COMPARING TYPES OF STUDENT PLACEMENT AND THE EFFECT ON ACHIEVEMENT FOR STUDENTS WITH DISABILITIES

by

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Liberty University

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

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ABSTRACT

Since implementing No Child Left Behind, schools have improved student achievement while also preparing students for the 21st century. Schools continue to strive for 100% proficiency in all subgroups by 2014, but achievement gap exists for students with disabilities. This study used a causal comparative research design to test the concept of co-teaching by comparing types of placement for students with disabilities and the effect on student achievement. For this study, placement was considered where the student received instruction in either a general education class or a co-taught class during 9th through 11th grade. Student achievement was based on the 11th grade Pennsylvania System of School Assessment results for reading and math. This study examined the results from southwestern Pennsylvania high schools for the 2011-2012 school year. The independent variable was student placement in co-taught classes or general education classes. The dependent variable was student achievement based upon the state test results. A causal-comparative design matched 67 math and 68 English co-taught participants with non-co-taught participants based upon gender, disability, and full scale IQ. Analysis of variance was used to determine if the different placements had differential effects on the students’ state math and reading scores. Math and English pairs were analyzed separately. The results of this study found that there was a significant difference in mean scores for class placement in both math and English classes. The students with disabilities placed into a general education class scored significantly higher on the respective 2012 PSSA tests.

Descriptors: co-teaching, general education, high school, Pennsylvania System of School Assessment, PSSA, students with disabilities, student achievement
Acknowledgements Page

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CHAPTER ONE: INTRODUCTION

The Elementary and Secondary Education Act (ESEA) of 1965 was reauthorized as Public Law 107-110, also known as the No Child Left Behind Act of 2001 (NCLB). NCLB was proposed by the Bush administration and signed into law in 2002. NCLB was created to ensure that all students are successful and to close the achievement gap in various subgroups. The subgroups of concern are minority groups, economically disadvantaged students, and students with disabilities. Each state defines the minimum number of students needed for a subgroup to qualify for accountability purposes. When subgroups have numbers below the threshold, the academic needs of the students in that subgroup are not well served (Thornton, Hill, & Usinger, 2006).

The goal of public schools must be to close the achievement gap in all applicable subgroups, including the students with disabilities subgroup. Edmonds and Spradlin (2010) stated that a variety of factors must exist in order for students to reach their fullest potential of academic achievement, and research needs to focus specifically on student achievement for students with disabilities. The goal of the accountability movement was the basic right to learn, and positive test results were used as proof of learning (Crockett & Yell, 2008). As there continues to be an increase in the numbers of students with disabilities, there is a concern about not being able to meet their needs with traditional approaches so alternative options need to be developed (Bauwens & Hourcade, 1991).

This research study was built on the theoretical ideas of ecological theory and sociocultural theory. The concept of inclusion evolved where students would be served in the regular classroom with services and supports in order to be successful in the general education environment (Murawski & Swanson, 2001). Cooperative teaching was the response to the
dilemma and need for inclusion (Murawski & Swanson, 2001). Cooperative teaching is also called co-teaching. This model is used when a content area teacher and a special education teacher are both assigned to a class. This model uses the skills of both teachers to provide instruction in a general classroom setting. This classroom setting has allowed for heterogeneous grouping. The teachers divide the responsibilities of curriculum and instruction, and both are accountable for student learning in the class.

Co-teaching continued to evolve as more research was conducted; however, most recent research involves special education pullout classes or one-on-one settings, instead of research conducted in whole-class, general education classrooms (Van Garderen et al., 2009). Research conducted on co-teaching normally focuses on co-teachers’ roles, co-teachers’ relationships, and program logistics, rather than analyzing co-teaching’s impact on student achievement (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010). Therefore, there are numerous qualitative studies on co-teaching, but only a limited amount of quantitative studies. With all of the qualitative research in recent years on how to improve co-teaching, additional quantitative data is needed to determine if co-teaching has made a difference in student achievement. There is a shortage of research that supports the academic achievement benefits of co-teaching (Volonino & Zigmond, 2007).

Unfortunately, schools are not required to report when co-teaching occurs and the lack of reporting makes quantitative studies difficult to be conducted. Schools must only report the percentage of time that a student with a disability has participated in general education classes. States are then required to report this information to the Office of Special Education Programs (OSEP). The information reported to OSEP shows the extent to which students with disabilities were educated in general education classes, but it does not show which specific general
education classes the students were included. For example, the report does not show if students were in general education math versus general education social studies. In order to assess whether co-teaching classes have helped to improve achievement in math and English classes, data needs to be retrieved and analyzed for those specific math and English classes.

Schools are held accountable for achievement scores on state assessments for students with disabilities, and while inclusion of students with disabilities in general education classes has occurred for decades, the new accountability measures have made reviewing achievement scores related to student placement necessary (Crawford & Tindal, 2006). According to Thompson, Morse, Sharpe, and Hall (2005), students with disabilities can achieve on state assessment if instruction has been provided by qualified teachers, IEPs have ensured specialized instruction, appropriate accommodations were implemented, and collaboration has occurred between the general education teacher and special education teacher.

Placement of students with disabilities into math and English classes compared to their achievement was addressed in this quantitative research study. For this study, placement in a general education class or a co-taught class for each year in grades nine through 11 were considered for math and English classes. Math and English placements were computed separately. Student achievement was based on the 11th grade Pennsylvania System of School Assessment results for reading and math from the 2011-2012 school year. In Chapter One, a background for inclusion, student placement, and student achievement were presented. The problem statement and purpose statement were explained. The significance of the study was described. The research questions, hypotheses, identification of variables, definitions, and statistical methods were defined. The assumptions and limitations were also noted.
Background

In the early 1900’s, students with disabilities were educated in separate schools. As time progressed, laws were created and continued to change, such as the Education for All Handicapped Children Act. With these laws, students with disabilities were integrated into public schools. Eventually, students began to be included in general education courses and sometimes a co-teacher was also included in the general education course. These actions stemmed from two different theories. First, Bronfenbrenner’s (1979) ecological theory posited that behavior needed to be observed in numerous settings and a child’s development was based upon the relationships in each of the settings. Ecological theory connected individuals with their environments. Even if an individual was not an active participant of a particular environment, events that occurred in that setting may have affected that individual. Considering development is influenced by the characteristics of the environment, students should be placed with their peers. Placing students in inclusion classes will help provide age appropriate models for students with disabilities. If students are educated in self-contained special education classes, the students may not receive the same education. Bronfenbrenner’s (1979) theory was also supported by Butera (2005), who stated that ecological theory could be a lens to understand the context of collaboration and special education while finding influences for a child’s development.

While Bronfenbrenner’s (1979) theory helped to place students with disabilities into general education classrooms, another theory helped to build the conceptual framework of this study. The theory used for this study was Vygotsky’s (1997) socio-cultural theory, which posited that the intellectual development of individuals not only derives from social interactions, but also from interactions with others. Socio-cultural theory indicates that the additional teacher support in the co-taught classroom may have an effect on academic achievement. This implies
that when students are placed in a co-taught class to learn, the interactions afforded to them from two teachers would influence their academic performance. As applied to this study, the socio-cultural theory holds that the researcher expected the independent variable of student placement to influence the dependent variable of student achievement because the special education teacher could develop lessons to present the material in a variety of ways and the content teacher could build upon content knowledge to present materials. Having two teachers in one classroom also reduces the teacher-student ratio. The framework of Bronfenbrenner’s ecological theory and Vygotsky’s socio-cultural theory were used to develop the literature review and research findings for this study.

As more students with disabilities were integrated into general education classes, it was necessary to conduct research to determine the effects of this placement. Carlberg and Kavale (1980) conducted a meta-analysis of special education placement versus general education classroom placement. Until their research, there was little evidence of the effectiveness of special education versus general education classes. Carlberg and Kavale found that the special education class placement was inferior to general education class placement when evaluating student achievement. The study also found that the placement of some children in general education classes may not be appropriate (Carlberg & Kavale, 1980). If schools were going to continue to educate students in the general education classes, changes needed to be made in the classes in order for more students with disabilities to be successful.

There are many debates in the area of special education as to whether or not to include students with disabilities into general education classes (Fore, Hagan-Burke, Burke, Boon, & Smith, 2008). General education teachers and special education teachers developed the co-teaching model in order to provide students with disabilities the services and supports they
needed while continuing to educate them in the general education classrooms (Murawski & Swanson, 2001). Full inclusion with co-teaching is the favored service delivery model for educating students with disabilities (Zigmond, Kloo, & Volonino, 2009). But schools are having a difficult time helping students with disabilities function in general education classroom (Jimenez, Graf, & Rose, 2007). Murawski and Swanson (2001) conducted a meta-analysis on the effectiveness of co-teaching based upon studies from the 1990s and found student achievement improved in co-taught classes, although the data that suggested this was limited. They also stated that there is little experimental data to support the claims that co-teaching is an effective teaching model to use for students with disabilities in order to place them into general education classes (Murawski & Swanson, 2001). No other recent meta-analysis studies have been conducted on quantitative research pertaining to student achievement and co-teaching for students with disabilities. According to Friend et al. (2010), the future of co-teaching may depend on increasing the quantity and quality of research and including co-teaching in school improvement plans. Friend noted that new research needs to be evidence based as opposed to perception based. Friend stated that one way help establish an evidence base is to research outcome data on student achievement on high-stakes tests. This research study added a quantitative perspective to the co-teaching literature by conducting a causal-comparative study on types of student placement compared to student achievement for students with disabilities.

