

A COMPARISON OF EIGHTH GRADE GENERAL EDUCATION STUDENTS' ELA
SCORES IN CO-TEACHING AND REGULAR CLASSROOMS

by

Deborah Mitchell

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

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ABSTRACT

This causal comparative, *ex post facto* quantitative study compared the Georgia Milestones English Language Arts (ELA) scores of 8th-grade general education students taught in a co-teaching classroom compared with scores of students taught in a regular classroom. The research focused on a comparison of the academic performance of two groups on statewide standardized assessments in ELA over 2 consecutive years, 2017 and 2018. The study contributes to the limited research regarding student achievement of general education students in co-teaching classrooms. This study was based on Vygotsky's social development theory. The research questions examined the differences in the academic performance of general education students taught in a co-teaching classroom over a 2-year period, 2017 to 2018. The subjects in this study comprised four 8th-grade English Language Arts classes, $n = 238$: 125 general education students taught in a co-teaching classroom with 2 certified teachers, and 113 general education students taught in a regular education classroom with one certified teacher. The statewide Georgia Milestones ELA scores from 2017 and 2018 were analyzed using *t*-tests. The results revealed no statistically significant differences in the scores of the 2 groups in either of the academic years examined, and the null hypotheses were failed to be rejected.

Keywords: Academic performance, students with disabilities, general education students, co-teaching, inclusion.

Dedication

I give God all the praise glory and honor to the Father, Son, and Holy Spirit. Thank you,
Father.

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Thank you to my three daughters, Jenice, Khemiah, and Leyandra. You have encouraged me throughout this process. Your comments, of “Come on, Mum, you can do this,” have motivated and inspired me each step of the way. Thank you for enduring this journey with me. Jenice, thank you for taking care of your sisters whilst I was on yet another intensive during the summer.

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List of Abbreviations

American Educational Research Association (AERA)

American Federation of Teachers (AFT)

American Psychological Association (APA)

College and Career Readiness Performance Index (CCRPI)

Elementary and Secondary Education Act (ESEA)

English Language Arts (ELA)

Free and Appropriate Education (FAPE)

Georgia Department of Education (GADOE)

Georgia Standards of Excellence (GSE)

Individual Education Plan (IEP)

Individuals with Disabilities Education Act (IDEA)

Institutional Review Board (IRB)

Least Restrictive Environment (LRE)

National Center for Education Statistics (NCES)

National Council on Measurement in Education (NCME)

No Child Left Behind (NCLB)

Response to Intervention (RTI)

Student with Disability (SWD)

Teacher Effectiveness Measurement Scores (TEMS)

Teacher Keys Evaluation System (TKES)

United States Department of Education (U.S. DOE)

Zone of Proximity Development (ZPD)

CHAPTER ONE: INTRODUCTION

Overview

According to the United States Department of Education (National Center for Education Statistics, NCES, 2017) about 95% of children and youth ages 6 to 21 who were served under the Individuals with Disabilities Education Act (IDEA) in the 2013 – 2014 school year were enrolled in regular schools (NCES, 2017). In addition, among the students ages 6 to 21 served under the IDEA, the percentage who spent most of the school day (i.e. 80% or more of time) in general classes in regular schools increased from 33% in 1990 – 1991 to 62% in 2013 – 2014 (NCES, 2017). However, during the same period, the percentage of students who spent 40% to 79% of the school day in general classes declined from 36% to 19%, and the percentage of those who spent less than 40% of the time inside general classes also declined, from 25% to 14%. In 2013 – 2014, the percentage of students served under the IDEA who spent most of the school day in general classes was highest for students with speech or language impairments (87%) (NCES, 2017). Approximately two-thirds of students with specific learning disabilities (68%) and other health impairments (64%) spent most of the school day in general classes (NCES, 2017). The increase with students with disabilities spending more time in the general education setting has social and academic implications for general education students in the co-teaching classroom with their disabled peers (NCES, 2017).

In this chapter, the researcher provides the reader with the background, presenting a historical, social, and theoretical context for understanding the problem under investigation. The problem statement precedes the purpose of the study, substantiated through a discussion of the study's significance. The researcher then presents the research question, hypothesis, and identification of the variables under examination. Finally, the researcher identifies and defines

words and phrases important to this study.

Background

Co-teaching is a teaching model where two certified professionals, a general education and a special education teacher, teach students with and without disabilities in the same classroom. The educational practice of co-teaching was established and has evolved as a result of federal legislation. The IDEA and the No Child Left Behind Act 2001 (NCLB) stipulated students with disabilities should be taught in the least restrictive environment (LRE) (Kamens, 2007) and that teaching students with disabilities without their non-disabled counterparts is unethical (Gall, Gall, & Borg, 2007).

Most research studies have been qualitative in nature and have focused on the relationship between the co-teaching pairs (Sileo, 2011) and on the following co-teaching models: parallel, alternative, stations, and one teach-one assist (Cook & Friend, 2004). Although some studies suggested students with disabilities in co-teaching classrooms perform better academically and socially than their counterparts in more restrictive environments (Savich, 2008; York-Barr, Ghere, & Sommerness, 2007), limited studies have examined the effect of co-teaching on the academic performance of students without disabilities.

Prior to the reauthorization of the IDEA and NCLB, the existence of a disability was enough to exempt a student from participation in statewide assessments. In 2012, NCLB required states test at least 95% of their students with disabilities (SWD) and included the test scores of SWD in school ratings. Therefore, the data from SWD were evaluated and compared with other students in the district and nationally. According to NCES (2017), 12.1% of the nation's K - 12 students had disabilities in the 2012 - 2013 school year. The Rehabilitation Research and Training Center on Disability Statistics and Demographics at the University of

New Hampshire, funded by the NCES (2017), estimated of the 6,429,431 young people, 6 to 21 years old, 42% (2,700,531) were 12 to 17 years old. In addition, under the IDEA in the fall of 2012, 80.9% of the young people spent 40% of their time in the regular classroom (NCES, 2017.) In the 2014 – 2015 school year, the number of children and youth ages 3 to 21 receiving special education services was 6.6 million, or 13% of all public school students. Among children and youth receiving special education services, 35% had specific learning disabilities (NCES, 2017).

According to the American Federation of Teachers (AFT, 2017), the adoption of the Elementary and Secondary Education Act (ESEA) has not decreased the need for schools to assess, analyze, and evaluate the results of all statewide assessments. The original purpose of the ESEA was to bring fiscal equity and expand opportunities for all children (AFT, 2017). School districts are now required to report and are held accountable for the academic achievement of all students. High stakes annual assessment results are used in accountability systems to measure a school's performance. As a result, school personnel have set higher standards for students with disabilities, and teachers are now responsible for ensuring students meet these standards (Conderman & Hedin, 2014; Friend, 2013; Villa & Thousand, 2009).

As a response to the mandates from NCLB and IDEA, the co-teaching model, having two teachers – one general education teacher and one special education teacher – in the classroom at the same time, has become a popular instructional delivery method and teaching strategy adopted by school district personnel (Conderman, 2011; Sinclair et al., 2018). In addition, the co-teaching model provides an inclusive setting for students with disabilities in an LRE in the general education setting and is also an attempt to make the students with disabilities more accountable for their learning (Cramer, Liston, Nevin, & Thousand, 2010). In the fall of 2013,

the U.S. Department of Education National Center for Education Statistics (NCES, 2017) reported approximately 61.8% of students with disabilities were taught in the general education classroom for the majority of the day, an increase from 2012. Furthermore, the mandate from NCLB stipulated all teachers must be “highly qualified” in their content area. This posed a problem for school districts because special education teachers do not specialize in content and cannot be considered as highly qualified as their counterparts in the classroom (Magiera, Smith, Zigmond, & Gebauer, 2005). Conversely, general education teachers may lack sufficient training to meet the instructional needs of students with disabilities (Gal, Schreur, & Engel-Yeger, 2010). Thus, one of the ways school districts and personnel have attempted to meet the requirements of and comply with IDEA’s LRE policy and NCLB mandates for highly qualified teachers is the adoption of the co-teaching model in schools (Brownell & Walter-Thomas, 2002).

The co-teaching model takes on different formats in different schools and districts. Co-teaching takes the form of one teach-one assist, parallel teaching, alternative teaching, and station teaching (Cook & Friend, 2004; Cramer et al., 2010; Nevin, Thousand, & Villa, 2009). Cook and Friend (1995, 2004), Friend (2013), and McDuffie, Mastropieri, and Scruggs (2009) found in their studies on inclusive classrooms that the special education teacher had a subordinate role in the classroom. By contrast, Nevin et al. (2009) provided evidence of the benefits for educators who collaboratively planned and developed team-taught coursework. However, Nevin et al. also highlighted the need for empirical statistical data on the academic performance of students with and without disabilities in the co-teaching classrooms. Mastropieri et al. (2005) also called for additional support from statistical data. “In addition, systematic programs of research are needed to close the gaps in literature with respect to documenting the impact on the students whose professors co-teach” (Mastropieri et al., 2009, p. 572).

Inclusive education with two certified teachers – a general education and a special education teacher – in the classroom is unique to the U.S. In Europe, particularly in the United Kingdom., typically a certified teacher and a classroom assistant work together, but not two certified teachers teaching in the same classroom. As Muskens and Peters (2009) concluded in a comparative study of inclusion in 10 European countries, inclusion of pupils with a handicap, restrictions, disabilities, special needs, or ‘being different’ is feasible in principle, and inclusive education for almost all is policy in Italy, Spain, and Scotland. Also, educational achievement figures from Europe and further comparative research (Condie, Moscardini, & Grieve, 2011; Cornelius, Landström, & Persson, 2006; Enguita, 2009; Garrison & Vaughan, 2008; Gobbo, Ricucci, & Galloni, 2009; Porter, Schwab, & Sachs, 2004) proved that inclusive education is apparently better than non-inclusive education in terms of achievement and integration (Muskens & Peters, 2009). Other empirical evidence supported the concept that inclusion increases achievement (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010; Murawski, 2006; Sileo, 2011). However, research is limited on the comparison of the achievement of general education students, placed in a co-teaching classroom having both a general education teacher and a special education teacher, with the achievement of general education students, placed in a regular education classroom having one general education teacher.

Co-teaching is one of the solutions adopted to address and resolve the mandate by the U.S. Department of Education to make school districts accountable for the academic performance of all students, disabled and non-disabled (Cook & Friend, 2004; Loertscher & Koechlin, 2015; Sinclair et al., 2018). As the general education teacher takes the lead in dissecting the standard, both teachers design the learning activities to match the standards. The learning activities give students information and develop skills and enduring understandings.

Also, LRE is legislatively defined as the place where: “to the maximum extent appropriate, children with disabilities are educated with children who are not disabled With the use of supplemental aids and services. . .” (Least Restrictive Environment 34 CFR 300.550 (b) (2)). The standard set by the U.S. Department of Education is 90% of students with disabilities will be educated in the general education classroom for a minimum of 80% of the school day. One of the performance goals of LRE is to decrease the gap in performance of students with and without disabilities on statewide achievement tests, (Conderman, 2011; Conderman & Hedin, 2012, 2014). Another performance goal is to increase the percentage of time students with disabilities receive instruction in the general education setting with appropriate supports and accommodations (Hienonen, Lintuvuori, Jahnukainen, Hotulainen, & Vainikainen, 2018; Muskens & Peters, 2009). Thus, within the context of co-teaching as a response to legal mandates on school districts to account for the academic performance of all students, the purpose of this study is to compare the Georgia Milestones English Language Arts (ELA) scores of two groups of eighth-grade general education students. The scores of eighth-grade general education students in an inclusion classroom with two teachers using three preferred co-teaching models: alternative, parallel, and stations teaching were compared with the scores of eighth-grade general education students in a regular education classroom with one teacher.

Background of the Co-Teaching Models

The co-teaching model places two professionals in the same space to work collaboratively to deliver instruction to a heterogeneous group of students. Several school districts have adopted co-teaching as a tool to improve the achievement of students with disabilities and as a response to intervention (RTI) strategy for their non-disabled peers (Hott, Berkeley, Fairfield, & Shora, 2017; Murawski & Hughes, 2009). Thus, two teachers, a general

education and special education teacher, deliver instruction to students with disabilities and their non-disabled peers in the same classroom environment. However, co-teaching today has evolved from what was initially described as inclusion (Kinne, Ryan, & Faulkner, 2016).

Inclusion existed primarily where two teachers volunteered to work together to deliver a unit or a part of the curriculum. However, administrators and school district personnel have used the term co-teaching interchangeably with team teaching, inclusion, and collaboration. In addition, Cook and Friend (2004) differentiated between co-teaching and collaboration. In their research on co-teaching as an instructional model, they defined co-teaching as two or more certified professionals who are responsible for a group of students who are taught in the same space with joint resources and accountability (Brendle, Lock & Piazza, 2017; Cook & Friend, 2004; Woods, 2017). Similarly, Villa, Thousand, and Nevin (2008) defined co-teaching as “two or more people sharing responsibility for teaching some or all of the students assigned to a classroom” (p 256). Villa et al. asserted most of the co-teaching models from elementary to higher education are structured with one general education and one special education teacher sharing the same classroom space.

Five Models of Co-Teaching

Extensive research focused on models of co-teaching (Cook & Friend, 2004; Friend, 2013; Murawski & Hughes, 2009; Sileo, 2011; Villa et al., 2008). However, the research is mainly qualitative, and as such, the results are broad and not specifically related to academic performance. In addition, most of the research is centered on the co-teaching models as providing a quick-fix solution for curriculum leaders and administrators who are seeking ways to comply with the requirements of NCLB and IDEA. School districts and school personnel are being held accountable for the performance and progress of students with disabilities. The co-

teaching models appeared to offer schools the opportunity to comply with the requirements of both NCLB and IDEA. However, ESSA is addressing equity and accountability for all students.

The co-teaching model, as a service delivery method, is not limited to one mode in the classroom. Walther-Thomas et al. (2000) and Cook and Friend (2004) identified five models of co-teaching. These five models include the one teach-one assist model, the stations or centers model, the parallel teaching model, the alternative teaching model, and the team teaching or interactive teaching model.

One teach-one assist model. The predominant model of one teacher teaching and the other assisting places the general education teacher as taking responsibility for leading the instruction. The special education teacher provides supplemental support to all the students in the class(Cook & Friend, 2004). In this model, all students have access to instruction and individual support. Actually, the instructional delivery co-teaching model observed the most was one teach-one assist.

Station or centers model. The second model requires the teacher to organize students into structured groups, with the instructional materials organized in sections around the room. The students complete timed activities and move around the room, completing one activity after another. The teachers work with a particular group of students and provide support as necessary, or they may work at a specific station with a group of students (Friend & Cook, 2000).

Parallel teaching model. The third co-teaching model involves two heterogeneous groups taught the same instruction, one group by the general education teacher and the other by the special education teacher at the same time. Both the general education and special education teachers remain in the same room and deliver direct instruction on the same topic to their group of students. The desired outcome for each group is the same; however, the delivery may be

different (Conderman, 2012)

Alternative teaching model. The fourth model is similar to parallel teaching. However, alternative teaching is different in that the general education teacher works with a large group, while the special education teacher works with a smaller group. Some of the activities conducted by the teacher of the smaller group may include pre-teaching terms or assisting with make-up assignments (Cook & Friend, 2004; Cramer et al., 2010)

Team teaching or interactive teaching. The final co-teaching model is similar to the predominant model of one teach-one assist. The teachers may decide in advance who would deliver a section of the material and as one teaches the other assists with the delivery and or the activities with the students. However, with this model, the teachers share the delivery at specific times through demonstration or discussion (Friend & Cook, 2000).

For the purpose of this study, the students in the co-teaching classrooms experienced three of the co-teaching models, parallel, alternative, and stations, at some time during the two-year span. This study does not seek to compare the types and frequency of co-teaching models used. This study seeks to compare the ELA scores of general education students taught in the two different settings: a classroom with two teachers using three co-teaching models, accommodations, and modifications for students with disabilities; and a classroom with one regular education teacher in the general education setting.

The current research emphasizes the advantages and disadvantages of the co-teaching models for the teachers, students, and school districts. As is evident from the research by Cook and Friend (2004), Cramer et al. (2010), and Villa et al. (2008), several issues are inherent with the co-teaching model that school personnel must address to truly meet the needs of all students. There are disadvantages to the co-teaching models. Two teachers with two different teaching

styles can cause conflict in the classroom and impact class structure (Mastropieri et al., 2005). In addition, co-teaching requires more planning and preparation, and teachers may become overwhelmed because of time constraints. Much of the existing research focused on the models of co-teaching and the relationships between the teachers (Cook & Friend, 2004; Hock & Isenberg & Walsh, 2015; Jang, 2010; Nevin et al., 2009; Nichols, Dowdy, & Nichols, 2010; Sileo, 2011; Stang, 2015; Tiwari, Das, & Sharma, 2015).

