was no collection of confidential information about the respondent so, confidentiality was not an issue. There was no exposure to mental or physical risk, as only archival data was used and no human subjects were used. Data were stored securely online under the username and password of the researcher. Also, during data analysis, the researcher used a computer that was secure and not available to the public. After the completion of data collection, e-mail addresses were deleted. However, the data will be kept by the researcher indefinitely.

Summary

This study seeks to explore whether co-teaching had a positive effect on academic performance, and add to the literature in this area that was considered current. In this study, the independent variable was classroom setting, where there were two setting options, co-teaching and collaboration. This study utilized a cross-sectional standardized multiple choice survey design to assess if there were significant differences in academic achievement between the co-teaching and collaboration classroom settings. The test scores for this study included students from Jackson High School in Butts County. This was a historically rural county that has suffered from urban sprawl. Many residents in the county have had family in the county or area for more than 100 years.

The analysis of variance was conducted to evaluate the following research

questions. First, was there a significant difference in the mean score on overall GHSGT scores between students who were in a co-teaching class setting and students who were in a collaborative class setting? Second, was there a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in a collaborative class setting? Third, was there a significant difference in the subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in a non-co-teaching class setting. The next chapter will contain the results of the Mann-Whitney U.

Chapter 4: Data Analysis

Introduction

In this chapter, a description of the purpose of this study will be reviewed. A description and results of the statistical analysis to address the two research questions will follow. For each research question, the variables in the analysis will also be defined in detail. After all the reporting was completed for the four research questions, Chapter 4 will conclude with a summary of the results.

Purpose. The purpose of this quantitative, archival study was to determine if there were significant differences in academic achievement between special education students who were taught in co-teaching and collaborative teaching settings. The independent variable in this study was classroom setting, for which there were two: co-teaching classroom and collaborative teaching classroom. The dependent variable was the percentage of student in each classroom setting who pass the Georgia High School Graduation (GHSG) Test during the years 2002 to 2011. Additionally, students with disabilities (SWD) and students without disabilities (SW/OD) was compared on mean scores of the Georgia High School Graduation Test. The independent variable in this analysis was student disability status: SWD and SWOD.

Research Question(s) and Hypothesis

R1. What were the differences in the mean scores on the GHSGT for SWD who were taught in co-teaching (academic testing years 2007-2011) academic classes compared to those SWD who were taught in collaborative classes (academic testing years 2002-2011)?

$H_0$1: There was no statistically significant difference in the mean scores on the GHSGT between SWD who were taught in co-teaching classrooms (academic years 2007-2011) and SWD who were taught in collaborative classrooms (academic testing years 2002-2007).

H_a1: There was a statistically significant difference in the mean scores on the GHSGT between SWD who were taught in co-teaching classrooms (academic years 2007-2011) and SWD who were taught in collaborative classrooms (academic testing years 2002-2007).

R2. Was there a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in a non co-teaching class settings?

$H_0$2: There was no significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in non co-teaching class settings.

H_a2: There was a significant difference in subtest GHSGT mean scores between students who were in a co-teaching class settings and students who were in non co-teaching class settings.

Data Collection

On an annual basis from 2002 to 2011, junior and senior students from each school district in Georgia were given the GHSGT as a mandatory requirement. The state's Office of Student Achievement then compiled the results and made them available to the public via the Georgia Department of Education web site. The data were

downloaded from the web site in the form of an Excel file. The data file contains the school district and then only information pertaining to gender, ethnicity, test scores, and an indication of the type of classroom setting. Thus, there were no issues with confidentiality. The only school district data used was for Butts County. Butts County was the only school district for which collaboration was known to be used. The link to download the data is as follows: http://gosa.georgia.gov/report-card.

Results

RQ1: Were there Differences in Mean score among SWD between Co-Teaching and Collaborate Teaching Methods on the GHSGT Reading, Math, Science, Social Studies, and Writing Sub-tests?