Co-teaching has been studied for over two decades and collaboration has been studied for almost half a century (Cook & Friend, 2010). Even though co-teaching is popular in education settings, the instructional validity and outcomes for students with disabilities have not been justified in research (Volonino & Zigmond, 2007). Current research has centered around philosophies, perceptions, and methods of co-teaching, rather than on effects on student
achievement. Since the accountability focus has now been placed on academic outcomes and student access to the general education curriculum, research on these areas is needed (Lingo, Barton-Arwood, & Jolivette, 2011). After reviewing state test results, the question remains if the Education for All Handicapped Children Act is providing the appropriate education for students with disabilities (Zigmond et al., 2009). More research is needed that carefully studies co-teaching, rather than describing co-teaching and offering advice (Friend et al., 2010).

The primary research focus has been on co-teaching that occurs in any class, not specifically math and English classes. Murawski and Hughes (2009) stated that not all classes need to be co-taught. Van Garderen, Scheuermann, Jackson, and Hampton (2009) found that very few studies are conducted in whole-class, general education classrooms, but rather in special education classes or one-on-one settings. Since more students with disabilities are being included in general education classes, research must be conducted on those classes. Hang and Rabren (2009) did not find significant changes in academic achievement after one year of co-teaching, and they stated that additional research was needed using individual assessments in content areas in order to evaluate the efficacy of co-teaching. Under NCLB, math and reading scores on state assessments are one measure of school accountability. Garderen et al. (2009) stated

> To date, a comprehensive review of research-based instruction that is focused on more than one mathematics subject area for the struggling learner and that addresses both students with disabilities and those at risk or low achieving has not been conducted. (p. 57)

This research study was designed to investigate co-teaching at the secondary level, specifically for math and English classes in Pennsylvania, where the Pennsylvania System of
School Assessment (PSSA) scores are used for state accountability purposes. As the demand for co-teaching continues, research must be conducted on the impact of this collaboration (Friend, 2000). When determining the least restrictive environment for students with disabilities, the individualized education plan (IEP) team needs to evaluate the effectiveness of student learning in the potential educational placement where specially designed instruction will occur. The IEP must be reviewed and updated at least once a year. Quantitative research has greatly assisted educators when attempting to determine the effective placement. With the accountability standards under NCLB, educators could research schools that have shown success in the subgroup for students with disabilities. Research using the NCLB accountability standards would only be possible for subgroups that have met the minimum quantity for reporting under state requirements, which varies from state to state. There are many schools that have not been required to report on the students with disabilities subgroup because the number of students in the subgroup is too small (Thornton et al., 2006). Accountability for schools in Pennsylvania is based upon a subgroup that has more than 40 students (McLaughlin, Embler, Hernandez, & Caron, 2005). This study used schools with a subgroup too small for accountability purposes to compare student placement to student achievement for students with disabilities. This quantitative study examined whether placement of students with disabilities had differential effects on student achievement using scores from the 11th grade math and reading state tests for some schools in southwestern Pennsylvania.

Problem Statement

When a student with an IEP attends a small school, there could be a gap in the implementation of NCLB because the subgroup is too small to be considered for AYP purposes and therefore, schools are not held publicly accountable for student achievement within that
subgroup (Thornton et al., 2006). Schools are not addressing certain subgroups when the enrollment is too small to be considered for NCLB accountability standards (Borkowski & Sneed, 2006). Whether or not a school’s subgroup is too small for NCLB accountability purposes, students with disabilities must meet grade-level standards (Edmonds & Spradlin, 2010).

The use of co-teaching is a strategy educators have been implementing more often in order to address the need for a least restrictive environment, as well as a need to increase student achievement for students with disabilities. No meta-analysis has been found since 2001 to determine if co-teaching has impacted student achievement. The current co-teaching literature covers three areas (Friend et al., 2010). First, research has been conducted on teachers’ roles and relationships in the co-teaching classrooms. This has included many studies on professionals’ perceptions of co-teaching. The second area of research was conducted on the logistics of co-teaching. The need for having a common planning time was mentioned frequently in the logistical studies. The third area of research involved the impact of co-teaching. There are minimal studies on the actual results for students with disabilities placed in co-taught classes even though raising standards and academic achievement are currently emphasized in the area of special education (Friend et al., 2010).

In 2008, an average of 54 percent of students with disabilities were enrolled in general education classes for at least 80 percent of the day (Holdheide & Reschly, 2008). While the percent of time that students with disabilities participate in general education classes was reported to OSEP, co-teaching was not considered in this data. The specific content area classes at the secondary level were also not considered in the OSEP reporting. Friend et al. (2010) pondered whether or not co-teaching required a minimum amount of time in class in order for
that model to be effective. This quantitative study compared the placement of students with disabilities in math and English general education or co-taught classes to student achievement on the 11th grade state tests in math and reading to determine if co-teaching was an effective strategy in some small high schools in southwestern Pennsylvania.

**Purpose Statement**

The purpose of this quantitative research using a causal-comparative design was to use Bronfenbrenner’s (1979) ecological theory and test Vygotsky’s (1997) socio-cultural theory. The theories indicated that students should be educated with their peers in order to learn from their environment and interactions with others. The collaboration among all stakeholders can help a child’s development. As applied to this study, inclusion and co-teaching were used to educate students with disabilities in their least restrictive environment and to increase collaboration. Based upon the socio-cultural theory, the researcher expected the independent variable of student placement to influence the dependent variable of student achievement because the special education teacher could develop lessons to present the material in a variety of ways and the content teacher could build upon content knowledge to present materials. Having two teachers in one classroom also reduced the teacher-student ratio.

Based upon 11th grade students with disabilities during the 2011-2012 school year, all high school math and English class placements were considered for each student. Student achievement was determined by the results from the 11th grade PSSA tests in reading and mathematics from the spring 2012 test administration. The population for the study was students from eight high schools in southwestern Pennsylvania. The causal-comparative design was appropriate due to the fact that the researcher was unable to manipulate the independent variables.
since placement was determined by each student’s individualized education plan (Gall, Gall, & Borg, 2007).

The independent variable, student placement for students with disabilities in inclusion classes, was decided by an IEP team based upon the least restrictive environment. While Individuals with Disabilities Education Act (IDEA) does not define how an IEP team determines placement in the least restrictive environment, IDEA does define that the general education class placement must be considered first (Howard, 2004). If the IEP team believes the student will not achieve satisfactorily in the general education class, even with supplementary aids and services, the team can remove the student to a more restrictive environment (State Eligibility, 2004). The two inclusion placements are co-taught math or English class and general education math or English classes with accommodations. All students without disabilities are placed into general education math or English classes without accommodations. For this study, the dependent variable, student achievement, was based upon four levels which were composed of the results of the PSSA math and reading tests (Pennsylvania Department of Education, 2013). Scores of below basic and basic do not meet the cut off to pass the state test, and scores of proficient or advanced meet the cut off to pass the state test. Adequate yearly progress is determined by the percent of students passing the state test.

Friend et al. (2010) identified the need to study student achievement for co-teaching in content area subjects as one research dilemma. Kloo and Zigmond (2008) stated that the majority of co-teaching research has centered on the logistics of co-teaching. Other research has focused on student or teacher perceptions, which has not provided an evidence base for co-teaching (Friend et al., 2010). This study tried to determine whether co-teaching had an impact on math achievement or reading achievement for students with disabilities at the secondary level.
This study can help to add to the quantitative research base for educators and researchers as they continue to find ways to close the achievement gap. When making placement decisions for students with disabilities, educators must be mindful of where the students will have the best outcomes (Fore et al., 2008). This study can help educators determine the appropriate inclusion placement for students with disabilities while also considering student achievement.

**Significance of the Study**

In the past, students with disabilities have been excluded from regular education classrooms, as well as state testing programs (Hurwitz, 2008). In the 21st century, students with disabilities have been educated in the least restrictive environment and then included in state testing programs. A debate has existed on whether state tests for accountability are fair for students with disabilities, but all states are required to use some form of testing to prove adequate yearly progress for No Child Left Behind (Katsiyannis, Zhang, Ryan, & Jones, 2007). Under NCLB, 95% of students with disabilities are required to participate in state testing, but they may use accommodations and modifications on the assessments as defined in their Individual Education Plans (Yell, Katsiyannis, & Shriner, 2006). Since students with disabilities have been participating in state testing, achievement gaps have been identified. More students with disabilities are participating in high-stakes testing, but only a small improvement has been seen in the test results (Defur, 2002). The NCLB requirements have helped to close the achievement gap for students with disabilities, but more work is needed.