Cook and Friend (2004), Jang (2010), Nevin et al. (2009), Nichols et al. (2010), and Sileo (2011) have also identified common advantages with the co-teaching model. Research has found that co-teaching in some classrooms allows the general education teacher to focus on the content, while the special education teacher can concentrate on simplifying the content and providing accommodations for the students with disabilities (Nichols et al., 2010). With two teachers in the classroom, at times students can get extra attention or be provided with instructional scaffolding, or additional instruction regarding content, which can lead to students having more confidence (Nevin et al., 2009). Quantitative statistical evidence is lacking addressing whether the co-teaching classes have any significant effect on the academic performance of students with and without disabilities and the impact of co-teaching, compared with a single-teacher classroom, on the learning environment for all students.

Several factors contribute to the success or failure of the co-teaching learning environment: for example, teacher compatibility, teacher knowledge of co-teaching, and teacher communication skills (Friend, 2008; Mastropieri et al., 2005). Limited research exists on the academic performance of general education students taught in the same classroom as students with disabilities. Murawski and Dieker (2008) suggested a need for more statistical evidence on the effects of co-teaching and academic performance. This quantitative causal comparative/ex

post facto study addressed that gap in the body of knowledge related to the impact of co-teaching on general education students without disabilities in inclusion classrooms.

Problem Statement

The problem is while extensive research has been conducted on the achievement of special education students in the co-teaching environment, a gap exists in the literature about the impact of the co-teaching environment on the ELA achievement of general education students (Murawski & Lockner, 2011). Increased accountability has prompted school personnel to analyze the results of statewide standardized tests, but more importantly to use the data to guide curriculum development and to adapt student assessment (Murawski & Bernhardt, 2015). This study provides data to assist teachers' and school administrators' understanding of teachers' perception of the classroom environment, teaching strategies, and academic performance of eighth-grade general education students in the co-teaching setting with two teachers using three co-teaching models: alternative, stations, and parallel. This study addresses the need for more statistical data on the effectiveness of the co-teaching classroom environment to increase the achievement of general education students when compared to their peers taught in a regular classroom with one teacher.

Purpose Statement

The purpose of this causal-comparative study is to identify whether significant differences exist in the ELA scores of eighth-grade general education students in a co-teaching classroom and those in the regular education classroom with one teacher in a school district in the northeast of Georgia. In this study, the researcher sought to determine whether a significant difference exists in the academic performance in ELA of general education students in a co-teaching classroom when compared with their peers in a regular education classroom. Co-

teaching was developed by school districts as a response to legal mandates from IDEA and NCLB and increased accountability for the academic performance of all students in high stakes statewide tests. It is critical for educators to use evidenced-based practices to ensure all students are making progress as compared to their peers in the school, district, state, and nationally. In this quantitative study, the researcher seeks to compare the Georgia Milestones ELA scores of general education students taught in a co-teaching classroom with two certified teachers with their peers taught by one teacher in a general education classroom. The Standards aim to align instruction with the National Assessment of Educational Progress (NAEP) framework so that many more students than at present can meet the requirements of college and career readiness. In fulfilling the standards for grades 6 – 12 ELA, the NAEP assessment framework matches instructionally to measure students' growth toward college and career readiness. Therefore, assessments such as the Georgia Milestones in ELA are aligned with the state Standards and are used by the state to measure students' growth.

This study is grounded in Vygotsky's social development theory. Vygotsky's studies impacted the area of education, particularly in the area of special education (Vygodskaya, 1999). Vygotsky argued that in a conducive environment with the right adults and peers, all children can succeed and even exceed expectations (Stengers, 2008). Therefore, within this framework, it appears that co-teaching classrooms lend support to the concept that students who work with a group of more knowledgeable peers and with guidance from an educator can positively impact all students and lead to greater cognitive gains for students with disabilities. According to the social development theory, the independent variables of co-teaching are expected to impact the dependent variable of the Georgia Milestones ELA scores (Stengers, 2008).

Significance of the Study

The purpose of this quantitative study is to determine if differences exist in the academic performance as measured by the statewide tests administered at the end of the academic year to assess general education students' mastery of the state standards in ELA taught in co-teaching and regular education classrooms. Research on the co-teaching classroom has generally focused on the ways in which school districts are attempting to meet the requirements of NCLB and IDEA (Conderman, 2011; Cook & Friend, 2004; Cook, McDuffie-Landrum, Oshita & Cook, 2011; Cramer et al., 2010; Murawski, 2006). The co-teaching model is cited as an instructional strategy in itself, which can increase the capacity of teachers to work collaboratively to meet the needs of diverse learners in the classroom (Nevin et al., 2009). Nonetheless, even within higher education, "there are no models for research that assess the impact on student achievement when professors co-teach" (Nevin et al., 2009, p. 573). Goran and Gage (2011) found students with emotional disorders and learning disabilities performed poorly compared to their non-disabled peers in English Language Arts. This result is attributed to the relationship of the students' disability and history of suspension, rather than the relationship of the students' cognitive ability, academic performance, or language skills. The results from this current study address this gap in the literature.

This quantitative study sought to compare the ELA scores of general education students taught in a co-teaching classroom with scores of general education students taught by one teacher in a regular education classroom, as determined by the state standards. The standards aim to align instruction with the National Assessment of Educational Progress (NAEP) framework so many more students than at present can meet the requirements of college and career readiness. In fulfilling the standards for 6 – 12 English Language Arts, the NAEP assessment framework is to be matched instructionally to measure students' growth toward college and career readiness,

and assessments such as the Georgia Milestones are aligned with the standards (GADOE, 2014). Empirical studies on the adoption of the co-teaching model are still in their infancy. Co-teaching evolved in the 1980s but was only truly implemented and researched well into the 1990s.

The current research focuses primarily on the benefits of co-teaching for students with disabilities. The main findings state the general education teacher can provide the content area knowledge, while the special education teacher provides the best modifications and accommodations to meet the individual needs of students with disabilities in the general education classroom. Co-teachers develop strategies in which they demonstrate concepts, model, lead discussions, and create a positive learning environment. Students have the opportunity to become involved in hands-on learning experiences (Dieker, 2001). Therefore, in this setting, the special education teacher can still assist students with disabilities in meeting their IEP goals and objectives in the general education classroom alongside their non-disabled peers (Kloo & Zigmond, 2008).

Cook and Friend (1995) identified an important factor in the success of the co-teaching model, mutual trust and commitment between teachers and specific characteristics that co-teachers share consistently, which makes co-teaching a success. However, other studies have alluded to major limitations with the co-teaching models as a teaching strategy. The limitations reported are teacher incompatibility, limited staff development training, lack of classroom management plans that both teachers initiate, misunderstandings, and lack of clear expectations of each teacher's role (Friend & Cook, 2000; Keefe & Moore, 2004; Sileo, 2011). Researchers have rarely examined and evaluated the effect of co-teaching and student academic performance (McDuffie et al., 2009). The emphasis has been on qualitative studies, which focus on the co-teaching models, the perception of students and teachers of the co-teaching models, the practice

of the co-teaching models, the relationship of the teachers, and the effect on students with disabilities. Limited statistical research addresses the effect of co-teaching on the academic performance of general education students, and even less on how general education students in the co-teaching classroom compare with other general education students taught by one certified professional (Cramer et al., 2010; Kloo & Zigmond, 2008; McDuffie et al., 2009).

The education community, policymakers, school districts, school administrators, and teachers need statistical research to support co-teaching as a solution to the problem of general education teachers lacking skills to educate children with disabilities and special education teachers lacking content knowledge to be deemed highly qualified. Therefore, in this study the researcher aimed to determine if the co-teaching classroom with specialized instructional activities, planned and delivered by two certified professionals, impacts the academic achievement of the general education students in the classroom by comparing their scores with the ELA scores of general education students taught by one certified professional in a regular education classroom.

The independent variable was the presence and or absence of the co-teaching instructional environment and general education students, that is students without disabilities, who do not have an IEP, do not receive specialized instruction, and who do not receive services from a special education teacher. Another independent variable was the 2017 and 2018 general education students in co-teaching classrooms and general education students in general education classrooms. The dependent variable was the Georgia Milestones ELA scores from 2017 and 2018. The Georgia Milestones ELA End of Grade test is assessed as beginning, developing, proficient, and distinguished level.

Research Questions and Hypotheses

In this study, the researcher compared and analyzed the Georgia Milestones ELA scores of eighth-grade general education students taught in the regular education classroom with scores of general education students taught in the co-teaching classroom over two consecutive years.

The following were the research questions:

RQ1: Is there a difference between the 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom?

RQ2: Is there a difference between the 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom?

Definitions

The following key vocabulary and definitions provide a critical common understanding for the content of this study.

1. *Accommodations* - Accommodations are adjustments and modifications made to the way students receive educational material and assessments for the student to learn and access the same concepts as their non-disabled peers (Cruey, 2006). The Individuals with Disabilities Education Act (IDEA) did not offer a definition for accommodation or modification. However, general agreement exists as to what the terms mean. An accommodation allows a student to complete the same assignments as other students, but permits a change in the timing, formatting, setting, scheduling, response, or presentation. An accommodation does not alter what the test or assignment measures.

- A modification adjusts the expectations for an assignment or a test. Modifications permit a change in what a test or assignment measures (GADOE, 2017)
2. *College and Career Readiness Performance Index (CCRPI)* - CCRPI is Georgia's annual tool for measuring how well its schools, districts, and the state itself are preparing students for the next educational level. The CCRPI provides a comprehensive roadmap to help educators, parents, and community members promote and improve college and career readiness for all students (GADOE, 2018).
 3. *Co-Teaching* - Co-teaching comprises the general education teacher, who specializes in the content area, and the special education teacher, who is the expert in the learning strategies, working together to teach in the same classroom (Cook & Friend, 2004; Mastropieri et al., 2009; Sileo 2011; Solis, Vaughn, Swanson, & McCulley 2012).
 4. *General Education* - General education is a term that refers to non-special education programs (Glynn, Aultman, & Owens, 2005; Tszumski, 2015). General education for the purposes of this study refers to a classroom led by a teacher who does not have special education certification, and the classroom may or may not have students with disabilities.
 5. *Georgia Milestones (Georgia Milestones Assessments)* – Georgia Milestones are Georgia's statewide standardized assessments introduced in 2014 and used to measure whether students have mastered the Georgia Standards of Excellence (GA DOE, 2017).
 6. *Georgia Standards of Excellence (GSE)* - GSE are the professional standards upon which Georgia curriculum frameworks are based and by which performance standards are assessed (GADOE, 2017).

7. *Inclusive Education* - Inclusive education consists of provision for the educational experience for all students in the same age appropriate classroom. All students are accountable for the same content knowledge, and the services for students with disabilities are provided in the classroom (Conderman, Johnston-Rodriguez, & Hartman, 2009; Murawski & Swanson, 2001; Schwab, Holzinger & Krammer, 2015).
8. *Individualized Education Plan (IEP)* - An IEP is a written plan developed by a committee to define the goals and expectations of a child with disabilities. The IEP states the types of support services, accommodations, and modifications necessary to help students with disabilities achieve their goals (Katsiyannis, Mitchell, Yell, & Bradley, 2001).
9. *Least Restrictive Environment (LRE)* - In the LRE, students with disabilities learn the curriculum and are involved in the programs alongside their non-disabled peers (IDEA, 2004). Each Local Education Authority (LEA) shall have policies and procedures to ensure that to the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities in Georgia, shall be educated with children who are not disabled [34 C.F.R. § 300.114(a) (2) (i)] (GADOE, 2017).
10. *No Child Left Behind Act* - The No Child Left Behind Act (NCLB) reform was enacted to hold educational agencies and states accountable for improving the quality of education for all students (Maleyko & Gawlik, 2011).
11. *Student with a Disability (SWD)* - IDEA (2004) defined students with disabilities as: a child with mental retardation; hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional

disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and who by reason thereof, needs special education and related services. (20 U.S.C. 1400 602.3.A.i)

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter will include an in-depth review of the literature used to theoretically and conceptually guide this study. In this study, the researcher compared the Georgia Milestones ELA scores of eighth-grade general education students taught in a co-teaching environment with scores of eighth-grade general education students taught by one teacher in the regular education classroom within an educational context of a middle school setting with grades 6 - 8. The purpose of this causal comparative/*ex post facto* research study is to understand the impact of co-teaching on the ELA scores of general education students in a co-teaching setting by comparing their ELA scores with general education students taught in a regular education classroom with one teacher.

Through this study, the researcher sought answers to the following research questions. Is there a statistically significant difference between the Georgia Milestones ELA scores of eighth-grade general education students taught in a co-teaching classroom and the Georgia Milestones ELA scores of eighth-grade general education students taught in a regular education classroom for two consecutive years in 2017 and 2018? For the purpose of this study, co-teaching was generally defined as two certified teachers, one special education and the other general education certified in the content area, working in the same classroom environment. The co-teaching models practiced in the co-teaching classroom was defined as parallel, alternative, and stations. The Georgia Milestones ELA scores from 2017 and 2018 were used to measure the difference between a significant change in the academic performance of the eighth-grade general education students in co-teaching classrooms and in the academic performance of the eighth-grade general education students taught by one certified teacher. The social development theory, as defined by

Vygotsky was the guiding theory for this study and relates directly to the concept of the zone of proximal development (ZPD). ZPD relates to how a student learns or develops with help from a teacher or a more knowledgeable peer (Levykh, 2008).

An exhaustive review of the literature was conducted on the topic using keywords such as: co-teaching, co-teaching models, general education students and co-teaching, criterion-referenced competency tests, ELA scores, general education students and academic performance, standardized state tests, academic achievement, accountability, and high stakes testing. The literature centered around the following topics: the types of co-teaching models, the benefits of co-teaching, the impact of co-teaching on academic performance, the challenges with the co-teaching models, and current research on co-teaching and general education students. Each of these literature topics will be discussed and summarized in this chapter, and strengths and weaknesses identified in an effort to provide an understanding of how the co-teaching models affect the ELA scores of general education students taught with students with disabilities by two certified teaching professionals.

Generally speaking, the literature selected fits within four overarching categories used as an outline for this literature review. The review begins with an overview of social development theory by Vygotsky. The social development theory is the overarching theoretical framework for this study. The conceptual framework under review is known as the zone of proximal development. This provides a conceptual context for understanding how the co-teaching model impacts and influences the academic performance of general education students. Archival data from statewide testing was used to compare how two similar groups of eighth-grade general education students perform academically, after being taught the same standards for the same length of time. However, one group was taught by two teachers in a co-teaching setting, and the

other group was taught by one teacher. Finally, the end of year statewide Georgia Milestones scores in ELA were reviewed and provided a means to compare the achievement of two groups of similar students but who were exposed to two different instructional strategies and teaching models. In addition, the co-teaching models used in this study provided the basis for this study and grounds for both the form and the content of this study and established the importance of this study as contributing to the existing empirical knowledge base.

Theoretical Framework

This study was based on Vygotsky's social development theory. Vygotsky stated individuals and their environment should not be viewed as two distinctly separate factors, but both factors can be added to explain an individual's behavior. Indeed, the individual and environment mutually shape each other in a spiral process of growth (Spooner, Baker, Harris, Allgrem-Delzell & Browder, 2007). This theory supports the co-teaching, inclusive environment where students with and without disabilities are taught in the general education classroom. The social development theory also lends support to the possible effects of co-teaching on the academic performance of both disabled and non-disabled students taught in the same classroom by two highly qualified professionals (Schreiber, 2013).

Social Development Theory

Vygotsky espoused cognitive development as partially reliant on social interactions between peers and educators (Gindis, 1999; Vanderburg, 2006). Conversely, poor social interactions limit cognitive development and increase difficulties with processing speed and executive functioning skills. The impact and influence of the co-teaching model on academic performance can be applied to the social development theory because co-teaching practices enhance the social interactions of students with differing academic and cognitive abilities and

teacher collaboration (Ruben, Rigelman, & McParker, 2016; Zagona, Kurth, & MacFarland, 2017). Students with disabilities also benefit from the specialized instruction of the special education teacher and the content area knowledge from the general education teacher. Research studies by Fruth and Woods (2015), Loertscher and Koechlin (2015), Pratt (2015), and Strogilos and Stefandis (2015) asserted the inclusive environment has been generally accepted as increasing the educational performance and social experience of students with disabilities.