To assess if there were significant differences in mean scores between SWD who were in co-teaching classes and collaborative classes, four Mann-Whitney U tests were conducted. The Mann-Whitney U test was used because the sample size was very small (10). According to many authors (Field, 2012, Hair et al., 2012; Pallant, 2012), non-parametric tests, like the Mann-Whitney U test are used when sample sizes are small, typically less than 30. The independent variable was teaching style: collaboration or co-teaching. The dependent continuous variable was mean score where scores range from 37% to 93%. The null hypothesis states that that there was not a significant difference in mean scores among SWD between co-teaching and collaboration teaching methods. If the p value of the Mann-Whitney U test was less than 0.05, then there were significant differences between the groups and the null hypothesis was rejected. Finally, the effect size measure, r, is a measure of the magnitude of the difference between the two groups

(Field, 2012; Pallant, 2012). Values of 0.1 were considered a small difference/effect, 0.3 was considered a moderate difference/effect, and 0.5 and higher were considered large difference/effect (Cohen, 1988).

The results indicated that for the English class, the collaboration approach (Median = 92, n = 3) had significantly higher mean scores than the co-teaching approach (Median = 45, n =7), U = 1.5, z = -2.137, p = 0.033. The effect size value, r = z/sqrt(n), equals 0.68, which according to Cohen (1977) was considered a large effect. Additionally, for the math class, the collaboration approach (Median = 83, n = 3) had significantly higher mean scores than the co-teaching approach (Median = 61, n =7), U = 1.5, z = -2.137, p = 0.033, r = 0.68. The collaboration approach (Median = 73, n =6) had significantly higher mean scores for writing than the co-teaching approach (Median = 44, n = 6), U = 0.00, z = -2.91, p = .004, r = 0.84. However, there was no significant difference between the collaboration (Median = 66, n = 3) and co-teaching (Median = 54, n = 7) approaches for science, U = 7.5, z = -.712, p = .476, r = 0.23. The r value was considered a small effect, based on Cohen's standards. There was also no significant difference between the collaboration (Median = 84, n = 3) and co-teaching (Median = 73, n = 7) approaches for social studies, U = 7.5, z = -.712, p = 0.476, r = 0.23. Median values are given in Table 1 and U test results are given in Table 2.

Table 1

Descriptive Statistics: Median Scores for Collaboration and Co-teaching Approaches for English, Math, Science, Social Studies

	Type	*N*	Median
Eng_passTot_SWD	collaboration	3	92.0
	co-teaching	7	45.0
Math_passTot_SWD	collaboration	3	83.0
	co-teaching	7	61.0
Sci_passTot_SWD	collaboration	3	66.0
	co-teaching	7	54.0
SS_passTot_SWD	collaboration	3	84.0
	co-teaching	7	73.0
Writing_passTot_SWD	collaboration	6	73.0
	co-teaching	6	44.0

Table 2

Mann Whitney U Test: Was There a Difference in Median Mean Scores Between Collaboration and Co-teaching Approaches for English, Math, Science, Social Studies?

	U	*Z*	*P*	*R*
English	1.5	-2.137	.033	.68
Math	1.5	-2.137	.033	.68
Science	7.5	-.712	.476	.23
Social Studies	7.5	-.712	.476	.23
Writing	.00	-2.913	.004	.84

RQ2: Were there Significant Differences in Mean score between Students with Disabilities (SWD) and Students without Disabilities (SWOD) in English, Math, Science, Social Studies and Writing?

Four Mann Whitney U tests were conducted to determine if students with

disabilities who were either in collaboration or co-teaching classes had significantly higher GHSGT mean scores in English, Math, Science, and Social Studies than students without disabilities. Again the Mann Whitney U test was used to compare two groups on a continuous variable when the assumptions of parametric tests were not met. So, if the sample sizes were small (below 30), the data was non-normal, or the variances were heterogeneous, then non-parametric tests should be used (Field, 2012). The Mann Whitney U test compares medians (see Table 3) instead of means of the two groups. It converts the scores of the continuous variable to ranks, across two groups. It then evaluates whether the ranks of the two groups differ significantly.

The results of the Mann Whitney U test (see Table 4) revealed that students with disabilities (*Mdn* = 60, *n* = 10) had significantly lower English scores than the students without disabilities (Mdn = 90, *n* = 14), *U* = 32, *z* = -2.243, *p* = 0.025, *r* = 0.46. The students with disabilities (*Mdn* = 82, *n* = 10) had significantly lower Math scores than students without disabilities (*Mdn* = 94, *n* = 14), U = 0.0, *z* = -4.131, *p* < 0.001, 0.84. Students with disabilities (*Mdn* = 58, *n* = 12) had significantly lower writing scores than students without disabilities (*Mdn* = 94.50, *n* = 12), *U* = 8.0, *Z* = -3.71, *p* < .001, *r* = 0.76. However, there was no significant difference between students with disabilities (*Mdn* = 84.0, *n* = 10) and students without disabilities (*Mdn* = 85.0, *n* = 14) on Social Studies scores, *U* = 52, *z* = -1.062, *p* = 0.288, *r* = 0.21. Finally, there was a significant difference in Science scores, where students with disabilities (*Mdn* = 66.0, *n* =10) had significantly lower Science scores than students without disabilities (*Mdn* = 73.0, *n* =14), *U* = 24.0, *Z* = -2.715, *p* = 0.007, 0.55. See Table 4.