In order to improve student achievement and close the achievement gap, a variety of strategies are needed. One strategy for students with disabilities is to determine the best placement for the student to receive specially designed instruction based upon the least restrictive environment. The least restrictive environment allows the student to be educated with
non-disabled peers and also meet the needs of the individual student. A wide array of qualitative studies on special education placement involving co-teaching and inclusion has been conducted. However, a limited amount of quantitative research studies on special education placement in regards to student achievement exists (Fore et al., 2008). According to Lindsay (2007), “the evidence for the effectiveness of inclusive education/mainstreaming might best be described as equivocal although; equally, there was little evidence for the superiority of special education” (p. 7). The lack of quantitative studies has hindered the review of literature on student achievement for students with disabilities based upon student placement, but this study has built upon the few studies that have been published. For example, one study compared student placement in co-taught classes or general education classes with student achievement scores. Walsh and Snyder (1993) found that pass rates for students in co-taught classes were higher for the group and each subject when compared to student in general education without the support of a co-teacher. However, this study did not describe the results of the students with disabilities in either class placement.

The findings from the current study proved to be statistically significant, but illustrated that the extra teacher in the co-taught classes did not increase the achievement scores on the PSSA tests. In fact, the students with disabilities that were placed into general education classrooms without the support of a second teacher scored significantly higher on both the math and reading PSSA tests. The information gained from this research study can be used to determine if additional considerations need to be made when determining a student’s placement. The study can help to determine which placement is more effective to raise the achievement for students with disabilities. The information can also be used to determine if the additional teacher support in the co-taught classroom is a justified expense in order to increase student achievement.
for students with disabilities. Funding the co-teaching service delivery model is a common concern (Murawski & Hughes, 2009). Additional research is needed to determine if the value of the money spent on special education services actually impacts student achievement and outcomes (Aron & Loprest, 2012). Increased quality and additional research is needed in order to sustain co-teaching (Friend et al., 2010). The benefits of adding to the research base outweigh the limitations from the lack of quantitative research for the literature review.

Research Questions

Even though more students with disabilities have been placed into general education classes, very little research has been conducted at the secondary level to determine where student achievement improves the most for students with SLD (Fore et al., 2008). This study examined the differences in student achievement based on student placement at eight small high schools in southwestern Pennsylvania. Two questions were proposed for this research project. They are as follows:

RQ1: Is there a difference in the mean PSSA 11th grade reading test achievement scores among students with disabilities when the students are placed in a general education class versus a co-taught class?

RQ2: Is there a difference in the mean PSSA 11th grade math test achievement scores among students with disabilities when the students are placed in a general education class versus a co-taught class?

Hypothesis or Hypotheses

The following are the research hypotheses:
**H₁**: There is a statistically significant difference in the mean PSSA 11th grade reading test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes.

**H₂**: There is a statistically significant difference in the mean PSSA 11th grade math test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes.

Alternatively, the following are the null hypotheses:

**H₀₁**: There is no statistically significant difference in the mean PSSA 11th grade reading test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes.

**H₀₂**: There is no statistically significant difference in the mean PSSA 11th grade math test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes.

**Identification of Variables**

For this study, the independent variable was placement of students with disabilities in inclusion classes. The placements for math were a co-taught math class or a general education math class with accommodations. Placements for reading were a co-taught English class or a general education English class with accommodations. A co-taught classroom was defined as when “the special education and the general education teachers are both in the classroom during the same lesson and both participate in the instruction” (Vaughn, Bos, & Schumm, 2000, p. 107). There are both students with disabilities and students without disabilities in co-taught classes. While there are a variety of co-teaching models, the treatment for this study was the fact that there was an additional certified teacher in the classroom to help provide instruction. The other
placement option was a general education class with accommodations, which meant a student was considered in the mainstream. There was no limit to the amount of accommodations a student could receive, and the accommodations were dictated by the student’s individualized education plan. However, state policies and procedures for accommodations on the PSSA test were used to ensure the scores were valid (Pennsylvania Department of Education, 2012b). Some common accommodations the students could receive in class were extended time, clarified directions, and copies of teachers’ notes. These accommodations could be provided by the general education teacher; therefore, a highly qualified special education teacher was not needed. The student was only taught by a general education teacher certified in the content area and students without disabilities were also in the class.

The dependent variables were the achievement scores on the math and reading PSSA tests for 11th grade for the spring 2012 test administration. The achievement scores were generally defined by four levels. Test results of below basic and basic do not meet the cut score to pass the state test. Test results of proficient or advanced meet the cut score to pass the state test. One dependent variable in this study was math achievement as measured by the PSSA 11th grade math test. For mathematics, below basic is 700 – 1166, basic is 1167 – 1303, proficient is 1304 – 1508, and advanced is 1509 and above (Pennsylvania Department of Education, 2012d). Another dependent variable in this study was reading achievement as measured by the PSSA 11th grade reading test. For reading, below basic is 700 – 1111, basic is 1112 – 1256, proficient is 1257 – 1491, and advanced is 1492 and above (Pennsylvania Department of Education, 2012d). The data was analyzed separately for the two different tests. The data was collected as both categorical and continuous. Hypothesis testing was based on continuous data (Gall et al., 2007).
Definitions

There are two options for general education inclusion placement at high schools to meet the requirements of least restrictive environment (LRE). Inclusion is when students with disabilities receive their services and supports in the general education classroom (Murawski & Swanson, 2001). The options are co-taught classes and general education classes. “The law defines LRE as the setting where students with disabilities receive special education services and experience the greatest success toward progress” (Jimenez et al., 2007, p. 42). For this study, co-teaching was defined as when two teachers, a regular education teacher and a special education teacher, teach one course in the same room (Vaughn et al., 2000). Both teachers take on the responsibility of student learning in the classroom. For example, co-taught math was a math course taught by two teachers, a math teacher and a special education teacher. Co-taught English was an English course taught by two teachers, an English teacher and a special education teacher. Both teachers were highly qualified in their respective areas. The co-taught classes were considered the treatment in this study due to the extra teacher in the classroom that was also providing instruction; however, there are different models of co-teaching. For this study, general education classes were classes taught by a content teacher where students without disabilities were educated, as well as students with disabilities that received minor accommodations to progress in the regular curriculum. For example, general math was a math course taught by one teacher, and the teacher was certified in math. A general English class was an English class taught by one teacher, and the teacher was certified in English.

Research Summary

This quantitative study was conducted using a causal-comparative design, which is a type of group comparison design (Gall, Gall, & Borg, 2010). This research design was selected
because it was a non-experimental study to investigate the possible cause and effect relationship between the variables (Gall et al., 2010). This research design was also selected because the independent variables could not be manipulated by the researcher since it is impossible to change student placement once it has occurred (Gall et al., 2010). A causal-comparative design was also feasible because the data was from naturally occurring situations and it would be unethical to design a study with the intent to harm students and take away special education services that they are entitled to receive. This quantitative study adds to the research base as the differential effects of student achievement associated with placement of students with disabilities in inclusion classes were studied.

The study used spring 2012 reading and math PSSA results for 11th grade students with disabilities. Eight high schools in southwestern Pennsylvania were used in this study. The student achievement scores were compared to student placement in specific classes. The treatment was the extra teacher providing additional instruction in the co-taught classes. The reading and math scores were analyzed separately. Subject matching was used to control for selection threat to validity. Descriptive statistics, such as mean and standard deviation, were computed for each group. An analysis of variance (ANOVA) test was conducted “that compares the amount of between-groups variance in individuals’ scores with the amount of within-groups variance” (Gall et al., 2007, p. 318). Tables and figures were created to visually represent the data analysis.
CHAPTER TWO: REVIEW OF THE LITERATURE

As education futurists began to envision 21st century classrooms, the need to include students with disabilities emerged. Even though more students with disabilities were being included in general education classrooms, schools were still expected to meet the goals of NCLB. Schools need to find ways to increase the achievement of students with disabilities in order to reach such goals. In 2004, the Individuals with Disabilities Education Act was reauthorized to help align the provision of the Individuals with Disabilities Education Improvement Act (IDEIA) with NCLB (Bowen & Rude, 2006). With the support of these two acts, students with disabilities have an opportunity for academic success through an Individualized Education Plan (IEP). When determining the least restrictive environment for students with disabilities, the IEP team needs to evaluate the effectiveness of student learning in the current and potential educational placement.

Schools are required to administer high-stakes tests to students with disabilities in order to meet the requirements of NCLB and IDEIA. These tests are high stakes tests because the results are used to make decisions about a student’s education, such as diploma status or retention and promotion (Cole, 2006). Schools are evaluated on the state test results, including the scores from students with disabilities. Consequently, schools must meet the requirements of NCLB and are under pressure to find ways to meet the needs of students with disabilities so they can be successful on state tests (Harvey, 2004). Alternative assessments may be used with students with severe cognitive disabilities. In Pennsylvania, students with the most severe cognitive disabilities take the Pennsylvania Alternate System of Assessment (Pennsylvania Department of Education, 2012e). These students require intensive instruction and numerous supports. Special education students with less severe disabilities do not meet the requirements
for alternative assessment; therefore, other strategies need to be used to address their learning needs and the achievement gap.