Thus, based on the social development theory, students with disabilities in the co-teaching setting should experience greater opportunities to increase their cognitive development compared to receiving their education solely in the special education setting. In addition, students without disabilities also benefit from the specialized instructional supports provided by the special education teacher in the co-teaching classroom. Vygotsky argued that the environment plays an important role for every child irrespective of their cognitive ability, but how a child's environment is created is dependent on the child's own perception. As such, children in a co-teaching classroom may have a different perspective on the social environment, even though the physical environment may not have changed (Pitsoe & Maila, 2012; Vygotskaya, 1999). Vygotsky asserted the environment is not an absolute entity but plays the same role for every child regardless of the mental capacities or age (Spooner et al., 2007). Furthermore, children may have different interpretations of their social environment and social interactions. Similarly, adults alter their social interactions based on their perceptions and interpretations of the social and physical environment (Chitiyo, 2017). A co-teaching setting requires two adults to share the same classroom (Pratt, 2015). Therefore, according to the social development theory, the social interactions in a co-teaching class differ from the social interactions in a classroom with one classroom teacher. As a result, co-teaching creates and

develops social interactions with students and adults that are not evident in a general education classroom (Murphy, Scantlebury, & Milne, 2015; Spooner et al., 2007).

The social development theory and Vygotsky's concept of the zone of proximal development focuses on the social interactions of students and adults. However, Vygotsky's ZPD theory can appear very ambiguous and hard to measure. Knowing the width of children's zones does not provide an accurate picture of their learning or current level of development compared to other children of the same age and degrees of motivation. Having a wide or narrow zone can be desirable or undesirable depending on its causes. Simply assessing children's zones provides an incomplete development picture. Another problem of measurement is the absence of a common metric scale to measure an individual child's zone, and little is known about generality and stability of an individual zone.

Related Literature

High Stakes Testing and Co-Teaching

Accountability and high-stakes testing is a topic which continues to generate great debate among educators at local, district, state, and national levels. Research studies have focused on test-taking strategies, the importance of passing the test, and the effects of high stake tests on schools (Amrein & Berliner, 2002; Dianis, Jackson, & Noguera, 2015; Hursh, 2005; Nichols & Berliner, 2007; Polleck & Jeffery, 2017; Pratt 2015). As a result, according to the American Federation of Teachers (AFT, 2017), school administrators are now becoming more adept at analyzing their data to learn ways to use the results to raise academic performance of the students, by identifying and targeting interventions to close the large achievement gaps or large numbers of low-performing, disadvantaged groups.

Prior to the No Child Left Behind Act of 2001 (NCLB) and the Individuals with

Disabilities Education Act of 2004 (IDEA), the existence of a disability was enough to exempt a student with disabilities from participation in statewide assessments (Carpenter & Dyal, 2007; Cramer, Liston, Nevin, & Thousand, 2010). School districts are now required to report and are held accountable for the academic performance of students with and without disabilities. Consequently, school districts have set higher standards for students with disabilities, and teachers are responsible for ensuring students meet these standards.

Thus, in response to NCLB and the re-authorization of the federal special education legislation, IDEA, having two teachers in the classroom has become a popular method of instructional delivery and teaching strategy (Brigham, Mastropieri, & Scruggs, 2011; Conderman, 2011; Cramer et al., 2010; Jang, 2010; McHatton & Daniel, 2008; Sileo, 2011; Solis, Vaughn, Swanson, & McCulley, 2012; Tannock, 2009; Tsang, 2013, William, Jonte, Watt, & Kaldenberg, 2014). This teaching strategy provides an inclusive setting for special education students in the least restrictive environment (LRE). The co-teaching model places two professionals, a general education and special education teacher, in the same space to work collaboratively to deliver instruction to a heterogeneous group of students, that is, students with disabilities and their non-disabled peers.

Co-teaching as an instructional model has been adopted by several school districts as a tool to raise the academic performance of students with disabilities and as a response to intervention (RTI) strategy (Murawski & Hughes, 2009; Murawski & Lockner, 2011). As a result, school administrators have hastily put together co-teaching groups in an attempt to meet the legal mandates. The existing research is qualitative in nature and emphasizes what co-teaching is and is not, questions the impact on academic success of students with disabilities and school districts, and the lack of professional development for co-teachers in the secondary

and higher education settings. Research by Cook and Friend (2004), Cramer et al. (2010), Fontana, (2005), Friend, (2008, 2013); Rice and Zigmond (2000), and Villa, Thousand, and Nevin (2008) provided evidence of some inherent issues with the co-teaching model. For example, teachers did not have common planning time; administrators selected the co-teaching pairs, and teachers did not have a choice about who they would be working alongside in the same classroom. Teachers having different classroom management styles was not always conducive for learning in the co-teaching classroom. In addition, Mastropieri et al. (2005) reported special education teachers had a subordinate role in the classroom. Their activities were limited to distributing handouts and performing the functions of a paraprofessional.

The co-teaching model takes on different formats in different schools and districts. Co-teaching may take the form of *one teach-one assist*, *one teach-one observe*, *parallel teaching*, and *alternative teaching* (Cook & Friend, 2004). Some quantitative research studies focused on the academic performance of students with disabilities in the co-teaching environment, but limited research exists on the academic performance of the general education students taught in the co-teaching environment. In conclusion, this study compares the Georgia Milestones ELA scores of eighth-grade general education students taught in the co-teaching classroom having two professionals, with the Georgia Milestones ELA scores of eighth-grade general education students, taught in the regular classroom with one certified teacher.

Historical Context of Co-Teaching

The environment in which students with disabilities were taught and cared for changed dramatically after the enactment of the Education for all Handicapped Children Act of 1975 (Keogh, 2007). Before 1975, the educational provision for students with disabilities was delegated to private and charitable organizations (Kamens, 2007). As a result of the act, all

students with disabilities are entitled to a Free and Appropriate Public Education (FAPE) in an LRE where they can access the same curriculum in the same classroom with their non-disabled peers (Kamens, 2007). In addition, this act required all educators to become highly qualified to provide academically challenging and individualized education programs (IEPs) for students with disabilities (Kamens, 2007).

As a result of these requirements, educators became responsible for developing IEPs for students with disabilities, with the added condition of ensuring the students with disabilities receive education in their LRE that also included student supports and accommodations to enable the student with a disability to access statewide standards and curriculum (Dow & Thompson, 2017; McHatton & Daniel, 2008; Murawski & Swanson, 2001; Vizenor & Matuska, 2018). Thus, FAPE enabled students with disabilities to be taught in their LRE with their non-disabled peers. In addition, FAPE also brought to the forefront educators' lack of knowledge and skills in the new practices required to support students with disabilities (Conderman, Johnston-Rodriguez, & Hartman, 2009; Downey, 2017).

In the 1980s, the emphasis on mainstreaming, that is placing students with disabilities in classrooms with their non-disabled peers with little or no support, was the first step to integration or inclusive classrooms. However, it served to accentuate the different needs of students with disabilities, and how the general education teacher was ill-equipped to meet their needs. In the 1990s, the IDEA and the Americans with Disabilities Act (ADA) reforms continued to impel educators to accept students with disabilities into the general education classroom (Conderman, 2011). Later revisions of IDEA in 1997 and 2004 further stipulated the expectation and requirement of inclusion. In addition, the NCLB Act of 2001 reinforced this requirement even further (Rice, Drame, Owens, & Frattura, 2007).

The IDEA and NCLB have changed the educational environment and experiences of all types of learners (Rice et al., 2007). Due to legislative controls and accountability measures from NCLB and IDEA, school districts are striving to adopt research-based instructional strategies to improve the academic performance of all students, including students with disabilities. All students with disabilities must be taught the same standards and curriculum as their non-disabled peers. However, the planning, delivery, and assessment must incorporate differentiated instruction and individualized instructional modifications and supports (Rice et al., 2007; Shoulders & Krei, 2016).

The literature on the historical context of the development of the co-teaching models in school districts focused on co-teaching as a response to the NCLB and IDEA legislature. As such, the federal legislation and litigation involving the equality of education for students with disabilities has led to major changes in the education of students with disabilities over the last 50 years. From humble beginnings in segregated institutions with a little to no beneficial instruction to integration in general education classrooms and mandated accountability, special education has changed over five decades (McHatton & Daniel, 2008; Osgood, 2008).

Co-teaching evolved as a response for school districts to meet legal requirements of least restrictive environments for students with disabilities, not as a result of improving the academic achievement/attainment of disabled and non-disabled students. The school districts were required to provide settings that would allow non-disabled and disabled students to be educated in the same environment. Consequently, professionals were required to be skilled in their content area and in specialized instruction (Friend, 2013; Guise et al., 2016; Osgood, 2008). Rice et al. (2007) stated NCLB and IDEA made school districts accountable for the academic achievement of all students. The legislation meant students with disabilities were no longer

exempt from statewide standardized tests, and they were also expected to be taught all the standards as their non-disabled peers. The focus of the studies provided a rationale for school districts to adopt the co-teaching models in schools but based on meeting the needs of legislators, not the individual needs of the students. School districts responded to the requirements of high stake testing, but at the time, little evidence exists on how inclusion affects the academic and social interactions of general education students taught with students with disabilities by two certified teachers.

Conderman (2010) and Rice et al. (2007) provided evidence the co-teaching models introduced after the enactment of NCLB and IDEA leave a gap in the literature in terms of effectiveness as an instructional tool used to raise the attainment levels of disabled and non-disabled students. The studies failed to address how and if the needs of the students were actually being met in the classroom and how the dynamics of the two professionals in the classroom impacted the academic performance of the disabled and non-disabled students. Although later studies addressed the relationship of the two professionals in the classroom (Conderman, 2011; Cosier, Causton-Theoharis, & Theoharis, 2013; Goran & Gage, 2011; Sileo, 2011), research is still limited addressing how general education students taught in an inclusion setting perform academically, when compared to their counterparts taught by one teacher (Hienonen, Lintuvuori, Hotulainen & Vainikainen, 2018).

The Development of the Co-Teaching Model

The co-teaching model was initially called “inclusion.” Two teachers would volunteer to work together and deliver a unit or part of the curriculum together. The instructional model of collaborative teaching, the practice of a general educator and a special educator sharing all responsibilities for a class, including the delivery of instruction, planning, and management of

behavior have evolved over a period of time and has been referred to as team teaching (Cook & Friend, 1995; Dieker & Murawski, 2003; Rice et.al., 2007; Walsh & Snyder, 1993).

However, NCLB and the IDEA improvements in December of 2004 placed a greater importance for students with disabilities to be educated in a general education setting (Cramer et al., 2010). School districts and curriculum leaders responded by introducing the co-teaching model to meet the demands of the mandate, which required all professionals to be highly qualified in their content area. Thus, special education teachers were required to meet the highly qualified provision of the NCLB and IDEA, and in Georgia, special education teachers were required to pass the state tests in the content area they teach. As such, in recent years, the growth and adoption of the co-teaching model has been primarily a result of the highly qualified provision, and teachers are asked to co-teach or collaborate without any specific training from their administrators and or school districts (Cook & Friend, 2004).

Extensive research addresses the co-teaching models, (Cook & Friend, 2004; Cramer et al., 2010; Friend, 2008; Hang & Rabren, 2009; Jang, 2010; Sileo, 2011). Initially, the co-teaching models were viewed as a “quick fix” solution for curriculum leaders and administrators to hastily find a solution for school districts that were seeking ways to comply with the requirements of NCLB and IDEA. The IDEA of 1997 made it necessary for students with disabilities to receive instruction in the same classroom as their non-disabled peers but still receive their necessary accommodations. School districts and school administrators are being held accountable for the performance and progress of students with disabilities, and co-teaching models offered schools the opportunity to comply with the requirements of both NCLB and IDEA (Friend & Cook, 2000).

Administrators and school district personnel used the term co-teaching interchangeably

with team teaching, inclusion, and collaboration. However, Cook and Friend (2004) differentiated between co-teaching and collaboration. In their research on co-teaching as an instructional model, they defined co-teaching as two or more certified professionals who are responsible for a group of students and who are teaching in the same space with joint resources and accountability (Cook & Friend, 2004). Similarly, Villa et al. (2008) defined co-teaching as two or more people sharing responsibility for teaching some or all of the students assigned to a classroom. Villa et al. asserted most of the co-teaching models from elementary to higher education are structured with one general education and one special education teacher sharing the same classroom space.

Models of Co-Teaching

Research on co-teaching delivery models was initially limited to observation of the types of co-teaching service delivery methods and identified five models of co-teaching (Cook & Friend, 2004; Rea, McLaughlin, & Walther-Thomas, 2002). These models included one teach-one assist; stations or centers; parallel teaching; alternative teaching; and team teaching, also called interactive teaching. Mastropieri et al. (2005), Murawski and Swanson (2001), and McCray, Butler and Bettini (2014) reported the co-teaching model as an instructional strategy that too often resembles teacher collaboration rather than the co-teaching model.

One teach-one assist. The predominant model of one teacher teaching and the other assisting placed the general education teacher as taking responsibility for leading the instruction. The special education teacher provided the supplemental support to all the students in the class. The support observed ranged from prompting and redirecting students, explaining and paraphrasing directions, and distributing materials or resources (Cook & Friend, 2004).

Unfortunately, with one teach-one assist the best practices often recommended for the co-

teaching model were not observed. These best practices, which include small groups, parallel teaching, alternative teaching, test-taking strategies, study skills, and ELA comprehension exercises, were missing from the one teach-one assist model of co-teaching. In some instances, the special education teacher's role is limited to that of a teaching assistant and not that of a certified teacher qualified to provide specialized instruction (Carty & Farrell, 2018; Cook & Friend, 2004; Cramer et al., 2010; Dieker, 2001; Dieker & Murawski, 2003; McCray et al., 2014).

Stations or centers. Stations or centers teaching requires the teacher to organize students into structured groups. The instructional materials are organized in sections around the room, and the students complete timed activities and move around the room, completing one activity after another. The teachers work with a particular group of students and provide support as necessary, or they may work at a specific station with a group of students (Cook & Friend, 2004; Friend, 2008).

Stations as a co-teaching model allows the teachers to use data to drive their instruction, and group general and special education students to work together at their instructional levels. Assignments and materials are prepared based on the standards and the necessary skills required to master the standards. Students are part of a heterogeneous group, who move around the room, completing standards-based activities to practice the skills required to meet the standards. (Conderman, 2011; Conderman & Hedin, 2014).

Parallel teaching. Parallel teaching is a third model. In this model, two heterogeneous groups (general education and special education students) receive the same instruction. The general education teacher teaches one group, and the special education teacher teaches the other group at the same time, in the same classroom (Friend, 2008). Cook and Friend (2004) identified

practical issues in relation to this co-teaching model. They identified that one aspect creating an issue is having both teachers teaching the same material in the same classroom at the same time. The groups are a mixture of general and special education students whose skills, content knowledge, and level of mastery of the standards vary (Dieker, 2001).

However, both special education and general education teachers are expected to know the content and the special education accommodations (Conderman et al., 2009; Cook & Friend, 2004; Dieker 2001; Friend, 2008). The teachers may use the same teaching and learning strategies to deliver the same content. However, with the class divided into two groups, both teachers can provide their students with greater attention, break the materials into smaller chunks at a pace that is appropriate for each group and monitor the learning process and progress of each student.

Alternative teaching. With the fourth co-teaching model of alternative teaching, the general education teacher works with a large group, while the special education teacher works with a smaller group. Instruction is being delivered at the same time, in the same space. Although the teachers may be delivering the same content, different skills, assignments, and teaching methodologies are utilized by each teacher (McCray et al., 2014; Solis et al., 2012).

The general education or the special education teacher may support the students with remediation of topics and or standards that have not been mastered, assist with make-up assignments, and pre-teach terms and concepts of new material. Time for planning is required for both teachers to effectively deliver instruction in the co-taught classroom using the alternative teaching model (Shin, Lee, & McKenna, 2016; Walsh 2012). Teachers have to be mindful of some practical things when delivering instruction using the alternative model as a method of co-teaching instructional strategy. Cook and Friend (2004) and Sileo (2011)

highlighted classroom management styles and prior agreement to utilizing shared resources (Friend, Cook, & Hurley-Chamberlain, 2010; Friend et al., 1993; Scruggs & Mastropieri, 2007; Walsh 2012).

Team teaching/interactive teaching. The final model, team teaching or interactive teaching, is similar to the predominant model of one teach-one assist. In the team teaching delivery model of co-teaching, both the general education and the special education teacher lead large-group instruction by both teaching the same material. However, they may lead a discussion representing the opposing views in a debate or demonstrating another way to solve a problem (Friend & Cook, 2010).

Effective delivery of team teaching as a co-teaching model requires the teachers to decide in advance who would lead or assist with the delivery of a theme or topic during the planning of the lesson. This model of co-teaching also requires both the general education and special education teacher to have knowledge of the content area and not just the students' accommodations. The teachers share the delivery at specific times through demonstration or discussion (Cook & Friend, 2004; DeMartino & Specht, 2018; Friend et al., 2010; Hurd & Weilbacher, 2018; Scruggs & Mastropieri, 2007; Walsh 2012). A diagram of teaming, as well as the other co-teaching models, are provided in Figure 1.