Table 3

Descriptive Statistics: Median Scores for Students With and Without Disabilities for English, Math, Science, Social Studies

	Disability	*N*	Median
English	Yes	10	60.00
	No	14	90.00
Math	Yes	10	82.00
	No	14	94.00
Science	Yes	10	66.00
	No	14	73.00
Social Studies	Yes	10	84.00
	No	14	85.00
Writing	Yes	12	58.00
	No	12	94.50

Table 4

Mann-Whitney U Test: Differences in Mean Score Among SWD between Co-Teaching and Collaborate Teaching Methods on the GHSGT Reading, Math, Science, and Social Studies Subtest

	U	*Z*	*P*	*r*
English	32.0	-2.243	.025	.46
Math	0.0	-4.131	<.001	.84
Science	24.0	-2.715	.007	.55
Social Science	52.0	-1.062	.288	.21
Writing	8.0	-3.711	<0.001	.76

Summary

The first research question asked: Were there Differences in Mean score among SWD between Co-Teaching and Collaborate Teaching Methods on the GHSGT Reading,

Math, Science, Social Studies, and Writing Sub-tests? The co-teaching versus collaboration results indicated that for English (including writing) and math there were significant differences, but there were no difference between science and social studies results. The second research questions asked: Were there Significant Differences in Mean score between Students with Disabilities (SWD) and Students without Disabilities (SWOD) in English, Math, Science, Social Studies and Writing?

The results indicated that SWD perform better in a collaborative setting for English and math. The co-teaching versus general education results indicated that there were significant differences between SWD and SW/OD in all subject areas except for social studies for which there were none. The results indicated that SWD did not perform as well as SW/OD in a general education setting. So, what do these findings mean and how do the findings affect the use of co-teaching as an intervention for SWD. For a more detailed discussion, please see Chapter 5.

Chapter 5: Conclusions and Recommendations

Introduction

Presented in this chapter are the conclusions resulting from this study and the recommendations for further research. This quantitative study was conducted to evaluate the efficacy of co-teaching using the standardized test scores from the Georgia High School Graduation Test (GHSGT). Provided within this chapter will be a summary of the study leading to the conclusion presented here.

The purpose of this quantitative, archival study is to determine if there is a significant difference in academic achievement between special education students who are taught in co-teaching as compared to collaborative teaching settings. This study utilized a cross-sectional, archival design to assess if there are significant differences in academic achievement among students with disabilities (SWD) in the co-teaching and collaborative classroom settings. Many qualitative studies have been conducted to ascertain teachers' and students' likes and dislikes of co-teaching, what model of co-teaching they preferred, what is needed to make co-teaching successful, and the overall like or dislike of co-teaching according to questionnaires. Overall these mostly qualitative studies have shined a positive light on co-teaching. However, there has been little quantitative research completed to determine the effectiveness of co-teaching on student performance on standardized tests.

Research question 1 asked, are there significant differences in the mean scores on the GHSGT for SWD who were taught in co-teaching (academic testing years 2007-2011) academic classes compared to those SWD who were taught in collaborative classes

(academic testing years 2002-2007)? Mann-Whitney U test was used to address this question. The results indicated that for the English class, the collaboration approach had significantly higher mean scores than the co-teaching approach. Additionally, for the math class, the collaboration approach had significantly higher mean scores than the co-teaching approach. The collaboration approach had significantly higher mean scores for writing than the co-teaching approach. However, there was no significant difference between the collaboration and co-teaching approaches for science. There was also no significant difference between the collaboration and co-teaching approaches for social studies.