For students with disabilities, a student’s IEP can be used to determine the least restrictive environment (LRE) placement where a student will be successful. In order to have positive results for students with disabilities, student placement may be used when evaluating high stakes test results under NCLB. LRE is required by the Individuals with Disabilities Act (IDEA, 2004). Least restrictive environment is defined as:

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

More students with disabilities are now being included in general education classes (Jimenez et al., 2007). Some subgroups are being overlooked in the educational priorities of the school because too small subgroups are not accounted for under NCLB (Thornton et al., 2006). The minimum number of students for a subgroup for accountability is set by each state and states range from 5 to 200 for the minimum number (McLaughlin et al., 2005). Small sample sizes do not allow for statistically verifiable information. The differences in the minimums for subgroup reporting do not allow for comparison across states. In Pennsylvania, a subgroup is considered for accountability purposes once the subgroup reaches 40 students (Pennsylvania Department of Education, 2012a). Schools need to be accountable for all subgroups identified in NCLB
(Thornton et al., 2006). Even if NCLB does not hold schools accountable when subgroups are too small, schools should include the subgroups in their individual school improvement plans. If not, students with disabilities may not increase their achievement as expected when monitored on a school improvement plan (Coladarci, 2005).

In Pennsylvania, there are two different reports for placement decisions. The first report is part of the IEP placement decision. The options are full-time, itinerant, or supplemental based upon the percentage of time a student receives special education services. Special education services for 80 percent of the day or more is considered full-time; more than 20 percent but less than 80 percent is considered supplemental, and less than 20 percent is considered itinerant (Intermediate Unit 1, 2012). The second report falls under the reporting requirements for OSEP, where students with disabilities in local public schools have three options. The students can be placed in general education classes for more than 80 percent of the day, 40 to 79 percent of the day, or for less than 40 percent of the day (U.S. Department of Education, 2011). One report focused on the time spent in general education classes and the other report focused on the time a student received special education support. For both reporting methods, the specific type of content area class was not considered. For example, a student may have been placed into a self contained English class but a general education math class. By only reporting the percent of time in general education classes, as opposed to specific general education classes, research cannot be conducted on the reported data.

The purpose of this study was to test the theory of inclusion by comparing the various placements of students with disabilities in English and math classes to student achievement on the 11th grade PSSA tests in reading and math. The histories of special education and inclusion were reviewed. The theoretical framework of inclusion was used to develop the study. Experts
were identified as a wealth of literature was reviewed and analyzed. The need to research special education and the achievement gap was identified, as well as the importance of educating students in the least restrictive environment. A variety of settings for students with disabilities were identified, including self-contained, co-teaching, and full inclusion. The need for further research on the student placement for student achievement was identified. This included the need for further research on co-teaching. The need to monitor the effects on students without disabilities when placing students with disabilities into general education classes was also identified. The characteristics of a school culture that promotes learning for all students, including students with disabilities, were identified. Ultimately, the achievement gap must be closed for all students in all subgroups. These factors will be presented in this literature review.

History of Special Education

Educating students with special needs has evolved over the last five decades. Laws, policies, and procedures have also evolved during this time. “The evolution of a more inclusive education policy at the federal level is a recent phenomenon that is rooted in the 14th Amendment of the U.S. Constitution and manifested through the Civil Rights movement of the 1950s and 1960s” (Hardman & Dawson, 2008). The first law was in 1965, which was the Elementary and Secondary Education Act and included Title 1. This Act focused on equal access to education with high standards and accountability.

Dunn (1968) questioned whether separate classes for students with mild disabilities were justified. This led other researchers to question the need for separate and special classes. In 1973, Section 504 of the Rehabilitation Act stated that discrimination occurs when individuals with a disability are excluded or segregated (Aron & Loprest, 2012). This law helped to give students with disabilities greater access to education, but was not fully funded by the federal
government. Around this time, the teacher consultant model began where teacher-to-teacher interactions occurred, similar to the interactions of school psychologists and counselors (Cook & Friend, 2010).

In 1975, the Education for All Handicapped Children Act was passed as Public Law 94-142. Under this Act, students with disabilities were entitled to attend public schools, to receive a free and appropriate education (FAPE), and to be included with their non-disabled peers (Aron & Loprest, 2012). Prior to 1975, only one in five students with a disability attended public school (Aron & Loprest, 2012). Mainstreaming students with disabilities into general education classes had to be operationally defined and included placing students in the least restrictive environment. Inclusion gave students the opportunity to be educated with their peers, have access to the general education curriculum, and receive their special education services while in the general education classroom (Allen & Hughes-Hassell, 2010). Students with disabilities have an Individual Education Plan which documents their free and appropriate education under IDEA (Taylor, 2010). Although students at this time were now educated more often in their local school, students were still segregated into special education resource classes.

By the 1980s, the teacher consultant model was in question because it lacked the direct instruction required by special education laws (Cook & Friend, 2010). Collaborative consultation emerged to replace teacher consultants. This model was more of a partnership between peers who had similar responsibilities for student services (Idol, Nevin, & Paolucci-Whitcomb, 1986). Collaborative consultation recognized that professionals had to interact in order to work together to provide services to students with disabilities (Cook & Friend, 2010). Next, the term collaboration emerged to encompass various professional partnerships in regards to working with students with disabilities (Cook & Friend, 1991). Finally, the term co-teaching
appeared, which referred to a service delivery option where teachers collaborated to provide instruction (Cook & Friend, 2010). During all of the changes with the models and service delivery options, laws also continued to change.

The Education for All Handicapped Children Act was amended in 1990 as Public Law 101-476. This became known as the Individuals with Disabilities Education Act (IDEA). Under this legislation, handicapped children where now to be referenced as children with disabilities (Dettmer, Thurston, & Dyck, 2005). Schools began to receive federal funds under Part B of IDEA in order to help assist in educating students with disabilities. In order for a student to receive special education services under IDEA, the student was required to have an impairment and need related services due to the impairment (Aron & Loprest, 2012). An evaluation to determine if students were eligible to receive services was to be conducted by a multidisciplinary team (Taylor, 2010). The most common type of disability for students today is a learning disability (Aron & Loprest, 2012). A learning disability is a neurologically based processing problem, which can interfere with reading, writing, or math (Learning Disability Association of America, 2011).

In 1994, the reauthorization of ESEA amended Title 1. This reauthorization was Public Law 103-382, also called Improving America’s Schools Act (IASA). Standards-based curriculum was to include those students that fell under Title 1. Under this amendment, states were required to assess students with disabilities using the same assessments used by students without disabilities (Thurlow & Wiley, 2006). The scores from these assessments were to be disaggregated by subgroup and publicly reported.

In 1997, IDEA was amended in numerous areas as Public Law 105-17. One amendment helped to improve access to general education curriculum for students with disabilities. Another
amendment involved accurate assessments of academic achievement for students with disabilities. Each state was required to report assessment information on students with disabilities as frequently as assessment information for students without disabilities (Thurlow & Wiley, 2006). Alternate assessments were required to be developed. A third part of the amendment involved procedures for discipline and alternative education settings for students with disabilities. Lastly, the amendments helped to improve transition services for high school students.

Equal access for all children became national policy in the 21st century (Hardman & Dawson, 2008). The No Child Left Behind Act of 2001 (NCLB) became law in 2002. NCLB was a reauthorization of ESEA from 1965. Under NCLB, student achievement became the responsibility of the United States Department of Education (Bowen & Rude, 2006). Under NCLB, each state was required to have reading/language arts, mathematics, and science content and achievement standards that were challenging (McLaughlin et al., 2005). Under NCLB, schools were held accountable for student achievement in various subgroups, including students with disabilities. Assessment results for districts and states must then be made public by the beginning of each school year (Thurlow & Wiley, 2006).

In 2004, IDEA was reauthorized in order to improve existing legislation and to align Individuals with Disabilities Education (IDEA) with NCLB (Bowen & Rude, 2006). This is Public Law 108-446. This reauthorization is the Individuals with Disabilities Education Improvement Act. One amendment in IDEIA included increased accountability for test results. The IDEA of 2004 also allowed response to intervention (RTI) to be used as a method of identification (Aron & Loprest, 2012). Another part of the amendment involved increased parent participation. The amendment also included the requirement to used research based practices.
The amendments helped to reduce the paperwork burden on educators. Collectively, the laws and amendments have helped to pave the way towards full inclusion for students with disabilities.

Rosa’s Law was signed into law in October 2010 by President Obama. It is Public Law 111-256. This law changed references of mental retardation to intellectual disability. It also changed references of a mentally retarded person to a person with an intellectual disability. This law changed the wording in the Rehabilitation Act of 1973, IDEA, and ESEA.