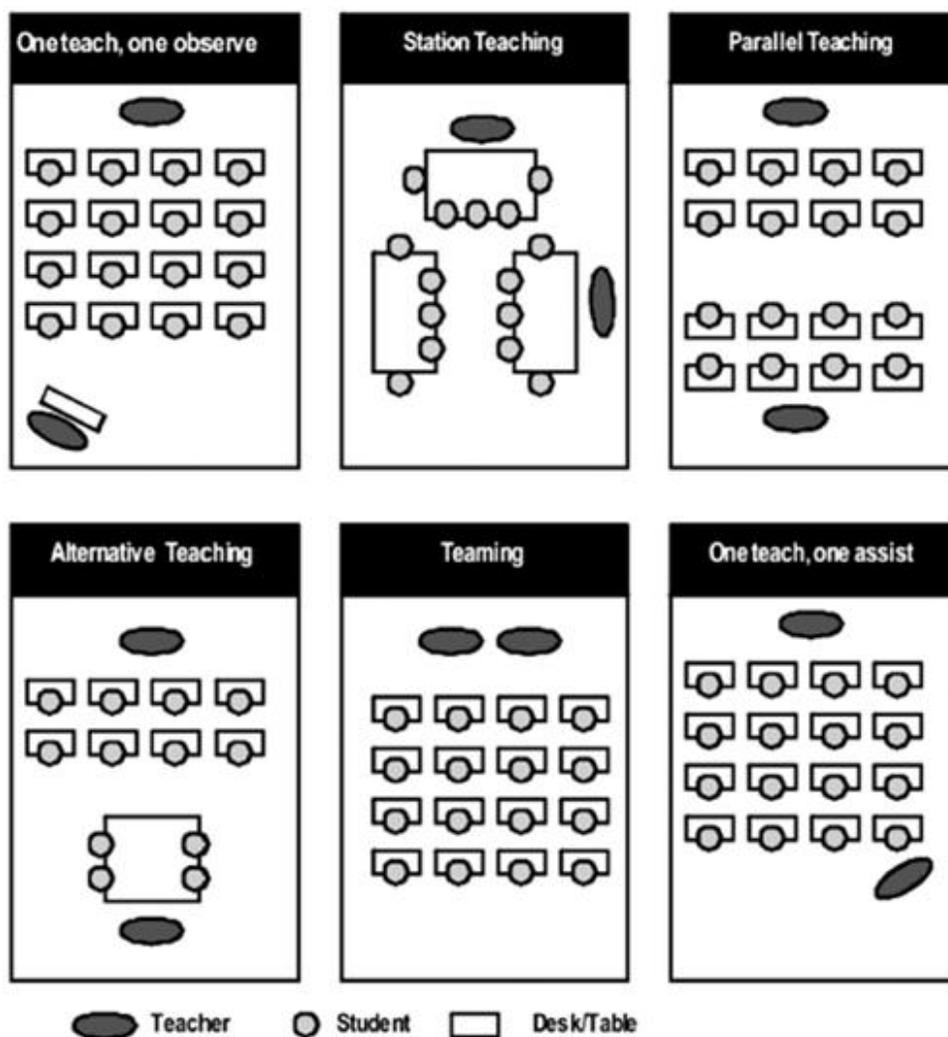


Figure 1. Co-teaching approaches. From M. Friend & W. D. Bursuck, 2009, *Including Students with Special Needs: A Practical Guide for Classroom Teachers* (5th ed., p. 92). Columbus, OH: Merrill.

Factors of Successful Co-Teaching Partnerships

Communication. The plethora of research on the co-teaching model emphasized the importance of communication as vital to the success of the co-teaching model (Estrada, 2016; Fontana 2005; Friend, 2013; Goran & Gage, 2011; Hang & Rabren, 2009; McCray et al., 2014; McDuffie, Mastropieri, & Scruggs, 2009; Pancsofar & Petroff, 2016; Sileo, 2011). Salend

(2010) stated the success of the co-teaching model is reliant on the time the teachers spend discussing the basis of their relationship. For example, discussions on the following important topics would be beneficial to both teachers: specific questions about responsibility of the students, who and how assignments are graded, the classroom rules and some logistical issues like the assigned space for each teacher in the classroom.

Later studies focused on the co-teaching relationships and identified the factors of successful co-teaching partnerships. Sileo (2011) identified issues with the co-teaching partnerships. The study of one co-teaching relationship of two professionals “thrown together” by administrators highlighted the need for communication between the two professionals, and the suggestion that the relationships are improved when both professionals volunteer for the co-teaching roles. Mastropieri et al. (2005) studied the co-teaching models and reported teachers raised the issue of insufficient planning time at the secondary school level, because the special education teacher may be paired with more than one teacher (Nichols, Dowdy, & Nichols, 2010).

Mastropieri et al. (2005), in their study of a high school world history class, reported the disparity in curriculum knowledge between the special education and general education teachers. The general education teacher was the content area expert, and the special education teacher managed the activities in the classroom. Mastropieri et al. also reported the special education teachers did not object to their role, because of their lack of content area knowledge. In addition, the students’ perception of the special education teacher was one of a teacher assistant rather than as a certified teacher. Similarly, Murawski and Dieker (2008) reported the co-teaching relationship comprised of one teacher leading or dominating the delivery of the content area. However, Nichols et al. (2010), in their study of 24 school districts, reported the way the teachers were paired significantly affected the co-teaching relationship. Where the teachers self-selected

their partners, the communication was better between the professionals, which had a positive effect on the co-teaching relationship. Administrators then have a role in making sure the individuals they assign to the co-teaching model are suitable for the roles. Where the co-teachers volunteer for the co-teaching positions, the relationships are more successful (Nichols et al., 2010; Schwab, Holzinger, & Krammer, 2015; Tiwari, Das, & Sharma, 2015).

Role balance. The differences in the roles of the teachers and the nature of the relationship of the two professionals in the classroom created issues with classroom management, particularly issues relating to rules, routines, procedures, philosophy, and beliefs (Sileo, 2011). Sileo (2011) examined the co-teaching relationship and noted in the initial stages the special education teacher's role was that of a teacher assistant. However, it was a role the special education teacher wanted to change, because her training and skills were not being utilized to benefit the students in the class. In these situations, the special education teacher needs to adopt a more dominant role, which emphasizes the issues in the roles of the co-teachers.

Sileo (2011) noted that the roles of the teachers and the scope and context of their relationship in the classroom, affected and sometimes created issues with classroom management, routines, procedures, philosophies, and beliefs. Sileo reported in the initial stages of the co-teaching relationship, the special education teacher was acting in the role of teacher assistant rather than the teacher. However, as time progressed, the special education teacher wanted to utilize her skills and training to better serve the SWD teachers in the classroom. It was at this point where the special education teacher wanted to take on a more dominant role in planning and delivery that issues arose between her and the general education teacher.

Beliefs and values. In addition, differences in beliefs and values can become an issue in the co-teaching model, particularly when one teacher has a dominant role, and the teachers do

not have adequate planning time to communicate and build a working relationship together. Mastropieri et al. (2005) compared the professional co-teaching relationship to a marriage. When teachers have been placed together by administrators, miscommunication and misunderstandings occur, which hinder the growth and development of the professional relationship to the point where it ends prematurely. This process of involuntary pairing can affect the classroom environment, how instruction is delivered, and the academic achievement of students. Sileo (2011) studied two inclusion teachers and identified the relationship between the teachers, Ms. Happa and Mr. Salvatore, as the main factor in the success of the co-teaching model. Both teachers were able to discuss their strengths and weaknesses of the content, utilize their strengths to enhance teaching and learning in the classroom and discuss all aspects of instruction in the co-taught classroom. i.e., planning, delivery, assessments, and classroom management. The relationship of these two trained professionals had a greater effect on the success of the co-teaching model than whether they had been assigned the positions or had volunteered for the positions.

Collaboration. Learned, Dowd, and Jenkins (2009), whose extensive research of co-teachers has been deemed outstanding, noted limited examples exist of innovative best practice where the two professionals were working truly collaboratively to meet the individual needs of all the students in the classroom. In fact, the instructional delivery still resembled the one teach-one assist model. The best practices often recommended with the co-teaching model of test-taking strategies, study skills, and ELA and comprehension exercises were rarely observed (Cramer et al., 2010; Guise et al., 2016; Hott et al., 2017; Tiwari et al., 2015).

Mastropieri et al. (2005) asserted the co-teaching model as an instructional strategy is under-utilized and resembles teacher collaboration rather than a true co-teaching model.

Hargreaves (2003) noted true collaboration should be spontaneous, voluntary, unpredictable, and oriented toward development. Roth and Tobin (2001), Roth, Tobin, Carambo, and Dalland (2005), and Tobin and Roth (2002) focused on using co-teaching as a tool for teacher education and evaluation. These studies focused on the benefits of co-teaching, primarily in the areas of communal interactions while planning, developing lessons, and providing instruction for students. Roth and Tobin (2001), Roth et al. (2005), and Tobin and Roth (2002) reported additional advantages of co-teaching included a reduction of stress related to work, increased opportunities to work with children, reduced behavioral issues in the classroom, and the increased knowledge and experiences of two teachers engaging in a quality collaborative relationship. Thus, teachers develop as individual classroom practitioners from their interactions with their partners as well as enhancing the classroom learning community by contributing to the growth of the collective experience. In contrast, Learned et al. (2009), who studied co-teaching relationships that were considered excellent, emphasized the need for examples of best practice, i.e., where the two teachers were truly working collaboratively to meet the individual needs of all the students in the classroom.

Training and support. School districts are making some attempts to provide staff development training for general and special education teachers. Some school districts also include administrators in staff development training (Nichols et al., 2010). Curriculum leaders and school personnel who plan and develop the curriculum are not always swift to respond to changes in society. However, the reporting of student and whole-school performance on high stakes tests of students with disabilities and other diverse populations have prompted administrators to adapt curriculums, adjust schedules, and promote the co-teaching model as an instructional strategy.

Teachers and administrators are generally satisfied with the co-teaching model. However, a limited number of teachers are very enthused by the way the co-teaching model is functioning in their schools. Where strong objections exist, the individuals are incompatible and have minimal administrative involvement, rather than problems inherent with the co-teaching model itself (Chitiyo, 2017; Nichols et al., 2010).

One of the issues reported by the co-teachers is insufficient time to plan. Administrators at the middle school level are scheduling planning time for their co-teachers, so they do not have to meet before and after school. Joint planning time for the co-teachers is critical for any changes with the predominant co-teaching model of one teach-one assist (Nichols et al., 2010). The mandates of NCLB for highly qualified special education teachers has meant an increase in the number of special education teachers seeking qualifications and certification in the content areas in which they teach. Special education teachers are moving away from the role of teaching assistant and sharing an equal role in the delivery of the content area (Nichols et al., 2010).

Co-Teaching and Academic Performance

Research on the co-teaching environment has developed from relationships of the two teachers in the classroom to the relationship between time spent in the general education setting and the academic performance of students with disabilities in ELA and mathematics (Cosier et al., 2013). In their study, Cosier et al. (2013) sought to correlate the time students with disabilities spend in the general education setting with academic performance. This study was based on the hypotheses that more access to general education contexts would positively impact achievement in mathematics and ELA. However, Cosier et al. also reported that co-teaching was not the only factor influencing academic achievement because the socioeconomic and demographic variables also accounted for variance in achievement.

Cosier et al.'s (2013) study was significant in light of the IDEA, which promotes the need for students with disabilities to be placed in an LRE with their non-disabled peers. The researchers found a positive correlation between achievement in math and ELA and the time spent in the general education setting. For every hour spent in the general education setting, the scores of the students with disabilities increased by 10 points. Cosier et al. provided evidence for the assumption students with disabilities perform better academically the more time they spend in the general education setting. The study did not provide evidence of the quality of the inclusion setting and did not elaborate on the types of disabilities of the students. The study did not state the amount of time the students spent in each general education classroom, nor the number of sessions, nor the results of the general education students (Cosier et al., 2013).

Similar quantitative studies have sought to evaluate the effects of co-teaching and academic performance. Jang (2010) examined the relationship among language, behavior, cognitive ability, and academic performance. The researchers used an extant school database and structural equation to provide relationship constructs between language, academic performance, academic deficits of students with emotional disturbance, and specific learning disabilities. Students with low cognitive abilities also displayed low academic performance. The researchers reviewed the literature and analyzed data to provide a relationship among language, cognitive ability, and academic performance.

Jang (2010) examined the impact of incorporating concept-mapping with co-teaching by fostering and developing collaboration among the students during group activities, and among teachers, as they planned and delivered lessons together within the same classroom environment. The experimental teaching method enhanced the students' performance of science learning. Incorporating collaborative concept mapping with team teaching did have a positive impact on

the final exam scores of the experimental groups. Jang provided the empirical evidence that showed the teaching method of integrating collaborative concept mapping and co-teaching did have some impact on the students' performance. Moreover, Jang found the strategies of collaborative learning and the team teachers' attitudes could affect the students' learning performance. Constructing concept mapping collaboratively, rather than working independently, can improve the learning performance,

Jang (2010) believed that the way of collaborative learning helps students exchange their ideas and learn from each other. Jang's suggestions for future study included more in-depth research on exploring the effects of incorporating collaborative concept mapping with co-teaching on a considerable number of participants with different grades, for a specific gender (males or females), or for student's ability (high or low achievement of students). Jang's research methods of integrating collaborative concept mapping and co-teaching techniques increased the learning and research experience of both science teachers and the researcher, and also served as a useful reference for other teacher education institutes. The strength of the study was using the quantitative technique to identify how the co-teaching model of concept mapping affected academic performance.

Social Issues, Co-Teaching, and General Education Students

Vygotsky's social development theory focuses on the benefits of social interactions of students. This study is grounded in the social development theory. Several studies regarding co-teaching models have focused on social interactions of students with and without disabilities receiving instruction in the inclusion setting. Although this study focused on the academic effects of co-teaching on general education students, several research studies have highlighted and focused on the social issues of general education students in middle and high school.

Hendrickson, Shokoohi-Yekta, Hamre-Nietupski, and Gable (1996) focused on the friendships between general education students and students with severe disabilities. In their study of middle and high school students, Hendrickson et al. determined the responses of the students without disabilities were positive, and that general education students should try to form friendships with students with disabilities. The general education students in a study by York, Vandercook, MacDonald, Heise-Neff, and Caughey (1992) found non-disabled students enjoyed being in an inclusive classroom and felt it was a good idea being integrated with students with disabilities. Grove and Fisher (1999) studied middle school students and reported the students felt they had a better understanding of students with disabilities, more positive interactions, and were more accepting of students with disabilities. The students without disabilities believed their lives were changed, and their communication skills were improved because they were able to express their thoughts and ideas to students who did not use words to express themselves. The general education students felt the overall experience was life-changing for them. Grove and Fisher and York et al. did not address the academic impact on the students.

General Education Students in Co-Teaching Classrooms

The focus on co-teaching models and academic performance has been highlighted in the last decade with the priorities of the Every Student Succeeds Act 2015 (ESSA). NCLB and the subsequent waivers followed a top-down punitive model and prescribed interventions for schools. ESEA/ESSA reauthorizations allow states and school districts to transfer and redirect funds within their schools. In addition, the federalization of educator evaluations after the Race to the Top and NCLB waivers have added to increased accountability in high stakes tests because they affect a school's College and Career Ready Performance Index (CCRPI) score, and educators' evaluation TEMS score are now linked to the academic performance and growth of all

the students in the class, disabled and non-disabled (AFT, 2017). However, the debate on the academic performance of general education students in co-teaching classrooms has received little attention in the field of education. Researchers have examined the effects of co-teaching on students with disabilities but did not address the academic performance of the non-disabled students in the classroom. Researchers have identified the lack of consideration and research in academic performance and general education students (Agunloye & Smith, 2015; Brigham et al., 2011; Fruth & Woods, 2015; Peltier, 1997; Solis et al., 2012; Staub & Peck, 1995; van Garderen, Stormont, & Goel, 2012). However even with evidence that co-teaching as an instructional delivery model for SWDs positively impacts their academic performance when compared to their peers in the regular education classrooms, there is still a lack of research on the academic performance of general education students in the co-teaching setting when compared with their peers in the regular education classroom (Agunloye & Smith, 2015).