The second research question asked, are there a significant difference in subtest GHSGT mean scores between SWD students who were in a co-teaching class settings and students without disabilities (SW/OD) students who were in a non co-teaching class settings. The results of the Mann Whitney U test revealed that students with disabilities had significantly lower English scores than the students without disabilities. The students with disabilities had significantly lower Math scores than students without disabilities. Students with disabilities had significantly lower writing passage scores than students without disabilities. However, there was no significant difference between students with disabilities and students without disabilities on Social Studies scores. Finally, there was a significant difference in Science scores, where students with disabilities had significantly lower Science scores than students without disabilities.

Interpretation of the Findings

The findings from the current research indicate that overall the SWD in the

collaborative setting performed better on the GHSGT than those in the co-teaching setting. Although there were no statistically significant difference for science and social studies there was a slight improvement with collaboration. As a reminder, collaboration is a form of co-teaching, but depends on the time in class. It is an intervention used to give students with disabilities access to the general education curriculum while in the general education setting. This involves the addition of a second teacher, usually a special education teacher, to the classroom, but only up to 50% of the class time (personal contact D. Patterson, 2007). The findings from comparing SWD in a co-teaching setting versus SW/OD on the GHSGT indicate that overall SWD performed worse than their non-disabled counterparts. The only subtest for which there was not a significant difference was social studies. The literature review indicated that the results were generally inconclusive. For example, from 1990 to 2014, three studies (Schults, Osborn, & McKinny, 1990; Wischnowski, Salmon, & Eaton, 2004; and Nash-Aurand, 2013) revealed that academic achievement gains were significantly better in co-teaching classroom settings with SWD compared to traditional resource settings. In addition, five studies (Klinger et. al., 1998; Rea, McLaughlin, & Walter-Thomas, 2002; Idol, 2006; Carter, 2007; and Fore, Hagan-Burke, Burke, Boon, & Smith, 2008) provided mixed results where there were significantly greater academic achievement gains for SWD in co-teaching classrooms in some content areas, but not in others. However, there were eight studies (Bear & Proctor, 1990; Marston, 1996; Boudah, Schumacher, & Deshler, 1997; Magiera & Zigmond, 2005; Lemel, 2010; Walker, 2013; O'Neal, 2013; Bell, 2013; Hightower, 2014) where the results indicated that there were no statistically significant

differences between the co-teaching and traditional resource classrooms. The findings from the current research indicate that there were no gains for the academic areas or in writing for co-teaching. Thus, the results from this study support the eight studies cited above which found no significant statistical differences for SWD taught in a co-taught classes and those in traditional resource classrooms. This suggests that co-teaching is not an acceptable intervention for all students because their educational needs are not being met.

As previously stated, progressivism is the guiding conceptual framework for this study. Progressivism postulates there is respect for diversity of culture, ideas, abilities, needs, and interests, and that these various diversities should be embraced in the mainstream (general education) classroom. Under a progressive conceptual framework, students would not be separated out of the classroom because they were different in culture, ideas, ability, needs, or interests (Knoester, 2012). A student not being separated out based on ability and needs is crucial to the co-teaching concept. However, how do SWD perform in this mainstream classroom? This has been the overarching question for researchers in this area. The research has shown to be inconclusive as is the current research. However, the current research supports Marston's (1996) research in that a collaborative setting, in which students spend at least part of the time in the general education setting, but are, still allowed time for pull-out services for more individualized specialized instruction. Thus, the progressivism concept that all students belong in the mainstream setting all the time is not supported by the current research.

Limitations of Study

This study is limited by the population of the study, the instrument used to measure academic performance, the use of archival data, and by the quantitative statistical approach. In addition to these limitations we must add sample-size data points. There were not as many data points available in the archival data to run the ANOVA test as originally planned, so a non-parametric test, the Mann-Whitney U tests, was used to analyze the data. However, the small sample size does not invalidate or make the research less reliable. According to Gravetter and Wallnau (2007), a difference between two treatments should cause the scores in one sample to be larger than the other sample. If all the scores are ranked than the scores from one sample should be concentrated at one end and vice versa. However, if there is no treatment difference, then the large and small scores will be intermixed evenly (Gravetter & Wallnau, 2007). Therefore, the results of Mann-Whitney U statistical analysis should be valid and reliable, thus, trustworthy. As a result of the limitations relating to sample size, and the use of only one school in Georgia as a source for data, the results may not be generalizable to the general population of 11th and 12th graders in the rest of Georgia or the U.S. Generalizability refers to taking a sample population and applying those results to the population at large. Before making a generalizability statement one should be cognizant of the limitations of the study.