Theoretical Framework

Bronfenbrenner connected human development with ecology rather than biology or behavior variables and stressed the importance of interpersonal relationships (Jackson, Ryndak, & Wehmeyer, 2008). Bronfenbrenner’s ecological theory pertained to the physical setting, activities, and roles of participants in relationship to behavior. Ecological theory played a role in special education by providing for the least restrictive environment. It also allowed for students with disabilities to be around other students and potentially change their behavior in a normal setting. This can be seen in the grouping of students in school, including students in inclusion classes.

Vygotsky can also be connected to the inclusion of students with disabilities in general education courses (Dixon & Verenikina, 2007). Vygotsky believed in inclusion but criticized mindless inclusion (Dixon & Verenikina, 2007). One of Vygotsky’s ideas was that authentic teaching and learning comes from adults collaborating with students (Davydov & Kerr, 1995). Vygotsky “proposed that a very different learning environment where all of the staff could concentrate on the individual needs of the child was necessary” (Dixon & Verenikina, 2007, p.
Coteaching allowed for changing the methods of inclusion to keep the student in the mainstream as much as possible (Dixon & Verenikina, 2007).

While the expectations for inclusion continue to increase, special education students must also reach 100% proficiency on state assessments by 2014 as mandated by NCLB. Special education students must reach adequate yearly progress (AYP) targets each year based on the Department of Education guidelines in each state. Sanctions are imposed if the targets are not reached. Haas, Wilson, Cobb, and Rallis (2005) stated that NCLB “has captured the attention of educators and policymakers and has hastened efforts to close the achievement gap” (p. 180). The NCLB requirements have helped to close the achievement gap, but more work is needed.

Educators need to find ways to increase student achievement in order to close the achievement gap for students with disabilities and reach the goals of NCLB. Scientifically based research must be used to increase student achievement and close the achievement gap. According to Simpson, Lacava, and Sampson-Graner (2004), scientifically based research has met rigorous standards and can yield positive results when correctly applied. Murawski and Swanson (2001) stated the following:

For co-teaching to be considered a viable service delivery option for students with disabilities within general education, statistical information disaggregating the effects of students served in co-teaching situations from those served in control situation (usually on a consulting or pull-out basis) is critical. (p. 263)

Under NCLB, all students must be successful regardless of their ability or disability (Faircloth, 2004). Under the rules of least restrictive environment, students with disabilities are placed into mainstream classes and are taught the same curriculum and must take the same test. Today’s accountability requirements rely on standardized tests as the means to judge student
achievement (Edmonds & Spradlin, 2010). Challenging academic standards must be assessed and the scores must be disaggregated and reported by subgroup. The state testing results have shown that an achievement gap exists. Additional research is needed to determine if inclusion is effective based upon student outcomes (Goodman, Hazalkorn, Bucholz, Duffy, & Kitta, 2011). Co-teaching is considered the most rapidly growing option for students with disabilities to be educated in general education classrooms (Cook & Friend, 2010). Additional research is needed to determine how collaboration impacts the achievement of students with disabilities (Cook & Friend, 2010).

Faircloth (2004) proposed four ethical lenses for educators to use when working with students with disabilities and NCLB. The ethic of justice gives benefits to all students while balancing individual rights. The ethic of care should be considered when NCLB sanctions are placed on individual students, as well as the whole school. The ethic of critique evaluates the impact of NCLB on special education students. The ethic of profession guides educators in their own personal and professional codes. Considering these four lenses, NCLB should close the achievement gap and not expand the differences for special education students.

**Educational Setting Options**

Students with disabilities can be educated in different settings based upon their individual needs as described in their individualized education plan. The placement also must meet the requirements of a free appropriate public education and the least restrictive environment. Appropriate is defined as customizing a child’s education to his needs as opposed to the school system’s needs (Crockett & Yell, 2008). The least restrictive environment “guides placement decisions so that students receive specially designed instruction in regular classrooms, to the maximum extent appropriate to their individual needs” (Crockett & Yell, 2008, p. 382-383). The
placement decision must be made to allow for the best opportunity for increased student achievement. Research has supported both settings so placement is the decision for each IEP committee to make. The accountability-movement focused on the basic right to learn and positive results were now used as proof of learning, not just completing the correct procedures (Crockett & Yell, 2008). The positive results are considered passing scores on state achievement tests. School professionals must use assessment data to make instructional decisions, so localities are beginning to collect data in subject areas, which will, in turn, help researchers document the impact of co-teaching (Friend et al., 2010). More in-depth studies are needed to determine the impact of co-teaching on students’ academic achievement (McDuffie, Mastropieri, & Scruggs, 2009).

An IEP team is required to make many important decisions regarding the services available for a student with disabilities. “Placement decision must continue to be made by determining whether a particular placement option will support the effective instructional practices that are required for a particular child to achieve his or her individual objectives and goals” (Zigmond, 2003, p. 198). The goal is to provide the education in the least restrictive environment. This means that the student can be in all special education classes, some general education classes and some special education classes, or even in all general education classes. The student should be educated with students without disabilities as much as possible. An IEP team must agree if a student is to be removed from the regular setting and placed into a more restrictive environment than a general education classroom.

The IEP team must be informed about all of the options available and take the individual needs of the student into consideration. The placement of students with disabilities is decided based upon a student’s individual need on the continuum of service options. Students with
disabilities can be educated in the regular, public school in a special education class, which is a classroom with no general education students and only taught by a special education teacher (Fore et al., 2008). This special education class is sometimes called a non-inclusive class, a resource class, a self-contained class, or a pull-out class. Students with disabilities can also be educated in the regular, public school in a general education class. These are sometimes called mainstream classes or inclusion classes (Lindsay, 2007). A fairly new practice of inclusion that is growing in use is co-teaching as a service to students with disabilities. Co-teaching is when a general education teacher and a special education teacher are in the classroom together and share the teaching responsibilities where both general education students and students with disabilities are present. Handler (2006) stated that research exists to support co-teaching as a method to increase the outcomes of students with disabilities when they are placed in general education classes (Handler, 2006).

There are other placements besides public schools for students with disabilities. One placement is a special school for students with disabilities. In Pennsylvania, these schools are Approved Private Schools (APS) and are licensed through the State Board of Private Academic Schools. The least restrictive environment must be considered when placing a student at an APS. Another type of placement is a new type of school in the 21st century. It is Cyber School, which educates students with disabilities and students without disabilities over the internet. With the growing opportunities for e-learning, students and teachers need to find ways to utilize this new technology (Hilliard & Jackson, 2011). The least restrictive environment must also be considered for cyber schools.

No matter the placement for students with disabilities, they must participate in the state accountability testing to determine if schools are making adequate yearly progress as defined by
NCLB. Most students take the regular state test and a small percent of students take an alternate state test. Students with disabilities must participate in these tests. Even with the requirement of increased participation in high stakes tests for students with disabilities, schools are expected to meet or exceed the proficiency level set forth by each state. Students with disabilities may have accommodations on the test as defined in the student’s individualized education plan. Some states have alternate assessments for students with severe disabilities. Changes in NCLB have had a positive effect on students with disabilities in that their participation and performance have increased (Katsiyannis et al., 2007). Although performance has increased, students with disabilities are not performing on the level of their peers. Educators need to ensure they are providing access to the curriculum and using research-based instructional strategies. Additional research is needed to compare placement in inclusive and special education classes for students with disabilities (Ruijs & Peetsma, 2009).

**Co-teaching Class**

Co-teaching is one service delivery model that is used frequently to place students in general education classes while also providing additional special education support to students with disabilities. Research has indicated that co-teaching increases instructional options and enhances participation and performance for students with disabilities (Nichols, Dowdy, & Nichols, 2010). There are several approaches to co-teaching. One approach is when one teacher teaches and the other teacher provides support while circulating around the room. A second approach is when teaching stations are used to divide the content as well as the students into groups. Parallel teaching is a third approach, where the class is divided into two groups at the discretion of the teachers, but the same content is taught in both groups. A fourth approach is alternative teaching, where the class is divided into a large group and a small group in order for
the small group to receive more individualized instruction. Hybrids of the approaches have also been used in co-taught classrooms (Nichols et al., 2010).

Co-teaching can be used to address federal regulations regarding placement of students with disabilities, as well as the special education achievement gap. Attempting to meet the service provisions for students with disabilities, co-teaching allows for changing the context and curriculum (Jackson et al., 2008). As more students with disabilities are being educated in general education classes, schools must find ways to ensure their individual needs are being met. Co-taught classes can provide this additional support by assigning a special education teacher and a regular education teacher in the classroom. The perception of co-teaching by administrators, teachers, and students is that it is socially and academically beneficial for general education students and some special education students (Scruggs, Mastropieri, & McDuffie, 2007).