In the 1990s, Sharpe (1994) reported general education students who were performing below and within grade level and who received instruction in the inclusive setting showed gains in both math and ELA scores. However, the study did not have a control group of general education students taught in the regular education setting, and as such, the researchers were unable to make any comparisons. Similarly, Saint-Laurent et al. (1998) conducted a study in which the inclusion model of teaching was delivered with a sample of 600 third grade students, and over two-thirds of the sample were general education students. Saint-Laurent et al. found in the areas of ELA, writing, and mathematics, the general education students benefitted from the inclusion support services that were afforded to their disabled peers in the same classroom. However, the results of the study were limited in quantifiable data and focused on gains in scores rather than the comparison of general education students in an inclusive setting with general

education students in a regular education classroom.

Researchers studying general education students taught with their disabled peers in a co-teaching setting have focused on the benefits of the co-teaching model in relation to the social interactions with their disabled peers (Conderman, 2011; Hang & Rabren, 2009; Hurd & Weilbacher, 2017). This is in contrast with students with disabilities in the inclusion setting who have been studied extensively (Cook & Friend, 2004; Magiera, Smith, Zigmond, & Gebauer, 2005; McDuffie et al., 2009; Murawski & Swanson, 2001; Rea et al., 2002; Sileo, 2011; Staub & Peck, 1995; Villa et al., 2008). These studies focused on the social issues; relationships and collaborative models, student outcomes; academic performance, teacher supports, attitudes, beliefs, perceptions of collaborative models, and student perceptions. In contrast, this quantitative study focuses on the comparison of ELA scores of general education students in an inclusion setting with the score of a similar group in a regular education setting. Solis et al. (2012) conducted a synthesis of 146 studies on inclusion and collaboration. Of the 146 studies identified as part of the syntheses, only 17 included information about student outcomes, and only two of the studies identified and established student outcomes as part of their design (Manset & Semmel, 1997; Murawski & Swanson, 2001). However, the findings from Manset and Semmel (1997) and Murwaski and Swanson (2001) only reported mixed results with regards to student outcomes for inclusion and co-teaching models. The student outcomes focused on gains and social interactions with peers.

Szumski, Smogorzewska, and Karwowski (2017) completed a meta-analysis of 47 studies over 4,800,000 students, on the effectiveness of inclusive education for students without special education needs. Although the overall effect was positive, it was weak, $d = 0.12$, in terms of the positive effect of school achievement of students without disabilities. The researchers identified

several moderators, the country of study, the manner of implementation, the educational team composition, and the level and type of disorders in the students with disabilities.

Limitations Among Existing Research

Jang (2010) identified two major limitations with the study. The first limitation was related to the generalization of the findings, in particular, with the small sample size. In addition, all the students were from the same school district with similar demographics. This may not be comparable to other districts in other geographic locations. The sample size was limited by the low frequency of language assessments provided to students with emotional disturbance in the district. Although statistically accurate based on the model fit results, the study did not include enough students with emotional disturbance for broad implications. The second limitation was the use of an extant database. The reasons for the suspensions and or antecedents were not noted in the database. The history of suspension measure only addressed in- and out-of-school suspension, not more specific behavioral manifestations, including internalizing and externalizing behaviors, and the academic performance measure was limited by its scaling (Goran & Gage, 2011).

Researchers have not identified any one item that makes an inclusive program successful. Superior leadership, teachers, curriculum and instruction, assessments, and parent and community involvement appear to affect outcomes in inclusive settings (Lipsky, 2005). A later study by Gal, Schreur, and Engel-Yeger (2010) identified environmental factors that affect the inclusion setting. Gal et al. stated the teacher's perception and mindsets of students with disabilities influenced the student outcomes in the inclusive setting. In addition, support of the administrative team, classroom techniques, appropriate accommodations, space in the general education classroom, and knowledge and experience of educating students with disabilities

contributed to a successful inclusion setting. Gal et al. did not elaborate on what was indeed successful inclusion and did not state the effect of co-teaching on academic performance of the students. Hurd and Weilbacher (2017) and Szumski et al. (2017) identified several moderators that affected the effect size of co-teaching and academic achievement of general education students. Also, later researchers Fuchs, Fuchs, McMaster, and Lemons (2018) focused on the academic achievement of students with disabilities in the co-teaching classroom and did not include general education students.

A Need for Empirical Statistical Data on the Effects of Co-Teaching

Researchers have defined co-teaching and described co-teaching models and programs implemented (Carpenter & Dyal, 2007; Mastropieri et al., 2009; Nevin, Thousand, & Villa, 2009). Many studies focused on the benefits and weaknesses of co-teaching from the school district's, administrator's, teacher's, and student's perspective (Chitiyo & Brinda, 2018). However, little quantitative research on the effects of co-teaching on student academic performance exists, and less so on the academic performance of general education students (Friend et al., 2010; McDuffie et al., 2009; Murawski, 2006; Murawski & Dieker, 2008; Szumski et al., 2017). Researchers on co-teaching (Kinn, Ryan & Faulker, 2016; Kloo & Zigmond, 2008; McCray et al., 2014; Polleck & Jeffrey, 2017; Sileo, 2011; Tsang, 2013; van Garderen et al., 2012; Villa et al., 2008) have identified benefits of co-teaching, but have not determined if co-teaching produces academic attainment/achievement, and have reported a need for statistical evidence of academic outcomes of co-teaching. Therefore, a gap in the literature indicates limited research on co-teaching and student academic performance using a quantitative design method. The studies emphasized assessing student outcomes in the co-teaching classroom requires developing a clear description of the type of co-teaching model being implemented, as

well as a comparison among students as a whole, individual ability groups (disability types and non-disabled students), and a control group by which to make comparisons.

York-Barr, Ghere, and Sommerness (2007) examined whether co-teaching increases student achievement for English Language Learners (ELL). Their study evaluated the first and second-grade outcomes in an elementary school in an urban district over a three-year time interval using field notes from classroom observations, interviews, and student performance on a standardized exam. The study supported previous research that co-teaching can be difficult to implement due to teacher differences, but also can have benefits. Student outcomes increased in student academic performance in math and ELA, and socio-cultural interactions with peers increased also.

Magiera et al. (2005) conducted a literature search of studies from 1989 to 2003 to identify academic gains of students in co-teaching classrooms. Magiera et al. reported seven of 13 articles that supported increased student academic achievement in the co-teaching setting. After their own study of the behaviors in the classroom, namely, student participation and teacher interaction with students, Magiera et al. noted minimal differences in the academic achievement of students in the co-teaching classroom. Primarily, the differences were in the one-to-one interactions in the co-teaching classes and interactions with general education teachers. Magiera et al. concluded that with the limited number of instructional practices observed, students with disabilities did not gain academically from the co-teaching classroom, because they did not observe an increase in instructional benefits. Nichols et al. (2010) concluded in their study the need for more research on the academic benefits of co-teaching for all students rather than a quick fix for legal mandates. In their study of the Greek model of parallel support as a co-teaching model to enhance academic performance and social outcomes,

Mavropalias and Anastasiou (2016) focused on the academic performance of students with disabilities and not on the students without disabilities in the classroom of students with disabilities. Mavropalias and Anastasiou concluded there was a need for further study on the academic performance of the students with disabilities. Carty and Farrell (2018) studied models co-teaching in an inclusive elementary mathematics class in Ireland and focused on the teacher's reflections on the co-teaching approaches. Carty and Farrell, 2018 concluded the study had value in terms of the potential and challenges for schools generally, but they also identified the lack of quantitative data of academic performance in their study.

Murawski and Swanson (2001) conducted a meta-analysis which consisted of a review of 89 articles. Only 37 of the articles contained empirical data and only six of the 37 articles had sufficient quantitative information to calculate an effective size. The student outcomes in the studies were varied. In addition, the student achievement data included social outcomes, attitudes, absences, and referrals. The researchers concluded that co-teaching failed to improve the student's academic performance. Nonetheless, in a wider view of the 89 studies, Murawski and Swanson found co-teaching had a limited influence on student outcomes. However, they cautioned that although the studies were very different, and the measures of student outcomes were inconsistent standardized test scores, grades, and curriculum-based assessments, some studies indicated co-teaching could potentially increase student academic success. Murawski and Swanson agreed with Weiss and Brigham (2000), who identified six concerns related to student outcomes and co-teaching. Essentially, the concerns were the lack of clear explanations of the measures used. The studies did involve schools where co-teaching appeared to be successful. The findings suggested that the personalities of the teachers appeared to have the greatest impact on the successfulness of the co-teaching pairs, the definition of co-teaching was

ambiguous among the teachers, and the research was mostly qualitative in nature (Weiss & Brigham, 2000). As such, the results were broad and not specific. Lastly, the studies failed to discuss the roles of the special education teacher during the co-teaching lessons.

In an attempt to investigate co-teaching with student academic performance, Welch (2000), using a quasi-experimental design, conducted a descriptive analysis study using formative experiments. The formative experiments allowed Welch to evaluate the effectiveness of co-teaching and the goal of 20% academic gain in ELA and spelling across all students in the classroom. The data collection consisted of pre- and post-tests and formative teacher evaluations. The teacher evaluations included teacher logs and group interviews. From the two elementary schools in the study, one school had a significant difference between pre- and post-test mean scores for ELA fluency and the students with disabilities in the classroom scored significantly higher in ELA fluency in the post-test than the general education students, but not in word recognition. Welch found in the other school a significant difference between the pre- and post-test mean scores for ELA comprehension, spelling, word recognition, and vocabulary knowledge for general education students. The students with learning disabilities made gains in scores, but none reached statistical significance. The limitations to Welch's study were the lack of a control group for comparisons, the small sample size of the students with disabilities, and the researcher admitted that the student's achievement could have occurred without the co-teaching model.

Murawski (2006) explored the effect of co-teaching on student outcomes of ninth grade English students' performance in four different classroom conditions: co-teaching, mainstreaming, general education students only, and special education students only. The researcher used pre- and post-tests to evaluate student academic performance. The study was

divided into two areas: evaluations of co-teaching as a means of exploring student outcomes as compared to other delivery methods; and secondly, observing and documenting the co-teachers' behaviors that lead to improved learning outcomes. Murawski found the overall student outcomes of the co-teaching class remained constant, and students with learning disabilities did show improvement in the co-teaching classroom compared to their counterparts in the mainstream classroom. However, significant differences were evident in the overall scores of standardized tests across the four classroom conditions in specific sections of the exams. Students with learning disabilities in the inclusion setting scored higher in the areas of spelling and ELA comprehension, but lower in writing, in comparison to the other classroom conditions. Murawski found no differences across conditions, but the students with learning disabilities did increase their overall average in the co-teaching classroom.

The success of the co-teaching model as an instructional strategy is dependent on many factors and vary in school districts locally and nationally. A few common factors are, common definition of co-teaching by school districts, teacher training and supports, teacher compatibility, and a defined method of co-teaching (Agunloye & Smith, 2015; Cramer et al., 2010; Szumski et al., 2017; Tiwari et al., 2015). Szumski et al. (2017), in their meta-analysis of over four million students, found no significant negative value when six moderators were tested on the various conditions of inclusive education implementation for students without disabilities. In the study, Szumski et al. were not able to examine how the academic achievement of the general education students was affected by total lack of a special education teacher in the classroom. In addition, Szumski et al. did not take into account the academic achievement levels of the students without disabilities. In earlier studies, Cosier et al. (2013) and Jang (2010) attempted to quantify the effects of co-teaching on academic performance of students with disabilities. However, co-

teaching was not the only variable in the studies. Both studies integrated social issues into the study by including additional factors, for example the type of disability, behavior, suspension rates, and socioeconomic and demographic data. Although both studies were quantitative in nature, it is not clear to what extent co-teaching as the instructional delivery model affected the academic performance of the students. Therefore, some areas require further quantitative investigation, specifically, the academic performance of general education students in the co-teaching setting.

General education students in co-teaching classrooms have received little attention in the field of education. Researchers have examined the effects of co-teaching on students with disabilities but did not address the academic performance of the non-disabled students in the classroom. Researchers have identified the lack of consideration and research in academic performance and general education students (Peltier, 1997; Shin et al., 2016; Solis et al., 2012; Staub & Peck, 1995; van Garderen et al., 2012; Vizenor & Matuska, 2018).

In the 1990s, Sharpe (1994) reported general education students who were performing below and within grade level and who received instruction in the inclusive setting showed gains in both math and ELA scores. However, the study did not have a control group of general education students taught in the regular education setting, and as such, the researchers were unable to make any comparisons. Similarly, Saint-Laurent et al. (1998) conducted a study in which the inclusion model of teaching was delivered with a sample of 600 third grade students, and over two-thirds of the sample were general education students. Saint-Laurent et al. found in the areas of ELA, writing, and mathematics, the general education students benefitted from the inclusion support services that were afforded to their disabled peers in the same classroom. However, the results of the study were limited in quantifiable data and focused on gains in scores

rather than on the comparison of general education students in an inclusive setting with general education students in a regular education setting.

Researchers studying general education students taught with their disabled peers in a co-teaching setting have focused on the benefits of the co-teaching model in relation to the social interactions with their disabled peers. This is in contrast with students with disabilities in the inclusion setting who have been studied extensively (Conderman & Hedin, 2012; Cook & Friend, 2004; Goran & Gage, 2011; Guise et.al., 2016; Magiera et al., 2005; McDuffie et al., 2009; Murawski & Swanson, 2001; Rea et al., 2002; Shin et.al., 2016; Sileo, 2011; Staub & Peck, 1995; Villa et al., 2008). The studies focused on the social issues; relationships and collaborative models, student outcomes; academic performance, teacher supports, attitudes, beliefs, perceptions of collaborative models, and student perceptions. In contrast, this quantitative, study focuses on the comparison of ELA scores of general education students in an inclusion setting with the scores of a similar group in a regular education setting.

Solis et al. (2012) conducted a synthesis of 146 studies on inclusion and collaboration. Of the 146 studies identified as part of the syntheses, only 17 included information about student outcomes, and only two of the studies identified and established student outcomes as part of their design (Manset & Semmel, 1997; Murawski & Swanson, 2001). However, the findings from Manset and Semmel (1997), Murwaski and Swanson (2001), and Reese (2017) only reported mixed results with regards to student outcomes for inclusion and co-teaching models. The student outcomes focused on gains and social outcomes as cited in Solis et al.

General education students have been included in studies about the benefits/suitability of co-teaching as an approach by school districts to meet the legal requirements of IDEA and its mandate of LRE for students with disabilities. The studies cited in Solis et al. (2012) were

limited in their research on student outcomes of general education students in the inclusion setting. Although the two studies revealed general education students did make gains when taught in the same classroom as their disabled peers with two teachers in the classroom, a greater emphasis was on the social outcomes of the general education students' attitude to and belief and perception of the co-teaching classroom. The qualitative results are valuable, but they do not address the demands of the current climate in the field of education where accountability measures place high stakes on the academic performance of all students on annual statewide tests. In Georgia, schools are judged as a Priority, Focus, or Reward based on their CCRPI score. In addition, student growth percentiles represent 30% of an educator's Teacher Keys Evaluation System (TKES) evaluation. AFT (2017) reports the increase in high stakes testing has taken the joy out of teaching and learning, streamlined the curriculum, and is negatively impacting efforts to recruit and retain teachers, especially in the most struggling schools. Therefore, school districts and personnel must address the needs of all students, by reviewing and evaluating student academic performance, and by assessing, evaluating, and researching effective instructional strategies by making the curriculum accessible both general education and students with disabilities. Furthermore, all students are expected to acquire the skills to meet and or exceed mastery of their grade level standards. The current research shows school districts and personnel cannot rely solely on qualitative studies to meet the needs of all their students. Quantitative research studies provide the researcher with data that can be measured and quantified.

Statewide Standardized Assessments and Student Achievement

Student growth percentiles were introduced as a normative description of growth that informs accountability systems constructed by the federal government's adequate yearly progress

requirements in the last decade. The annual measurement of student achievement to judge a school's quality have received criticism (Linn, Baker, & Betebenner, 2002). The criticism has focused primarily on status measures being inappropriate as a tool to judge educational effectiveness. Although school districts in Georgia are no longer bound by NCLB, the accountability measurement of CCRPI and TKES have meant statistical models have been adopted to provide longitudinal analysis of annual student achievement data from statewide assessments. These growth-to-standard approaches estimate future or projected student achievement. Students are rated from being on track to being proficient. This measurement is also used as evidence of the quality of the school.

The primary purpose of growth analyses theory in the last two decades has been to determine the amount of student progress/growth that can be attributed to the school or the teacher (Braun, 2005). These analyses, often called value-added analyses, estimate the teacher-school contribution to student achievement. However, the analyses fail to address the amount of growth in a given year. School districts are now adopting student growth percentiles to quantify how much growth a student has made over a period of time (Linn et al., 2002).