Recommendations for Future Research

What stands out with the research on the efficacy of co-teaching is that more research is required into why co-teaching works for some and not others. Reviewing co-teaching models used and which students had success will shed light onto why some

students have success and others have not. Because of NCLB, much data have been collected by schools and school districts. However, it appears that the data were mostly being used to grade schools for Annual Yearly Progress (AYP) purposes. This is what was done in Butts County. The high school just recently started to analyze the collected GHSGT results and other standardized test result data to determine student progress. As will be ascertained from the literature review, there was a lack of research on published data relating to the efficacy of co-teaching

As education research cannot be completed in a vacuum, nonetheless, some practical conclusions can be made. If co-teaching was meeting the needs of all students, then test scores in all subject areas would have risen. Since this did not happen, co-teaching is then not meeting the needs of all students. There are questions that need to be answered by future research. First, are the special education students performing on par as their general education classmates? If not, there is a problem, such as their needs are not being met. Second, are all student test scores improving, if not, there is a problem in either delivery of the information or with the test itself. Lastly, with as much data that is being collected, there is little being done with it, but pass/fail rating of schools.

We, as professionals, should be making use of these data, even with their limitations. We collect data to be used to determine achievement gaps, curriculum changes, or any changes in the delivery of information that need to be made to name a few. Like every study of this kind, there are errors (*vide infra*) that put limitations to using the information for more than generalizations. The errors that are typically associated with these type of studies are the same errors one finds with standardized tests.

If we are to accept standardized testing as a measure of quality education, then the myriad problems with the standardized tests in general, and in all probability, affect all students to some extent. Therefore, these limitations, such as gender, race, amount of sleep, nutrition, and socioeconomic status (i.e., systematic errors) make this study, as with all similar type studies and standardized tests, only generalizable (Creswell, 2003). A preprogram trend would be ideal to establish (Fitzpatrick, Sanders, & Worthen, 2004; Gall et al., 2003). A preprogrammed trend for the GHSGT, would be the scores for SWD's and SW/OD before the implementation of collaboration and co-teaching. However, the GHSGT, as it is being used today, was put into place after the passage of NCLB so, there are no data prior to 2002. Students with disabilities prior to 2002 could have been doing worse, which is the most likely case, the same, or better; however, there is no real way that can be determined from the data and information to which I had access. Nonetheless, the current study demonstrates that SWD have not done better with the implementation of collaboration and co-teaching.

The model of co-teaching used should be investigated too. As previously stated, one cannot say that co-teaching does not work based on the current research, but one can ask could the inconclusiveness and discrepancies found in the literature review be caused by the model of co-teaching used? Does one model operate better than another? Current and previous research did not take into account the co-teaching model used, but just co-teaching in general. Perhaps we need to research the model type too.

The following presents recommendation for further research based on the findings of this study. Some further research includes analyzing specific co-teaching styles as

compared to scores on standardized assessments; continue with comparison analysis between collaboration and co-teaching scores on standardized tests; and analyze scores between affluent schools and low socioeconomic schools.

Implications

Georgia has made a commitment to co-teaching prior to decisive and conclusive results around the performance of co-teaching compared to collaborative teaching. As stated previous, some previous research indicated that co-teaching had positive effect. However, those studies did not compare co-teaching to collaborative teaching as this study. The results of this study and the result from Marston's (1996) reveal that the Georgia Department of Education should review its policy on co-teaching. Additionally, more research needs to be done because there have only been two research studies in the past 20 years that have provided a head-to-head comparison of co-teaching and collaborative teaching.

The education of our children is the bedrock of an advanced society. Thus, to keep society advanced and to continue advancing, we must successfully educate our children. For students to be successful in school, their needs must be met. Are we meeting these needs? Apparently we are not meeting the needs of all students. This can be said even though the quantitative research completed thus far is inconclusive. That is some students have success while others do not. The question that we should now be asking is why. Why are some finding success in co-teaching and others not? In this current research, the collaborative classroom setting GHSGT assessment results were also analyzed. These results indicate that in the collaborative setting, SWD had more

success in math, English, and writing compared with those in the co-teaching setting. There were no significant differences for social studies and science. However, when comparing the co-teaching setting to the general education setting, there were statistically significant differences in scores for SWD in math, English, writing, and science. The scores for SWD were lower than for SW/OD. In both settings, collaborative and co-teaching, there were no statistical differences in social studies scores. Marston (1996) stated in his conclusions that there is a third direction that provides SWD the opportunity to learn in a general education setting while still receiving special instructional opportunities not available in the general education setting. This special instruction is provided by pulling the student out of the general education setting, also referred to as pull-out. He was advocating providing both co-teaching and pull-out services to the SWD. This is what the collaborative setting at the high school did and the results indicate an improvement in test scores especially in the critical areas of math and science.