Co-teaching provides support for students with disabilities. Hang and Rabren (2009) conducted a study which included the investigation of the efficacy of co-teaching. Using students’ behavior and academic records, the effectiveness of co-teaching was confirmed for academics. Differences were found in the academic performance and behavior of students from one year before co-teaching until the year of co-teaching. Observations revealed that co-teaching was truly taking place in the classrooms by both teachers taking an active role in instruction. Reading and math scores showed statistically significant differences, but the increase was similar to the general population. However, discipline referrals and absences increased and the increases were found to be statistically significant. The researchers pondered whether this increase had anything to do with confusion in the teachers’ roles and responsibilities in the class (Hang & Rabren, 2009).
In order to effectively provide special education services in co-taught classrooms, the teachers must work closely together. Co-teachers can work productively together if they use four practical techniques (Ploessl, Rock, Schoenfeld, & Blanks, 2010). The first technique Ploessl and colleagues suggested was communication, such as effective speaking and listening, which can provide a foundation for co-teachers. The teachers must conduct an honest self-examination and use that to identify and communicate each other’s strengths and needs. The second technique was preparation, to which Ploessl et al. agreed the team should commit to at least 45 minutes per week. Efficient preparation meetings must include protocols and timelines. The third technique suggested was using effective instruction. The co-teachers must monitor student progress, allow data to guide decision making, and use reflection. The last technique mentioned was conflict resolution, where conflicts are not avoided, but rather embraced and used as a way to strengthen the co-teaching interaction. Co-teachers must respect cultural differences, discuss minor issues before they escalate, think before acting, and turn differences into learning opportunities. Ultimately, a genuine commitment to the co-teaching concept is needed for success.

A variety of factors must be considered when co-teaching (Nichols et al., 2010). Research has indicated that the way teachers were paired made a difference. Teachers should be permitted to choose their co-teaching partner. Another important factor to consider was having sufficient planning time. Administration must make an effort to ensure co-teachers have time to plan together. Co-teachers must be considered equals in the classroom and also be jointly accountable for learning by all students. Classroom management strategies must be agreed upon in co-taught classrooms. Staff development must be conducted for the regular education teacher and the special education teacher. Some co-teaching strategies can be used over various content
areas, while some strategies are available specifically for literacy classes and mathematics classes.

Sileo and van Garderen (2010) suggested four strategies for blending co-teaching and research-based practices, specifically for mathematics instruction. The first strategy they suggested was to modify the instructional practice in order to complement the specific age and instructional need of the individual student. The second strategy was to adapt special education research based practices from other content areas when teaching mathematics. The third strategy was to use regular mathematics strategies as a supplement for topics that are not specifically addressed for students with disabilities. The last strategy was to use a variety of instructional strategies within the co-taught classroom, such as modeling, immediate feedback, and authentic assessments. The key to co-taught classrooms is to blend the knowledge base of both teachers in order to meet the needs of all students (Sileo & van Garderen, 2010).

Students’ opinions of a class can influence their learning. Wilson and Michaels (2006) found that students responded favorably for co-taught literacy classes. All students believed they were receiving better grades. The special education students believed they were developing their literacy skills that helped them in other general education classrooms. The availability of help and individualized assistance was important to the students. The students believed they were on-task more and the diversity in instructional strategies helped with their level of understanding. Special education students used the support outside of class to help with their literacy instruction. All students commented that there were more benefits in the co-taught classes, and very few drawbacks. Educators should use this research as a guide to increase their collaboration and to listen to students in a way that will help them to feel valued and in turn increase success (Wilson & Michaels, 2006).
There are some cases where the instructional strategies in a co-taught class did not change, but students with disabilities had increased achievement from the second available teacher. For example, Murawski (2006) conducted a study involving the achievement of students with disabilities on reading and writing assessments in co-taught English classes compared to the achievement of students with disabilities on reading and writing assessments in mainstreamed English classes with only a general education English teacher. The students with disabilities in mainstreamed classes with no extra support were not as successful. Students with learning disabilities increased overall grades in co-taught classes. Although the instruction did not appear to change for students with learning disabilities, the extra teacher in the classroom appeared to help with student achievement.

General Education

General education classes allow students with disabilities to be educated in the mainstream, which is a more inclusive setting. As a major policy initiative, inclusion was created to advance the learning opportunities for students with disabilities (Lindsay, 2007). The students received their education from general education teachers that received their training in the particular subject. Students in the mainstream have access to the general curriculum taught by a content specific teacher. Students in the mainstream also have the opportunity to interact with students that do not have disabilities. Inclusion allows students with disabilities to become members of their school community and begin to feel valued as a student (Causton-Theoharis & Theoharis, 2008).

Some studies have found positive effects from student placement into inclusion classes. Rea, McLaughlin, and Walther-Thomas (2002) conducted a study to determine the relationship between placing students in inclusion classes versus pullout classes. The sample used was 8th
grade students from two different middle schools. One school used the inclusion model and the other school used the pull-out model. The comparability of the two groups was established by comparing demographic data. It was found that students with disabilities in inclusion math and language classes have higher scores on the Iowa Test of Basic Skills than students with disabilities in pullout classes (Rea et al., 2002).

Another study found positive effects from student placement into inclusion classes. Myklebust (2007) reviewed data from a six year study to determine which placement was academically best for students with disabilities when considering general education classes or special education classes. Myklebust’s research indicated that students with disabilities in general education classes obtained higher competence when given additional support. The effect of class placement is improved when controlled for other independent variables, such as when the students do not smoke, whether they have been retained in a grade level, and when their parents are not divorced. The researcher attributed the reason for improvement to being around others with goals and aspiration (Myklebust, 2007).

There are some drawbacks to educating students with disabilities in general education classes. Student may not achieve at proficient levels while in general education classes, especially if the disability is so severe that specialized instruction is needed (Fore et al., 2008). Educators can use this as they consider the least restrictive environment for students with disabilities. When determining the best placement for students with disabilities, the decision makers must consider that there should already be similarities between the special education classrooms and the general education classrooms (Hilliard & Jackson, 2011). The decision needs to be based upon the level of service needed.
There are proponents and opponents to educating students with disabilities in general education classes. “Congressional intent to enhance educational outcomes through authentic engagement with general education core academic content taught by professionals with expertise in that content and measured through objective state-level assessment is clearly evident in both NCLB and IDEA 04” (Handler, 2006, p. 6). The decision is ultimately left to the IEP team. Including students with disabilities into general education classes is an important decision that needs to be made and all of the student’s needs must be taken into consideration before a placement decision is made (Kavale & Forness, 2000). When students with disabilities are placed in the mainstream, educators must make sure their individual needs are being met and that their IEPs are being followed.

**Special Education Class**

If students with disabilities are not successful in inclusion classes, the next placement consideration should be a special education class. Non-inclusive classes do not enroll general education students and special education teachers provide the instruction (Fore et al., 2008). Non-inclusive classes are also called special education classes, resources classes, self-contained classes, or pullout classes. With the increase in regulations requiring students with disabilities to be educated in the least restrictive environment, most schools are limiting the number of pullout classes available to students with disabilities. However, there are times when students need to be separated from the mainstream in order to provide the level of instruction and support needed to meet the needs of the student (Kauffman, Bantz, & McCullough, 2002). If a student needs a distinctive place to learn in order to meet his needs, the pullout class may be considered superior to an inclusion class (Kauffman et al., 2002).
Although the number of pullout classes is being reduced, there are positive aspects to pullout classes. Most pullout classes are smaller classes and therefore the student-teacher ratio is smaller. The pacing of instruction is often slower to meet the needs of the students. The curriculum in the pullout classes is modified and adapted to the student’s ability level. The instruction in pull-out classes is presented in different ways and on a different schedule (Zigmond, 2003). According to Zigmond (2003), a pullout setting may be appropriate for:

- (a) Intensive instruction in basic academic skills well beyond the grade level at which nondisabled peers are learning how to read or do basic mathematics,
- (b) explicit instruction in controlling behavior or interacting with peers and adults,
- (c) to learn anything that is not customarily taught to everyone else. (p. 197)

Only a small percentage of students should be educated in pull-out classes (Zigmond, 2003). Even with the positive reports for pullout classes, the rules for the least restrictive environment encourage student placement into general education classes.

While recent research on pullout classes is miniscule, a few reports have supported the use of pullout classes for student achievement. Klingner, Vaughn, Schumm, Cohen, and Forgan (1998) conducted a study on student preferences in learning environments. The participants in the study were middle school students with experience in pullout and inclusion classes. The researchers found that overall, students preferred the pullout classes for their education and the inclusion classes for the social aspect (Klingner et al., 1998). Hehir (2003) supported pullout services for students that need extensive help with reading. Pull-out services allow the special education teacher to continually adjust the curriculum and instruction in order to meet the needs of the student (Hardman & Dawson, 2003). The adjustments are expected to help increase student achievement.
Even with the positive aspects of educating students with disabilities in pullout classes, there are some concerns for students with disabilities when they are placed in pullout classes. One concern is for the quality of education in the pullout classes. Students with disabilities may not reach their academic potential when they are placed in a specialized setting due to the fact that they may not receive instruction based upon the general curriculum and often times the special education teacher does not have expertise in that content area (Fore et al., 2008). In a literature review conducted by Duhaney and Salend (2000), they found that the parents of students in pullout classes were concerned about having a qualified teacher available. Another concern was that since pullout classes are different than general education classes, some students may be stigmatized and segregated from their non-disabled peers (Kauffman et al., 2002).