The individual percentiles of student growth now provide information on the relationship between assessment outcomes and their relationship to education quality. The state used Georgia Milestones ELA scores of the general education students to understand growth both used normatively as well as to answer how much growth is necessary for a student to attain and maintain mastery of the standards within a specific timeframe. As a result, discussions about student achievement and or mastery of standards have now moved to include additional considerations, specifically prior attainment and its impact on current achievement.

Linn et al. (2002) asserted student growth percentiles provide a normative basis for

growth, whereby what constitutes adequate growth, a year's growth, or enough growth is reduced to achievement standard setting procedures. Student growth percentiles measure and examine students' growth by examining their current achievement relative to their academic peers, that is, students with identical prior achievement. Therefore, the data set of students with the exact prior scores are compared with the current scores of those students with the same prior year's scores. Consequently, if the students' current year's scores exceeded the scores of most of their peers, then on the normative scale, the students have done well.

Georgia has adopted the student growth percentile model to assess the amount of growth students achieve compared to a student who received the same score from the previous year. These scores are used to develop CCRPI scores for the schools as an accountability measure and to assess the level of achievement a teacher makes with their TEMS score for their TKES evaluation.

Summary

The purpose of this chapter was to provide background and support for the co-teaching model as a service delivery model being used to meet the needs of all learners within a classroom (Murawski, 2006). The majority of research has been on the effects of co-teaching on the students with disabilities but limited on the effects and consideration of students without disabilities in the co-teaching setting. Over the last three decades, school districts have adapted instruction to meet the requirements and demands of current legislation, and accountability measures in high stakes state testing. Different models of instructional delivery are adapted and/or introduced to raise the achievement of students. Schools are now awakening to the concept that if they wish to improve academic performance, then they must seek to change instructional strategies and practices from year to year to meet the needs of all their students.

Cook and Friend (2004) focused on the types of service delivery models, parallel, stations, and alternative. Later, Carty and Farrell (2018), McDuffie et al. (2009), Murawski and Dieker (2008), and Sileo (2011) studied the relationships between the two professionals in a co-teaching relationship.

The empirical research on co-teaching (Cook, McDuffie-Landrum, Oshita, & Cook, 2011; Kloo & Zigmund, 2008; Kochler-Bryant, 2008; Little & Dieker, 2009; Magiera et al., 2005; McCray et al., 2014; McDuffie et al., 2009; McHatton & Daniel, 2008; Salend, 2010; Shin et al., 2016) are qualitative studies on the co-teaching relationships and the positive social effects on student interactions rather than on the academic performance of the students. Co-teaching evolved as a response to legal mandates from NCLB and IDEA. Students with disabilities are taught with their non-disabled peers in a least restrictive environment. However, given that the co-teaching model as a response to intervention strategy is increasing, the need for more statistical research on the co-teaching model is needed to determine if it is effectively raising the academic performance of students with disabilities and their non-disabled peers taught in the same classroom. Goran and Gage (2011) concluded from their study that cognitive ability, language, and behavior all significantly affect academic performance. The students with emotional and learning disabilities have language and academic deficits, and language skills are a significant predictor of academic performance. As such, students with disabilities are predisposed to perform academically lower than their non-disabled peers.

The empirical studies provide a clear definition of the co-teaching models (Cook & Friend, 1995; Friend, 2013; Mastropieri et al., 2009; Murawski & Dieker, 2008). The general education and the special education teachers collaborate to teach the grade level curriculum to all students using the co-teaching models of one teach-one assist, parallel teaching, alternative

teaching, and stations teaching. Increased academic achievement and performance has been identified as one of the benefits of co-teaching for disabled students (Friend & Riesling, 1993 as cited by Bryant & Land 1998; Learning, 2003). Other studies have been qualitative in nature and have provided little information on the academic performance of general education students in the co-teaching setting. The studies have focused on the social interactions of students with disabilities and general education students in the same classroom rather than academic achievement (Murawski & Swanson, 2001).

The body of literature established certain types of benefits for students with disabilities such as gains in achievement, increased social interactions, and perceptions. General education students have reported co-teaching provides an increase in assistance and student teacher-interaction (Little & Dieker, 2009; Wilson, Kim, & Michaels, 2013). However, inconsistencies and gaps in the literature leave some questions about the value of co-teaching due to the lack of quantitative data, which supports improvement in academic performance. In addition, the research related to co-teaching and its impact on general education students is even more limited (Little & Dieker, 2009; Szumski et al., 2017; Tiwari et al., 2015). This lack of quantitative data weakens the support for co-teaching and more research is needed to confirm its impact on achievement for all students, general education and disabled.

CHAPTER THREE: METHODOLOGY

Overview

Co-teaching and how it affects students with disabilities has been given considerable attention by researchers over the last three decades (Conderman & Hedin, 2017; Cook & Friend, 2004; Friend, 2013; Murawski, 2006; Sileo, 2011; Szumski, Smogorzewska, & Karwowski, 2017). The literature review identified a gap in the literature for quantitative studies assessing the academic performance of general education students taught in the inclusion setting. The purpose of this causal-comparative study is to examine and compare existing ELA scores from the Georgia Milestones Assessments of eighth-grade general education students taught in the co-teaching setting and their counterparts, general education students who were taught solely in the regular education classroom for two consecutive years, 2017 and 2018. Furthermore, in this study, the researcher sought to determine if the educational environment, co-teaching and regular education, significantly impact the Georgia Milestones ELA test scores of eighth-grade general education students over two consecutive years. In addition, this study compared any differences in the levels of achievement of the students in the co-teaching and regular education classroom. This chapter will describe the design, the sample of the study, the instruments used for data collection, the method(s) of data collection, and the statistical measures used to analyze the data.

Design

The causal-comparative research design was used for this study. A causal-comparative design is a type of non-experimental investigation in which researchers seek to identify differences in relationships by forming groups and individuals in whom the independent variable is present or absent – or present at several levels – and then determining whether the groups differ on the dependent variable (Gall, Gall, & Borg, 2007). In this study, the causal-

comparative design is used to investigate and compare the GA Milestones ELA scores of general education students in the co-teaching classroom, and the scores of general education students, taught by one teacher in the regular education classroom. The researcher collected quantitative data that allowed for an investigation of the difference between the co-teaching classroom and the general education students ELA scores with general education students taught in the regular education classroom. Both groups of general education students were taught to the Georgia Standards of Excellence (GSE) in ELA for two consecutive years. In addition, the Georgia Milestones ELA scores are archival numerical interval data and as such, a quantitative *ex post facto* causal-comparative design was appropriate for this study (Gall et al., 2007). The independent variables are the co-teaching and regular education classroom environment. The dependent variable is the Georgia statewide standardized End of Grade test, generally known as the Georgia Milestones ELA Assessment test scores.

Furthermore, empirical studies on the effect of co-teaching and the academic performance of students have used quantitative research designs (Drame, 2010; Goran & Gage, 2011, Tsumski, 2017). Thus, a quantitative design was used for this study. Student achievement data was utilized, and the independent variables were categorized on an ordinal scale—co-teaching general education students and non-co-teaching general education students. The researcher sought to determine if any significant differences exist between the Georgia Milestones ELA scores of general education students taught in regular education classrooms and those in co-teaching classrooms. An experimental design was not appropriate for this study because the data was *ex post facto* and did not allow for experimental controls in the research process.

Research Questions

This study compared and analyzed the Georgia Milestones ELA scores of eighth-grade general education students taught in the inclusion classroom with the scores of general education students taught in the regular education classroom. The following research questions guided this study.

RQ1: Is there a difference in ELA scores as measured by Georgia Milestones assessment of 2017 eighth-grade general education students placed in a co-teaching classroom as compared to the regular education classroom?

RQ2: Is there a difference in ELA scores as measured by Georgia Milestones assessment of 2018 eighth-grade general education students placed in a co-teaching classroom as compared to the regular education classroom?

Null Hypotheses

The following are the research null hypotheses:

H₀1: There is no statistically significant difference in ELA scores as measured by the Georgia Milestones assessment of 2017 eighth-grade general education students placed in a co-teaching classroom as compared to the scores of students placed in a regular education classroom.

H₀2: There is no statistically significant difference in ELA scores as measured by the Georgia Milestones assessment of 2018 eighth-grade general education students placed in a co-teaching classroom as compared to the scores of students placed in a regular education classroom.

Participants and Setting

Setting

This study was conducted in the middle school setting located in an urban school district in Georgia, with the student population being predominantly African-American. The target population for this study was eighth-grade general education English Language Arts students. The researcher compared the Georgia Milestones ELA scores of general education students taught in co-teaching classrooms with the scores of general education students taught in regular education classrooms in two different middle schools in a single school district. The general education students from the co-teaching class were taught by two certified teachers, one general education and one special education teacher. The general education students in the co-teaching classroom have experienced three co-teaching styles: alternative, parallel, and station teaching. The general education students in the regular education class were taught by one certified general education teacher. Each group of students were in class for one 60-minute class period, five days each week for 33 weeks.

Participants

In this *ex post facto* study, the researcher focused on Georgia Milestones ELA scores for eighth-grade general education students in co-teaching and in regular education classrooms from two large middle schools for the 2017 and 2018 school years. The 2016 U.S. Census data reported that the area in which the school district is located has a population of over 700,000 people with a median age of 35.5 and a median household income of \$52,623. The population of the county is 53.6% Black, 29.2% White, and 8.78% Hispanic, with 19.4% of the people in the school district speaking a non-English language, and with 90.1% being U.S. citizens. However, 19.1% of the population live in poverty. The enrollment of the school district is approximately

over 100,000 students (U.S. Census.Gov/Quick facts, 2018).

Only general education students who were taught in the co-teaching setting and have test scores for both 2016 and 2017, and 2017 and 2018 were selected for this study. Students selected were match paired using their previous years GA Milestones scores. Approximately 240 ELA scores exist for both the 2017 and 2018 school year. Two groups of students were studied, $n = 113$ general education students in co-teaching; $n = 125$ general education students in regular classroom. Each group comprised of 120 subjects. The students involved were predominantly African-American with very little diversity in ethnicity. During the school years, 2017-2018 the English Language Learners (ELL) subgroup increased within the district's population; however, for the purpose of the study, race, ethnicity, and economic status were not used as factors. Gender was included as a factor for the purposes of descriptive statistics.

Instrumentation

The instruments used in the study were the 2017 and 2018 Georgia Milestones ELA scores. The Georgia Milestones Assessment replaced the statewide assessment Criterion-Referenced Competency test in 2014. The Georgia Department of Education (GA DOE, 2015) oversees the development of the Georgia Milestones Assessment and adheres to the Standards for Educational and Psychological Testing as established by the American Educational Research Association (AERA), the American Psychological Association (APA), and the National Council on Measurement in Education (NCME). The Georgia Milestones Assessment measures how well students have mastered the state's content standards (O.C.G.A. 20-2-281). The Georgia Milestones are mandated by state law and are designed to measure how well students acquire the skills and knowledge described in the states mandated content standards in English Language

Arts, mathematics, science, and social studies in grades 3 through 8 and in selected high school courses.

The ELA test is part of the GA Milestones English Language Arts assessment. The ELA portion of the assessment is comprised of two sub-tests, the Reading and Vocabulary subtest, as well as the Writing and Language subtest. The student's performance on the GA Milestones ELA assessment is based on the subset of reading items and two constructed response-writing items: the extended writing test and the narrative writing response. The reading status is reported as *below grade level*, *grade level*, and *above grade level*. The extended writing task is reported as scores for the following two traits: Trait 1—Idea Development, Organization and Coherence with a maximum of 4 points; and Trait 2—Language Usage and Conventions with a maximum of 4 points. The questions are selected-response, evidence-based, and constructed-response (GADOE, 2015). Scale scores by achievement level of each subtest range from beginning to distinguished levels. For the 2015 GA Milestones ELA Assessment, achievement levels were: beginning level, 225 - 474; developed, 475 - 524; proficient, 525 - 580; and distinguished level, 581 - 730. GA Milestone Assessment results also report a Lexile measure and a national percentile rank. A Lexile measure is a standard score that matches a student's reading ability with the difficulty of textual material. The Lexile measure is the level of text a student can read with 75% comprehension (GADOE, 2015). For the purpose of this study, the researcher used the raw scaled ELA scores at the four achievement levels: beginning, developing, proficient, and distinguished. The Georgia Milestones Assessments also identify the areas where the students need improvement, inform stakeholders of progress towards meeting academic achievement standards of the state and requirements of federal accountability, and gauge the overall quality of education in the state of Georgia. The assessments provide information on academic

achievement at the student, class, school, system, and state levels (GADOE, 2015)

Validity and Reliability of the Georgia Milestone Assessments

The test development cycle began with the approval of the states' mandated content standards, which were published and enacted in the classrooms. The process also relied on the inclusion of educators from around the state. Therefore, when the test was established, committees of educators were formed from around the state to review the content, standards, concepts, knowledge, and skills being assessed. From this information, the test specifications were developed and the item format, content scope and limits, and cognitive complexity were determined (GADOE, 2015). In regard to English Language Arts assessments, the genre, complexity, and length of literary passages were specified (GADOE, 2015). Content validity of the GA Milestones Assessments is ensured by careful attention to each developmental phase of the test development process. Educators from around the state produce multiple pieces of meaningful documentation of each phase of the test development process. The GA Milestone ELA Assessment is carefully aligned to the state standards and curriculum framework. The GA DOE rely heavily upon input from Georgia educators at every stage of test development. Construct validity is the degree with which the test measures what it is intended to measure, (GADOE, 2017). The GA Milestones Assessments' validity was developed using total item correlation and Rasch fit statistics. Therefore, test items with high item total correlation (0.30 or above) indicate that the students who performed well on the test overall answered the items correctly. By contrast, students who obtained a low score on the test answered the test items incorrectly.

The Rasch fit statistics were used to show that the items fit the measurement model. The Rasch fit statistics were observed closely during the test development phase to ensure test

construct validity (Tennant, McKenna, & Hagell, 2004). Therefore, the content standards' validity was determined by the purpose and intended use of the test, which was to measure student mastery of the state's content standards.

Georgia Milestones Assessments guides are provided to stakeholders and Georgia Milestones blueprints and content weights are posted on the GADOE website. Items were written by qualified professional assessment specialists specifically for Georgia tests. Committees of Georgia educators reviewed the items for alignment with curriculum, suitability, and potential bias or sensitivity issues. Field tests or trial runs of the test items were conducted by a representative group of motivated students under standard conditions. After the items were field tested, another committee of Georgia educators examined the items again along with supporting data. The review committees had the authority to accept the items as is, revise and re-field test, or reject the items. Only after items were approved by the Georgia educators did they appear on an assessment form. GADOE used a method of equating to make sure the tests' difficulty remained consistent from year to year and to ensure that students are always held to the same standard; therefore, this allowed one to interpret differences in test performance as the result of changes in student achievement as opposed to fluctuations and or changes in the components of the test form. Georgia educators provided input at every stage of test development to ensure the validity of the tests. As such, the Georgia Department of Education was able to establish content validity for the instrument (GADOE, 2015).

For the Georgia Milestones Assessments system, Cronbach's alpha reliability coefficient (1951) was the reliability measure reported. Cronbach's alpha measures the internal consistency over the responses to a set of items measuring an underlying one-dimensional trait. The reliability coefficient is a unit-less index, which can be compared from test to test and ranges

from 0 to 1. Table 1 shows the median reliability indices as well as the minimum and maximum values across forms and administrations for the Georgia Milestones Assessment for English Language Arts. These range from 0.85 to 0.94. The reliabilities are similar across grades and suggest that the Milestones Assessments are sufficiently reliable for their intended purpose. That is, the reliability indicators obtained for Georgia Milestones suggest that scores reported to students for the 2015-2016 school year are well established and estimated and provide a reliable picture of student performance (GADOE, 2015; Tavakol & Dennick, 2011). The reliability score of the Georgia Milestones using Cronbach's alpha is used to measure internal co-efficiency. The closer the score is to 1, the higher the reliability (GA DOE, 2015; Tavakol & Dennick, 2011).

Table 1

Reliability Indicators for the 2015-2016 Georgia Milestones Assessments in English Language Arts

Grade/ Course	Number of Forms	Number of Operational Items per Form	Number of Raw Score Points per Form	Median Reliability	Minimum Reliability	Maximum Reliability
3	2	45	55	0.89	0.89	0.89
4	2	45	55	0.9	0.89	0.9
5	2	45	55	0.9	0.88	0.91
6	2	45	55	0.89	0.88	0.9
7	2	45	55	0.89	0.88	0.9
8	2	45	55	0.89	0.88	0.9
9th Grade Lit. & Comp.	4	45	55	0.88	0.87	0.89
Am. Lit. & Comp.	4	45	55	0.88	0.87	0.89

Note. GA DoE 2016 Assessment and Accountability Brief 2015-2016

Eighth-grade students must pass the reading portion of the ELA and the mathematics sections of the Georgia Milestones to be eligible for promotion to the next grade level (GA DOE, 2016). Thus, when the students fail to pass the reading subtest of the ELA assessment, they face a possibility of retention in the eighth grade. The school district also utilizes the expertise of its local Regional Educational Support Agency (Metro RESA) to produce reports to measure student growth and monitor the achievement gaps of the different subgroups within the school population.