Why are there the differences in math, English, and writing between the collaborative setting and the co-teaching setting? One should ascertain the role variation of the special education teacher between the co-teaching and the collaboration settings. The role of the special education teacher could enlighten educators as to why SWD performed better on math, English, and writing GHSGT in the collaborative setting versus the co-teaching setting. The current research indicates that SWD perform better in the collaborative setting than in the co-teaching setting except in science and social studies. However, SWD did not perform better in science in the co-teaching setting versus the general education setting.

One cannot take generalization to specifics, so I cannot say the co-teaching does not work. What I can say is co-teaching is not working for Butts County. None of the research indicated that students in co-taught classes improved with any statistical significance on the GHSGT. In addition, as Butts County is a low socioeconomic district, it is possible that a school district with similar demographics would have similar results. Perry and McConney (2010) avow "it is well established in the research literature that socioeconomically disadvantaged students and schools do less well on standardized measures of academic achievement compared with their more advantaged peers" (p. 1137). Students in affluent districts from affluent families have more access to outside resources for educational aid such as tutoring. Could this have an effect on SWD performance on standardized tests? One would need to look at the socioeconomic status of the school districts to study and compare how access to resources may influence SWD performance on standardized tests.

The current research indicates that, in Butts County, students in collaborative classes performed better on the GHSGT. Could this be due to the time the special education teacher spends in the classroom? Can the special education teacher be a hindrance instead of a benefit? Perhaps the special education teacher is too helpful, and thus, the SWD do not learn to rely on their ability. Instead, perhaps the special education teacher should teach the SWD tool(s) to use, help them practice using those tool(s), and then let them succeed on their own. Perhaps this is something that should also be researched.

Positive Social Change and Conclusions

Research can lead to positive social change by imparting the information recovered. However, how this information is used, for the most part, is up to those who make policy. This is especially true in education. The current research adds to the body of research already published and as is the case more research should be completed as previously discussed. However, when all the published research is compiled the indication is that co-teaching is not meeting the needs of all students. It is meeting the needs of some, but what about those whose needs are not being met. More research is required into why co-teaching works for some and not others such as reviewing co-teaching models used and which students had success will shed light onto why some students have success and others have not. The positive social change that may arise out of this research is for professionals to continue the research into co-teaching and to conduct new research into other avenues of meeting the needs of SWD. Butts County education professionals may use this research to help guide them to designing a special education program that focuses on the needs of the SWD and how to meet those needs.

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Appendix A: IRB Approval

Jeannette Stach <jeannette.stach@waldenu.edu>

IRB Materials Approved - Jeannette Stach

IRB <irb@waldenu.edu> Mon, Jan 11, 2016 at 5:47 PM
To: "Jeannette Stach (jeannette.stach@waldenu.edu)" jeannette.stach@waldenu.edu
Cc: "Steven G. Little" <steven.little@waldenu.edu>

Dear Ms. Stach,

This email is to notify you that the Institutional Review Board (IRB) confirms that your doctoral capstone entitled, "The Impact of Co-Teaching on the Graduation Test Scores of Students with Disabilities," meets Walden University's ethical standards. Since this project will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. Your IRB approval number is 01-11-16-0127045.

This confirmation is contingent upon your adherence to the exact procedures described in the final version of the documents that have been submitted to IRB@waldenu.edu as of this date. This includes maintaining your current status with the university and the oversight relationship is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to the project staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 10 business days of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB materials, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website:
http://academicguides.waldenu.edu/researchcenter/orec

You are expected to keep detailed records of your capstone activities for the same period of time you retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below: http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Sincerely,

Libby Munson
Research Ethics Support Specialist
Office of Research Ethics and Compliance Email: irb@waldenu.edu
Fax: 626-605-0472
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Office address for Walden University:
100 Washington Avenue South, Suite 900
Minneapolis, MN 55401

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link: http://academicguides.waldenu.edu/researchcenter/orec