The federal mandate is for students with disabilities to be taught in the least restrictive environment. In the 21st century, national policy has mandated that every student have access to an equal education (Hardman & Dawson, 2003). There are times when educators and advocates must admit that full inclusion may not be appropriate for certain students and that the one-size-fits-all model must be changed (Hehir, 2003). The IEP team has a very important decision to make at least one time a year. That decision is where a student with a disability will receive a free appropriate public education using specially designed instruction in the least restrictive environment.

**Inconclusive Findings**

Some studies are inconclusive when determining the effectiveness of inclusion, co-teaching, and pullout classes. Fore et al. (2008) conducted a study on academic performance using an inclusive setting versus a non-inclusive setting for high school students. The results do not give any statistical support for one type of class placement over another. Also,
generalizations to a larger population cannot be completed due to the small sample size. A difference was found in general education literature classes compared to special education literature classes but the effect size was small (Fore et al., 2008).

**Effects on Students without Disabilities**

The argument exists that students without disabilities are placed at a disadvantage when students with disabilities are placed into the classroom. There are effects on students with disabilities and students without disabilities in inclusion classes. Ruijs and Peetsma (2009) conducted a literature review study where cognitive and socio-emotional effects were considered. The results were divided into four areas. One area was achievement of students with special education needs, which found that most studies had positive or neutral results. Ruijs and Peetsma concluded from this that students with disabilities have better achievement in inclusion classes as opposed to non-inclusion classes (Ruijs & Peetsma, 2009). A second area found in the study was socio-emotional effects on children with special educational needs, but it was not possible for the researchers to draw conclusions. The third area was academic effects on students without disabilities in the class. It was also difficult to draw conclusions in this area, mainly because of the varying levels of additional support offered in the various studies. The last area in the study was the social effects on the other children in the class, which found mostly positive effects or neutral to mixed effects. Inclusion may affect high achieving and low achieving students in a different manner. Research has supported inclusive education for students with mild to moderate disabilities (Ruijs & Peetsma, 2009).

Ruijs, Van der Veen, and Peetsma (2010) conducted a study to investigate whether the academic achievement or socio-emotional function of students without special educational needs (SEN) was affected by students with disabilities being placed into classes. No differences in
academic achievement were found with students without SEN whether in inclusive or non-inclusive classes. The effect size was small in the difference found for the socio-emotional functioning of students without SEN when in classes with students with SEN. While the debate continues over whether to include students with disabilities in general classes, this study found that students without SEN were not impacted by the inclusion of students with SEN. This research strengthens the support for inclusion of students with SEN.

Part of a study conducted by Idol (2006) investigated teachers’ perceptions of seven variables when considering the impact students with disabilities had on students without disabilities in inclusion classes. The seven variables were “academic skills, course grades, statewide test scores, social behaviors, students’ attitudes towards students with disabilities, students’ attitudes toward inclusion, and parents’ attitudes towards inclusion” (Idol, 2006, p. 88-89). Teachers from four secondary schools in the study were interviewed. The results indicated that 24% of the teachers believed that students without disabilities improved from having students with disabilities in the classroom, and 58% of the teachers believed that students without disabilities were unaffected. Ten percent of the teachers believed that students without disabilities were negatively affected by having students with disabilities in the classroom.

Some also stated that the quantity of students with disabilities must be considered when mainstreaming students. The findings in a study conducted by Ruijs, Peetsma, and Van der Veen (2010) showed that academic achievement was not affected if students with disabilities were included alone or with other students with disabilities in the mainstream, and that behavior issues increased when students with disabilities were included with other students with disabilities. In general, students with disabilities scored lower on language and arithmetic. Students with disabilities were found to have less self-confidence, less positive relationships with teachers, and
make less effort at school. Consideration should be given to the quantity of students with disabilities placed into a single general education classroom.

**School Characteristics**

Some studies were conducted to determine the characteristics of the school and culture where students with disabilities were successful on state accountability tests. A study by Edmonds and Spradlin (2010) found four themes in schools where students with disabilities had high performances on the state tests. Taking ownership of students was the most prominent theme, which begins with leadership in the school. Teacher self-efficacy was another theme where there is collective responsibility for student achievement and the belief that students can achieve. Self-efficacy can begin in professional learning communities. Child centeredness and belongingness of special education staff are also important because students passed the state tests when teachers showed concern each student (Edmonds & Spradlin, 2010). This can be a win-win situation for all. As schools strive to increase student achievement for state standardized testing, some themes found in this study may guide leaders as each school makes changes.

The culture of high expectations for inclusion and state accountability tests has appeared to have a negative effect on graduation rates for students with disabilities. More students with disabilities are being educated in inclusion classes and are included in state accountability tests. Some believe that the diploma sanction from state testing has caused students to drop out of school, especially at the secondary level. A study was conducted to examine how raising the standards on graduation and limiting choices have affected students with mild disabilities (Goodman et al., 2011). During a six year study, a 62% increase was found in inclusion for students with mild disabilities, but the graduation rate for those students was less than 30% for all six years. Graduation rates were found to be different for students with various mild
disabilities, regardless of diploma options. There is over 40 years of research on how to educate students with learning disabilities where inclusion was not used as often, and considering the dropout rates from this study where more students were included in general education classes, there appears to be a disconnect between the research and what is being implemented in the schools (Goodman et al., 2011).

**Discussion and Conclusion**

Student success in school is based on many factors. At varying paces, children develop socially, cognitively, academically, and physically during their K-12 career. Educators must balance the requirements of NCLB and individual student needs. “More than ever, issues of academic achievement and adequate yearly progress in content area classes are the focus of intense scrutiny” (McDuffie et al., 2009, p. 493). Students with disabilities will need to improve their academic performance for schools to reach 100% proficiency by 2014 as required by NCLB. The 100% proficiency should include the subgroups that are too small to be considered in the NCLB accountability standards. Caution should be used when analyzing data for particularly small subgroups due to the fact that the data may not be statistically valid, but the small subgroups should still be included in the school’s overall population reports. This study addressed the need to determine the least restrictive environment where students with disabilities will show achievement on state mandated tests for NCLB.

Content standards were set forth by the State Department of Education, and teachers in each placement must instruct students based upon the standards. Educators must work together to find ways to close the gap. No matter the placement, changes should be made in the classroom and the school to meet the requirements of NCLB and to increase student achievement. Changes that are made in classrooms must involve scientifically based research
practices. A school culture must be created where educators believe that all students can learn and everyone works together for the success of the students.

Each student with a disability is required to have an individualized plan in the least restrictive environment. Finding ways to close the achievement gap and increase student achievement of students with disabilities is also necessary. “Disability does not reside in the individual, but rather in the interactions between the individual and the environment” (Broderick, Mehta-Parekh, & Reid, 2005, p. 200). No matter the placement in the least restrictive environment, educators must focus on how students learn in order to create an environment and assessment techniques to meet the needs of individual students. Co-taught classes are one way to keep the students in the mainstream while also meeting the individual needs of students in order to close the achievement gap. The method and strategies used for inclusion must continue to be investigated, and effects on students without disabilities must be considered when developing policies and procedures in the school. The effects of inclusion must be scrutinized so that subgroups avoid negative results (Ruijs & Peetsma, 2009). This research attempted to find quantitative information on the student placement in inclusion classes compared to student achievement.

Chapter Three discusses the research on co-teaching in eight small schools in southwestern Pennsylvania. The results from the study are presented in Chapter Four. The findings from this study are discussed in Chapter Five.
CHAPTER THREE: METHODOLOGY

Introduction

As more schools are implementing inclusion classes, this research study attempted to determine if these settings were improving student achievement in math and reading in some small, southwestern Pennsylvania high schools. The purpose of this causal-comparative study was to determine if significant differences existed when comparing placement of students with disabilities in math and English inclusion classes to student achievement on the 11th grade PSSA tests in mathematics and reading. For this study, placement was considered where the student with a disability received instruction in either a general education class or a co-taught class during all three years in high school leading up to the state assessment. Math and English classes were considered separately. Schools for this study were only considered if their subgroup reporting category was too small for NCLB accountability purposes when computing adequate yearly progress. The point of focus for this study was whether co-taught classes for the instructional setting made a difference on student achievement based upon the 11th grade PSSA math and reading tests.

This quantitative study has added to the research base as the nature of changes in student achievement associated with placement of students with disabilities in inclusion classes was studied. Murawski and Swanson (2001) conducted a “quantitative synthesis of the intervention research on co-teaching between general and special education professionals” (p.264). The researchers suggested that additional research was needed before co-teaching could be considered a valid service delivery option, and this research should include outcomes in specific classes (Murawski & Swanson, 2001). Friend et al. (2010) stated that additional research has been conducted on co-teaching, but it focused on perceptions and logistics instead of actual
student achievement. In addition to the lack of research on student achievement for co-taught classes, small subgroups are not included in AYP calculations and therefore, achievement gaps in particular subgroups are not being addressed in many school districts (Borkowski & Sneed, 2007). This quantitative study researched schools that have small subgroups for students with disabilities by comparing inclusion placement in co-taught and general classes to student achievement on the 11th grade state math and reading tests.