In 2011, Georgia Department of Education (GA DOE, 2016) received a waiver, which applies to the mandates of the Elementary and Secondary Education Act (ESEA), now ESSA, by

the U.S. Department of Education to develop its own accountability measure. As a result, Georgia developed the College and Career Readiness Performance Index (CCRPI). Georgia Milestones achievement scores are used as one of the main measurements for student growth achievement model. More recently, Georgia Milestones achievement scores have been adopted as a measurement for Georgia's Growth Achievement model as a measurement for a Teacher's Effectiveness Measurement Score (TEMS). Gall et al. (2007) stated standardized tests are good instruments in causal-comparative studies.

The Georgia Milestone Assessment tests, as an assessment instrument, has been analyzed for reliability and validity. According to Gall et al. (2007), an assessment instrument is valid if the results measure the intended item to be measured and an instrument is considered reliable if the results are consistent over multiple applications of the assessment to the same students. Reliability is defined by the Georgia Department of Education as the level to which an examinee's performance is consistent; validity is the level to which test items measure what they are intended to measure.

According to the GA DOE validity and reliability report (2016), the Georgia Milestones reliability score ranges from 0.85 to 0.93. This reliability score is very high. In addition to the reliability score of 0.85 to 0.93, the tests are also developed using the same process over time. Testing companies submit bids to GA DOE; the state department selects a company; professional writers of the test write the questions; the questions are reviewed by a team of educators; the test is field tested; and a team of educators meet to determine the amount of questions needed to meet and exceed in each domain. The State Superintendent approves the standards and authorizes the development and implementation of the tests (GA DOE, 2016).

The Georgia Milestones measures how well students have learned the knowledge and

skills outlined in the state-adopted content standards in English Language Arts, mathematics, science, and social studies (GA DOE, 2015). Students in grades three through eight take an end-of-grade assessment in English Language Arts and mathematics while students in grades five and eight are also assessed in science and social studies. High school students take an end-of-course assessment for each of the 10 courses designated by the State Board of Education (GADOE, 2015).

Features of the Georgia Milestone Assessment System. The Georgia Milestone Assessment includes open-ended (constructed-response) items in English Language Arts. The Georgia Milestone Assessment also includes mathematics, all grade levels and courses. Furthermore, the Georgia Milestone Assessment includes a writing component, in response to passages read by students, at every grade level and course within the English Language Arts assessment. The Georgia Milestone Assessment contains norm-referenced items in all content areas and courses to complement the criterion-referenced information and to provide a national comparison. During the time of transition from the old assessment system to the current Georgia Milestone Assessment, online administration was increasingly available over time, with online administration considered the primary mode of administration and paper-pencil as back-up until the transition was complete (GADOE, 2016).

Procedures

Before any data was collected the researcher obtained Liberty IRB approval (see Appendix A), reviewed the literature on the historical context of the co-teaching models, reviewed accountability data on statewide testing, examined the literature on the research design and the assessment data as an effective measurement of academic performance. Upon receiving Liberty IRB approval, the researcher contacted the school district administration to request

permission to conduct the study and to request the data needed pertinent to the two selected middle schools (see Appendices B & C).

The schools maintain archival Georgia Milestones data in an Excel spreadsheet. The students' ELA scores from 2017 and 2018 were obtained from the school district administration in an Excel spreadsheet. The students were matched paired using their 2016 and 2017 GA Milestones ELA scores and level of mastery. High Achievers, ELL and Gifted students were not selected in the sample. All test identification numbers were removed and an alternate form of coding was assigned to differentiate general education students taught in the co-teaching classroom and those taught in the regular education classroom. The general education students taught in the regular education class were coded GEN RC; and general education students in the co-teaching classroom were coded GEN CT. No personal identifiers were associated with the data. Therefore, parental permission was not necessary. Confidentiality violations were avoided, because the researcher does not have access to the archival data with student test scores. The researcher entered the data from the schools' archival data Excel spreadsheets into a statistical analysis database SPSS (Rovai, Baker, Ponto, 2013). The SPSS database used the raw scaled Georgia Milestones ELA scores for 2017 and 2018 and produced means and standard deviations as a summary of the data. Analysis of the data also included descriptive statistics.

Data Analysis

The Independent Samples *t*-Tests were used to analyze the collected Georgia Milestones ELA scores from 2017 and 2018. The samples *t*-test is a parametric analysis used to evaluate the mean scores of two independent groups; that is group 1 (co-teaching classroom) as compared to group 2 (the general education classroom). Significant differences between groups were examined and effect size calculated. The Bonferroni correction was utilized in the analysis in

order to minimize the chances of a type 1 error which can increase the chances of a false positive, thus rejecting the null hypothesis when it should not be rejected. The Bonferroni correction was adjusted based on the alpha level, $\alpha = .05/2$ ($\alpha = .025$). The null hypothesis for the research questions was tested for statistically significant difference using a sample *t*-test with an alpha level ($\alpha = .025$). A $p < .025$ significance level was used comparing the mean difference scores between the two groups to discover whether the mean difference is significantly different.

Summary

This chapter described and explained the design methods, procedures, participants, setting, instrumentation, and the rationale for the data analysis, which were used to conduct the study. This study was an attempt to determine if the co-teaching environment makes a statistically significant difference on the Georgia Milestones ELA scores of eighth-grade general education students taught in the regular education class and general education students taught in a co-teaching classroom. The results of the study will be presented in the next chapter.

CHAPTER FOUR: DATA ANALYSIS

Overview

The purpose of this causal-comparative study was to determine whether statically significant differences existed in the ELA GA Milestones scores of eighth-grade general education students in co-teaching and regular education classrooms in a school district in the northeast of Georgia for years 2017 and 2018. The researcher sought to determine whether a statistically significant difference existed in the academic performance in ELA GA Milestones scores of eighth-grade general education students in co-teaching classrooms, taught by two certified teachers - a general and special education teacher, compared with their peers in a regular education classroom, taught by one certified general education teacher. Co-teaching was developed by school districts as a response to legal mandates from IDEA and NCLB and increased accountability for the academic performance of all students in high stakes statewide tests (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010). It is critical for educators using evidenced-based practices to ensure all students are making progress in comparison with their peers in the school, district, state, and nationally (Fruth & Woods, 2015).

The GA Milestones were developed to assess mastery of state standards. The standards aim to align instruction with the National Assessment of Educational Progress (NAEP) framework (GA DOE, 2017). In fulfilling the standards for grades 6–12 English Language Arts, the NAEP assessment framework matches instructionally to measure students' growth toward college and career readiness (GA DOE, 2017). Therefore, standards-aligned assessments such as the Georgia Milestones in ELA are used by the state to measure students' growth, their academic progress, and mastery of the state standards (GA DOE, 2017).

Chapter Four consists of the research questions, null hypotheses, descriptive statistics for

the sample (e.g., frequency, mean, and standard deviation). The remainder of the chapter includes the results section consisting of assumptions, tests, and whether the null hypotheses was rejected. The data is presented and the results are analyzed in Chapter Four.

Description of Sample

Participants in this causal-comparative study were from two suburban middle schools in the northeastern part of Georgia. The sample included general education students taught in the co-teaching and regular education classroom environments in years 2017 and 2018. In the co-teaching classroom, there were two certified teachers, a general education teacher and a special education teacher. In the co-teaching classroom, the students experienced three models of co-teaching: parallel, alternative, and stations. In the regular education classroom, there was one certified teacher. All participants received instruction in the classroom on eighth-grade GSE standards for 60 minutes, five times a week for 33 weeks. The researcher used convenience sampling. Gall, Gall, and Borg (2008) stated convenience sampling is a good way to select a sample for the purposes of comparing selected groups. The ELA scores of the general education students from the co teaching classroom environment were matched paired using their 2016 and 2017 ELA GA Milestones data by score and level. As a result, only eighth-grade general education students in the co-taught classroom and general education students from the regular classroom environment who were not identified as Gifted, ELL, and High Achiever were included in the sample. The students' data were stripped from all identifiable information. The students' archival raw ELA GA Milestone scores, level of mastery, and gender were identified from the archival data.

Descriptive Statistics

Group statistics for the students' ELA scores, also indicating mastery levels, for 2017 in the co-teaching classroom are presented in Table 2. The mean score was 486.31, which was developing level. Group statistics for the students' ELA scores, also including mastery levels, for 2018 in the general education classroom are presented in Table 3. No student from the population sampled was at a distinguished level for the years 2017 and 2018. Gender distribution in both classroom settings in 2017 is presented in both Table 4 and Figure 2. For the year 2017, there were more female students in the sample (see Figure 2). Gender distribution in both classroom settings in 2018 is presented in both Table 5 and Figure 3.

Table 2

Group Statistics for Students ELA Scores, Mastery Levels for 2017 (Co-Teaching Classroom)

	Students in Co- Teaching Classrooms 2017	ELA Scores Students in Co- Teaching Classrooms 2017	Mastery for Students in Co- Teaching 2017
N	116	116	116
Mean	1.48	486.31	1.74
Std. Deviation	.502	42.015	.699
Variance	.252	1765.555	.489
Skewness	.070	.107	.405
Std. of Skewness	.225	.225	.225
Minimum	1	404	1
Maximum	2	585	3

Note. Levels 1 = Beginning, 2 = Developing, 3 = Proficient, 4 = Distinguished

Table 3

Group Statistics for Students ELA Scores, Mastery Levels for 2017 (General Education Classroom)

	Students in General Education Classrooms 2017	ELA Scores Students General Education Classrooms 2017	Mastery for Students in General Education Classrooms 2017
N	121	121	121
Mean	1.56	503.88	2.07
Std. Deviation	.498	31.301	.629
Variance	.248	979.737	.396
Skewness	-.253	.017	-.049
Std. of Skewness	.220	.220	.220
Minimum	1	422	1
Maximum	2	577	3

Note. Mastery levels: 1 = Beginning, 2 = Developing, 3 = Proficient 4 = Distinguished

Table 4

2017 Students by Gender

	Male	Female	Total
Gen Ed RC	29	27	56
Gen Ed CT	26	34	60
Total	55	61	116

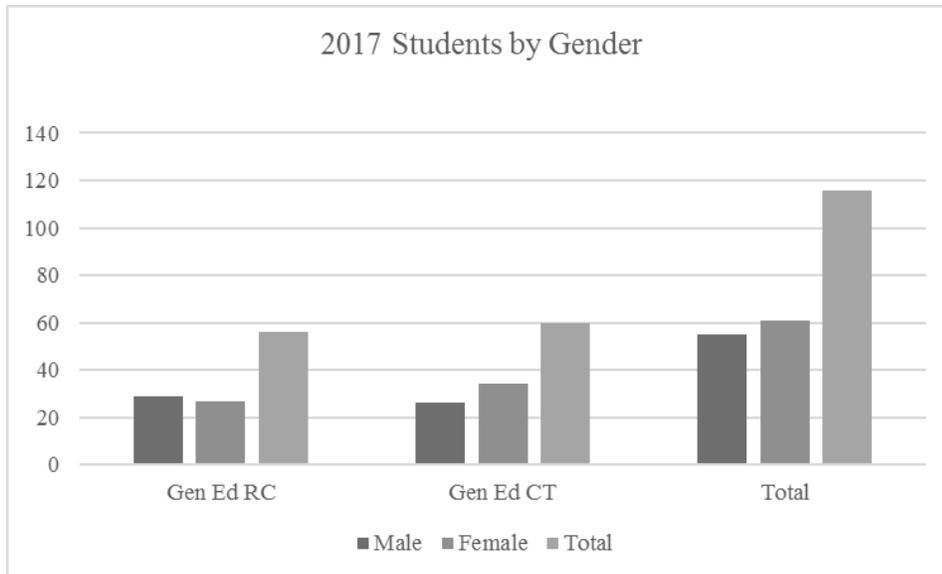


Figure 2. 2017 Students by Gender.

Table 5

2018 Students by Gender

	Male	Female	Total
Gen Ed RC	43	26	69
Gen Ed CT	25	28	53
Total	68	54	122

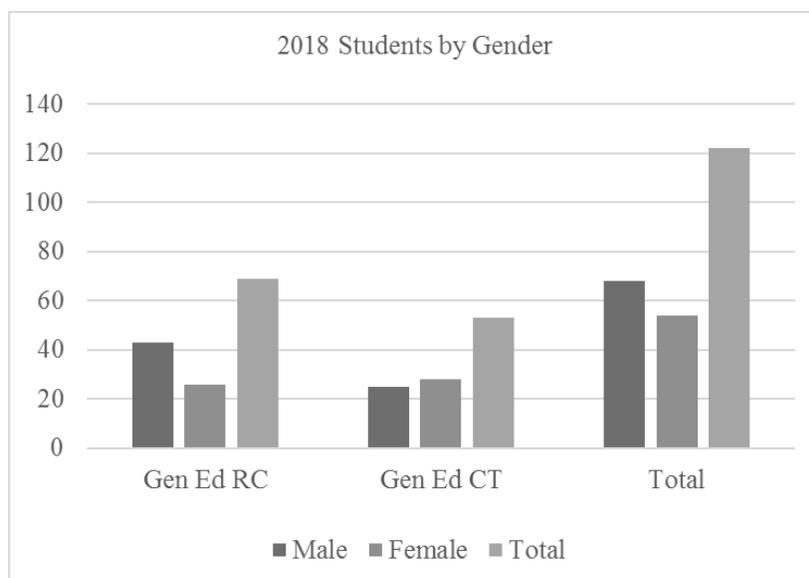


Figure 3. 2018 Students by Gender.

Research Questions and Hypotheses

In this study, the researcher compared and analyzed the Georgia Milestones ELA scores of eighth-grade general education students taught in the regular education classroom with general education students taught in the co-teaching classroom over two consecutive years. The following are the research questions that guided the study.

RQ1: Is there a difference between the 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom?

RQ2: Is there a difference between the 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom?

Null Hypotheses

H₀1: There is no statistically significant difference in ELA scores as measured by the Georgia Milestones assessment of 2017 eighth-grade general education students taught in a co-taught classroom as compared to the general education classroom?

H₀2: There is no statistically significant difference in ELA scores as measured by the Georgia Milestones assessment of 2018 eighth-grade general education students taught in a co-taught classroom as compared to the general education classroom.

Table 6 presents the frequency of students placed in general education co-teaching classrooms compared to the frequency of students placed in regular general education classrooms for Grade 8 in 2017. Table 7 presents the frequency of students placed in general education co-teaching classrooms compared to the frequency of students placed in regular general education classrooms for Grade 8 in 2018. In 2017 there were four more students placed in the co-teaching setting. In 2018 the groups were evenly placed between the two settings.

Table 6

General ED Co-Teaching Classroom and General Education Classroom (Frequency) 2017

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Students in Co-Teaching Classrooms	60	49.6	51.7	51.7
	Students in General Education Classrooms	56	46.3	48.3	100.0
	Total	116	95.9	100.0	
Missing	System	5	4.1		
Total		121	100.0		

Table 7

General ED Co-Teaching Classroom and General Education Classroom (Frequency) 2018

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Students in Co-Teaching Classrooms	53	43.8	43.8	43.8
	Students in General Education Classrooms	68	56.2	48.3	100.0
	Total	121	0.00	100.0	
Missing	System	0	0		
Total		121	100.0		

The results of the statewide GA Milestone assessment are analyzed in terms of mastery levels of the test. Mastery levels are defined as beginning, developing, proficient, and distinguished. Tables 8 and 9 show the mastery levels of the participants. The results of the 2017 statewide GA Milestone assessment are analyzed in terms of mastery levels of the test in

percentages: Beginning 38.8%, Developing 43%, and Proficient 14%. There were not any students from the population sampled with a distinguished level in the year 2017. The results of the 2018 statewide GA Milestone assessment are analyzed in terms of mastery levels of the test in percentages: Beginning 16.5%, Developing 60.3%, and Proficient 23.1%. There were not any students from the population sampled with distinguished level.

Table 8

Mastery Score for Students in General ED Co-Teaching Classroom and Students in General ED Regular Classroom 2017

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Beginning	47	38.8	40.5	40.5
	Developing	52	43.0	44.8	85.3
	Proficient	17	14.0	14.7	100.0
	Total	116	95.9	100.0	
Missing	System	5	4.1		
Total		121	100.0		

Table 9

Mastery Score for Students in General ED Co-Teaching Classroom and Students in General ED Regular Classroom 2018

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Beginning	20	16.5	16.5	16.5
	Developing	73	60.3	60.3	76.9
	Proficient	28	23.1	23.1	100.0
	Total	121	100	100.0	

The tables show the mastery levels of the participants. Repeated measures *t*-tests were conducted using independent samples *t*-test of the 2017 scores of general education students in the co-teaching and regular education environments.

Results Analysis

The researcher reviewed and sorted the data on each group's variables for 2017 and 2018 for inconsistencies. No data errors or inconsistencies were found. Samples *t*-tests were used to analyze the collected Georgia Milestones ELA scores from 2017 and 2018, on the dependent variables. The samples *t*-test is a parametric analysis used to evaluate the mean scores of two independent groups; that is group 1 (co-teaching classroom) as compared to group 2 (the general education classroom).

Research Question 1:

Research question 1 stated: Is there a difference between the 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom?

The independent samples *t*-test was conducted to compare 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom. The Bonferroni correction was used to limit the amount of Type 1 errors, lower the confidence level to limit a positive significance where there is not, and counteract the problem of multiple comparisons when the differences are small. The alpha level used was $\alpha = .05/2$ ($\alpha = .025$). There was no significant difference in the 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving

instruction in a co-teaching classroom ($M = 490.68$, $SD = 45.119$) and 2017 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom ($M = 481.63$, $SD = 38.271$), $t(114) = 1.162$, $p = .248$. Therefore, the null hypothesis failed to be rejected. For further review of this data, see Table 10, which shows the mean and standard deviation for the ELA scores for 2017, and Table 11, which shows the summary of the t -test analysis.

Table 10

Mean and Standard Deviation for ELA Scores for 2017

	<i>N</i>	Mean	Std. Deviation	Std. Error Mean
Students in General ED Co-Teaching Classroom 2017	60	490.68	45.119	5.825
Students in General Regular Classroom 2017	56	481.63	38.271	5.114

Table 11

ELA Scores Co-Teaching Classroom and General Education Classroom for 2017

Scale	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
ELA Scores Co-Teaching Classroom	60	490.68	45.119	114	1.162	.248
ELA Scores General Education Classroom	56	481.63	38.271	114		

Research Question 2

Research question 2 stated: Is there a difference between the 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom?

The independent samples *t*-test was conducted to compare 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom and 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom. The Bonferroni adjustment was used, $\alpha = .05/2$ ($\alpha = .025$). There was no statistically significant difference in the 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a co-teaching classroom ($M = 506.94$, $SD = 30.799$) and 2018 Georgia Milestones ELA scores of eighth-grade general education students receiving instruction in a regular education classroom ($M = 501.50$, $SD = 31.707$), $t(119) = .949$, $p = .345$. Therefore, the null hypothesis failed to be rejected.. For further review of this data, Table 12 shows the mean and standard deviation for the ELA scores for 2018, and Table 13 shows the summary of the *t*-test analysis.

Table 12

ELA Scores for General Education Co-Teaching Classroom and General Education Classroom (2018)

	<i>N</i>	Mean	Std. Deviation	Std. Error Mean
Students in General ED Co-Teaching Classroom 2018	53	506.94	30.799	4.231
Students in General Regular Classroom 2018	68	501.50	31.707	3.845

Table 13

ELA Scores Co-Teaching Classroom and General Education Classroom for 2018

Scale	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
ELA Scores Co-Teaching Classroom	53	506.94	30.799	119	.949	.345
ELA Scores General Education Classroom	68	501.50	31.707	119		

This study was designed to compare the ELA GA Milestone scores of general education students in the co-teaching and regular classroom. The purpose of this causal-comparative study was to identify whether statistically significant differences exist in the ELA scores of eighth-grade general education students in a co-teaching classroom and those in the regular education classroom with one teacher in a school district in the northeast of Georgia. The results of the analysis address whether a statistically significant difference exists in the academic performance in ELA of general education students in a co-teaching classroom when compared with their peers

in a regular education classroom. In addition, this study addresses the need for more statistical data on the effectiveness of the co-teaching classroom environment to increase the achievement of general education students when compared to their peers taught in a regular classroom with one teacher.

Summary

Chapter Four summarized the results of the analysis of the ELA scores of general education students in the co-teaching classroom and general education students in the regular education classroom. The data collected and procedures followed in data screening was summarized. Descriptive statistics and the parametric *t*-test was used for analysis of the data. The samples *t*-test is a parametric analysis used to evaluate the mean scores of two independent groups; that is Group 1 (co-teaching classroom) as compared to Group 2 (the general education classroom). The independent variable was the classroom environment, co-teaching and general education and the dependent variable was the ELA GA Milestones scores. The SPSS analysis revealed that there was no statistically significant difference between the eighth-grade 2017 and 2018 ELA scores of general education students in the co-teaching and the regular classroom. The researcher failed to reject both null hypotheses. Chapter Five will discuss the findings in context of the literature, the population sampled, the implications of the findings, recommendations of future research, and conclusion.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

Overview

In this final chapter, the researcher reviewed the purpose of the study and the research questions, then discussed and summarized the findings of the study. The researcher assessed the study in the context of prior literature reviewed, as well as any contributions this study has made to the current literature. Conclusions were drawn from the results of the study, suggestions provided based on the results of the statistical analysis and the implications of these results considering the population that was studied. In addition, the limitations of the study were examined and recommendations for future research presented and discussed in light of the research questions.

Discussion

The purpose of this causal comparative quantitative study was to determine if there was a statistically significant difference in the Eighth-Grade ELA GA Milestones scores of general education students taught in the co-teaching classroom with general education students taught in the regular classroom in 2017 and 2018. The results of the study could guide policy makers, school personnel, and administrators to make informed decisions about the placement of students in classes that will increase their academic achievement. A review of the literature focused on the models of co-teaching (Chitiyo, 2017; Conderman & Hedin, 2012; Cramer, Liston, Nevin, & Thousand, 2010). However, little empirical quantitative data had been collected about the academic achievement of general education students in the co-teaching environment or even how they compare with their counterparts in the regular classroom taught by one teacher. Researchers have identified the lack of consideration and research in academic performance and general education students (Agunloye & Smith, 2015; Brigham et al., 2011; Fruth & Woods,

2015). This study adds to the current research about the academic performance of general education students in co-teaching classrooms. The results of the study yielded no statistically significant difference between the ELA scores of the general education students in the co-teaching and regular classrooms for both years 2017 and 2018. These results are in contrast to the study by Szumski (2017), who found a weak statistically significant academic performance of general education students in co-teaching classrooms. However even with evidence that co-teaching as an instructional delivery model for SWDs positively impacts their academic performance when compared to their peers in the regular education classrooms, this study did not yield a negative impact of co-teaching on the ELA scores of the general education students when compared to their peers in the regular classroom. This study adds to the research on the academic performance of general education students in the co-teaching setting when compared with their peers in the regular education classroom.

Based on the state requirements that all eighth-grade students should be at developing level in reading and math for promotion to grade 9 (GA DOE, 2017), it is important that policy makers design and construct curriculum frameworks that ensure teaching and learning yields the maximum student learning and mastery of state standards. This study compared the ELA scores of 238 general education eighth-grade students in two classroom environments, co-teaching and regular education in years 2017 and 2018. The ELA test was the total raw score. The mastery levels were presented as beginning, developing, proficient, and distinguished for each student. The findings for Research Question 1 were the same as those for Research Question 2. However, the 2017 results yielded fewer students, 116 compared to 122 in 2018. In 2018 the general education students in the co-teaching classrooms yielded 53. There were more students who were at the developing level in the co-teaching classroom than in the regular classroom.

However, more students in the regular classroom achieved the proficient level.

For the years 2017 and 2018, there was no statistically significant difference in the ELA GA Milestone scores of the students in the co-teaching and regular education classrooms. The researcher failed to reject the null hypothesis for years 2017 and 2018. There was no statistically significant difference of the ELA GA Milestone scores of the two independent variables, co-teaching and regular classroom. Therefore, there was no difference in the ELA scores of the general education students taught in the co-teaching and regular education classroom environments.

School personnel have used co-teaching to meet the demands of IDEA in providing the least restrictive environment (LRE) environment for students with disabilities (SWDs) in the general education setting. School districts have sought to utilize the co-teaching environments to meet the LRE requirements. However, although the research outlines benefits for SWDs in terms of social interactions and academic progress, there is limited research on how the general education students compare with their peers in the regular education classroom. Although there was no statistically significant difference between the ELA GA Milestone scores of the general education students in the co-teaching classroom and the regular classroom, there is no suggestion that the school personnel should not continue to utilize the co-teaching models to meet the LRE requirements of SWDs. As a result of the study, school personnel and administrators should assess how they select general education students for the co-teaching classroom.

Implications

Theoretical Implications

This study was grounded in Vygotsky's social development theory of learning and the zone of proximal development. The social development theory is in line with learning theories

that advocate our knowledge is shaped by our influences and social interactions within our environment. There was no statistically significant difference in the ELA scores of the general education students in the co-teaching and regular education classrooms for both 2017 and 2018. The social development theory promotes the benefits of the social interactions of SWDs and general education students in the co-teaching classroom (Schreiber, 2013). This study does not indicate a statistically significant difference between the ELA GA Milestones scores of the general education students in the co-teaching and regular education classroom environments. This study can release curriculum developers and administrators from the burden of spending time on how they select and consider which general education students would experience the co-teaching classroom environment.

Empirical Implications

The empirical implications of this study relate to the sample population. In the context of the historical background of the co-teaching environment, as it now stands, IDEA (2004) continues to hold fast to the protection of the student's right to free appropriate public education (FAPE) in the LRE possible. For SWD to experience LRE, they must be educated with their general education peers. Thus, co-teaching appears to be the mechanism through which legislative expectations can be met (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010). Therefore, school personnel choosing to lessen or remove co-teaching from classrooms does not seem imminent; however, there may be implications from this study as to how general education students are selected for the co-teaching classroom. Considering the research on the co-teaching models and classroom environments, the results of this study should be taken as reflecting a reality in education of the comparison of ELA scores of general education students in the co-teaching and regular classroom. The data did reveal findings within this population that were

new to existing research literature. There was no difference in the ELA scores of the general education students in the two classroom environments, co-teaching and regular education. This adds to the existing research because a comparison of this population sample in two different environments, co-teaching and regular education, is not presented by other studies.

Practical Implications

The population sample was eighth-grade 2017 and 2018 students in a metro area of Georgia. There is no set criteria for the selection of general education students in the co-teaching group. They are placed in the co-teaching classes by the Assistant Principal of Instruction. Although the results of the study did not yield a statistically significant difference and the null hypothesis was failed to be rejected, a review of the students' prior data could be used to determine selection in the co-teaching classroom. Therefore, further development of the process by which general education students are placed in the co-teaching classroom could be examined by the district.

Limitations

This study must be reviewed in the context of the population sample, the research setting, place, and time. This study compared the ELA GA Milestones scores of eighth-grade general education students in the co-teaching and regular education classroom in two schools in one state, Georgia, in two years, 2017 and 2018, for one grade level. Therefore, beyond these qualifiers, external validity must be considered. Trochim (2006) stated external validity is the degree to which the conclusions of the research may be generalized from the sample population to a broader population. Although there was no significantly statistical differences between the ELA scores of the two groups in the state of Georgia in the given time frame, which meant the researcher failed to reject the null hypotheses, these findings should not be constructed as

representing national and international trends. The extent to which the findings of the study may predict trends in the results of ELA assessments of general education students in the co-teaching and general education classroom in Georgia is beyond the stated time frame and depends on the existence of factors which have influenced this study.

Another threat to the validity of the study is one researcher made all the categorization decisions. The decisions were very clear, eighth-grade ELA GA Milestone assessment scores and general education students in co-teaching and regular education classroom environment in the years 2017 and 2018. The frame of reference was made clear that only general education students who had experienced the co-teaching models were selected. General education students who were identified by the school district as English Language Learners (ELL), Gifted, and High Achievers were not selected for the purpose of this study.

Recommendations for Future Research

This current study endeavored to compare and find a statistically significant difference of eighth-grade ELA GA Milestones scores for 2017 and 2018 of general education students taught in co-teaching and regular classrooms. Further research could focus on general education students in the co-teaching and regular classroom for grades 6 to 8 GA Milestones scores for ELA and Math. Eighth-grade students are assessed on all four content areas ELA, Math, Science and Social Studies. A comparison of the two groups, co-teaching and regular education, can be made of all content areas. In addition, there could be further research on a comparison of the mastery levels of each group for each content area assessed.

Additionally, a longitudinal study could be completed to compare a sample of students from grades 6 to 8 and this could measure whether the length of time a student experiences the co-teaching classroom environment impacts their academic performance when compared to their

peers in the regular classroom with one teacher. A mixed methods qualitative research could be used to research further how general education students are selected for the co-teaching classroom environment in addition to the quantitative research on the comparison of academic performance. The researcher recommends that where co-teaching is implemented, there should be explicit guidelines and procedures for selecting general education students in co-teaching classrooms.

Summary

The findings were discussed in light of the literature review and in the context of the population sampled. Limitations of the study were considered, including threats to validity. Theoretical, empirical and practical limitations of the findings were discussed. Finally, the recommendations for future research were presented. This causal comparative quantitative study examined if there was a statistically significant difference between the ELA GA Milestones scores of general education students taught in the co-teaching and regular education classroom environments for years 2017 and 2018. The literature review includes components of past history, learning theories, historical data about the background of the co-teaching and the legal mandates for IDEA and NCLB, the types of co-teaching models, the benefits of co-teaching, the co-teaching relationships, academic performance of SWDs and limited quantitative data on the academic performance of general education students in co-teaching classroom environments. This study used quantitative data, ELA GA Milestone scores of eighth-grade general education students from a sample of population of $n = 234$, which were general education students in co-teaching classrooms and general education students in regular education classrooms.

The findings of the study revealed the null hypotheses was failed to be rejected because the data showed there was no statistically significant difference between the ELA GA Milestones

scores of the eighth-grade general education students taught in the co-teaching and regular classroom environment for years 2017 and 2018. The findings of the study answered the two research questions that there was no statistically significant difference between the ELA GA Milestones scores of the eighth-grade general education students taught in the either co-teaching or regular classroom environment for years 2017 and 2018. In conclusion, from the findings of the current study, when compared to their peers in the regular classroom environment, general education students taught in the co-teaching classroom there was no statistically significant differences in their ELA GA Milestone scores for 2017 and 2018.

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APPENDICES

Appendix A: IRB Approval

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

April 4, 2019

Deborah Mitchell

IRB Exemption 3770.040419: A Comparison of Georgia Milestones English Language Arts Scores of Eighth Grade General Education Students in Co-teaching and Regular Education Classrooms

Dear Deborah Mitchell,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

(4) Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria is met:

(ii) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects;

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,



G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

Appendix B: First Middle School Approval

Dr. [REDACTED]
Principal

[REDACTED] [REDACTED]
School District

Dr. [REDACTED]
Superintendent

[REDACTED]
[REDACTED]
[REDACTED]

February 26th, 2019

Deborah Mitchell
[REDACTED]
[REDACTED]

Dear Deborah Mitchell,

LETTER OF APPROVAL RESEARCH PROPOSAL

Based on my review of your research proposal, I give permission for you to conduct the study entitled: **A Comparison of GA Milestones English Language Arts Scores of Eighth Grade General Education Students in Co-teaching and Regular Education Classrooms at [REDACTED] Middle School.**

As part of this study, I authorize you to use archival, stripped and non-identifiable data from 2015 to 2018 of 8th grade GA Milestones English Language Arts assessment scores.

I understand that our organization's responsibilities include: the use of the school's archival files. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely non-identifiable, confidential and may not be provided to anyone outside of the research team without permission from Liberty University IRB.

Respectfully,
[REDACTED]
Principal

Appendix C: Second Middle School Approval

Ms. [Redacted]
Principal



Dr. [Redacted]
Superintendent

February 27th, 2019

Deborah Mitchell
[Redacted]

Dear Deborah Mitchell,

LETTER OF APPROVAL RESEARCH PROPOSAL

Based on my review of your research proposal, I give permission for you to conduct the study entitled: **A Comparison of GA Milestones English Language Arts Scores of Eighth Grade General Education Students in Co-teaching and Regular Education Classrooms** at [Redacted] Middle School.

As part of this study, I authorize you to use archival, stripped and non-identifiable data from 2017 to 2018 of 8th grade GA Milestones English Language Arts assessment scores.

I understand that our organization's responsibilities include: the use of the school's archival files. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely non-identifiable, confidential and may not be provided to anyone outside of the research team without permission from Liberty University IRB.

Respectfully,

[Redacted Signature]
Principal