This chapter describes the methodology of the study. The research design is described. The research questions and hypotheses are stated. The participants and setting are identified. The instrumentation and procedures used in the study are described. The data analysis is stated.

**Design**

This quantitative study was conducted using a causal-comparative design. This research design was justified because this was a non-experimental study to investigate the possible cause and effect relationship between the variables (Gall et al., 2010). This research design was also necessary because the independent variable could not be manipulated by the researcher (Gall et al., 2010). The independent variable was placement in inclusion classes, which occurred prior to the research study. The treatment in this causal-comparative study was the extra teacher in the co-taught classes. The extra teacher was a special education teacher that provided additional assistance with instruction. The co-taught classes had a smaller student-teacher ratio where more individualized instruction could take place. The expertise of the general education teacher was in the content area, which in this study was math or English. The expertise of the general education teacher was combined with the expertise of the special education teacher, where a variety of instructional strategies could be used. Co-teaching is defined as when a general education teacher partners with a special education teacher in a general education setting to
deliver instruction to diverse learners, with and without disabilities (Friend, 2008). While the treatment was the extra special education teacher in the classroom to provide additional instruction, there are a variety of models for co-teaching. The co-teaching models are one teach-one observe, station teaching, parallel teaching, alternative teaching, teaming, and one teach-one assist (Friend et al., 2010). In this study, all co-taught classrooms used a combination of teaming and one teach-one assist. The control group was the general education class where students with disabilities were provided accommodations as dictated in their IEPs, but no additional teacher was placed in the class. The equality of the co-teaching classes and additional teacher in the class to provide additional instruction was conducted by interviewing principals at each of the participating schools.

Questions and Hypotheses

Two questions were proposed for this research project, and they are as follows:

**RQ1:** Is there a difference in the mean PSSA 11th grade reading test achievement scores among students with disabilities when the students are placed in a general education class versus a co-taught class?

**RQ2:** Is there a difference in the mean PSSA 11th grade math test achievement scores among students with disabilities when the students are placed in a general education class versus a co-taught class?

The following are the research hypotheses:

**H1:** There is a statistically significant difference in the mean PSSA 11th grade reading test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes.
H$_2$: There is a statistically significant difference in the mean PSSA 11$^{th}$ grade math test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes.

Participants

Archival data was needed for this study. The participant sampling began with identifying the accessible population, which was the group that would reasonably be included in the study (Gall et al., 2010). For this study, the possible participants were identified as 11$^{th}$ grade students with disabilities during the 2011-2012 school year and were from schools in southwestern Pennsylvania where co-teaching occurred and the school’s reporting subgroup of students with disabilities was too small for the spring 2012 testing administration. In Pennsylvania, a subgroup was considered for accountability purposes once the subgroup reached 40 students (Pennsylvania Department of Education, 2012a).

The final participants were determined by non probability, convenience sampling, which is when “the researcher selects a sample that suits the purposes of the study and that is convenient” (Gall et al., 2007, p. 175). This sample was convenient to the researcher because the researcher was the principal of a high school in southwestern Pennsylvania and students with disabilities were studied from schools that were in southwestern Pennsylvania. Fifty-six high schools in southwestern Pennsylvania were identified as having a subgroup smaller than 40 students for the 2011-2012 test administration. Central office administrators for all 56 schools were contacted to inquire whether or not they used co-teaching in English and math and if so, they were asked to participate in this study and would need to provide archival data. Nine schools agreed to participate and shared their archival student data. One school was later
removed due to the fact that co-teaching in math and English classes did not begin until the 2012-2013 school year. Eight schools remained for this study.

Students with special needs have a variety of disabilities. The Amendments to the Americans with Disabilities Act of 2008 described a disability as “a physical or mental impairment that substantially limits one or more major life activities.” The majority of the primary disabilities are learning disabilities. These students are placed into the general education classroom setting with accommodations or the general education classroom with a special education co-teacher. For this study, placement was considered where the student received instruction for all three high school years in either a general education class or a co-taught class. Math and English classes were considered separately.

Archival data was collected on an excel file from the contact person at each participating school. Matching was used to select which student data to use in the data analysis. Matching helped to control for the selection threat to validity. Matching is “a procedure that equates two or more groups on the extraneous variable Z at the outset of a study so that it can be ruled out as an influence on any relationship between X and Y that is later observed” (Gall et al., 2007, p. 644). Using the general education class placement participants and the co-taught class placement participants, students were matched based upon gender, then primary disability type, and finally full-scale intelligence quotient (IQ). Due to the differences in disability types, disability types were one matching factor. The other two matching factors were based upon prior research. Gender was found to be a factor in standardized test scores and achievement (Gibb, Fergusson, & Horwood, 2008). Full scale IQ was found to be a predictor of achievement scores (Freberg, Vandiver, Watkins, & Canivez, 2008).
Students were considered in the analysis if their placement was consistent for all three years of high school math and English, determined separately. Matching was then completed separately for math and English. The full-scale IQ was matched within plus or minus 7.5 points. Non-matched records were deleted from the study. A total of 159 students with disabilities from eight schools were used in the matching process. A total of 68 math and 69 English matched pairs of students were found for this study.

An adequate sample size for this study was 64 participants per group. This was based upon the analysis of variance for two groups with alpha set at 0.05, a medium effect size, and a power of 80% as shown in Cohen (1992). “The statistical level of significance for most studies in the teaching field is often fixed at alpha = .05” (Chuan, 2006, p. 80). The sample size of 64 was also based upon a power of 80% with a medium to large effect size (VanVoorhis & Morgan, 2007). Cohen (1992) suggested a medium effect size so it would be “visible to the naked eye of a careful observer” (p. 156). The researcher’s goal was to secure at least five high schools to participate in the study in order to ensure 64 participants in the co-taught placement and 64 participants in the general education placement.

There were 159 students with disabilities considered for this study. For English, there were 136 students matched into 68 English general education classes and 68 into English co-taught classes. For math, there were 134 students matched into 67 math general education classes and 67 into math co-taught classes. The first matching criterion was gender. Table 3.1 shows the gender disaggregated by placement for English classes.
### Table 3.1

*English Participant Breakdown by Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total</th>
<th>Co-taught English Classes</th>
<th>General Education English Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>86</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

The second matching criterion was the students’ primary disability. Table 3.2 shows the primary disability categories by placement for English classes.

### Table 3.2

*English Participant Breakdown by Primary Disability Type*

<table>
<thead>
<tr>
<th>Disability</th>
<th>Total</th>
<th>Co-taught English Classes</th>
<th>General Education English Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Learning Disability</td>
<td>98</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Other Health Impaired</td>
<td>16</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Emotional Disturbance</td>
<td>14</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Intellectual Disability</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Autism</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hearing</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The last matching criterion was the full-scale IQ from the students’ latest evaluations.

Table 3.3 shows the mean, standard deviation, and range by placement for the English classes.
Table 3.3

*English Participant Breakdown by IQ*

<table>
<thead>
<tr>
<th></th>
<th>Co-taught English Classes</th>
<th>General Education English Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>90.08</td>
<td>90.08</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>9.979</td>
<td>9.979</td>
</tr>
<tr>
<td>Range</td>
<td>52</td>
<td>52</td>
</tr>
</tbody>
</table>

Table 3.4 shows the gender disaggregated by placement for math classes.

Table 3.4

*Math Participant Breakdown by Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total</th>
<th>Co-taught Math Classes</th>
<th>General Education Math Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>84</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 3.5 shows the primary disability categories by placement for math classes.
Table 3.5

*Math Participant Breakdown by Primary Disability Type*

<table>
<thead>
<tr>
<th>Disability</th>
<th>Total</th>
<th>Co-taught Math Classes</th>
<th>General Education Math Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Learning Disability</td>
<td>98</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Other Health Impaired</td>
<td>16</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Emotional Disturbance</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Intellectual Disability</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Autism</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hearing</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3.6 shows the mean, standard deviation, and range by placement for the math classes.

Table 3.6

*Math Participant Breakdown by IQ*

<table>
<thead>
<tr>
<th>IQ</th>
<th>Co-taught Math Classes</th>
<th>General Education Math Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>88.99</td>
<td>88.99</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>9.079</td>
<td>9.079</td>
</tr>
<tr>
<td>Range</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>
Setting

The population for this study included eight high schools in southwestern Pennsylvania. While the treatment for this study was the extra special education teacher in the general education class, the type or types of co-teaching models used were described. The control groups were the general education classes that were taught only by a content area teacher and students with disabilities received accommodations as dictated in their IEPs. Descriptions of each school are described in this section. Co-taught and general education courses were used at each of the eight schools in this study. The content area teacher and the special education teacher both providing instruction to students in math and English classes promoted the socio-cultural theory tested in this study.

The PSSA tests are based upon the Pennsylvania standards set forth by the Pennsylvania Department of Education (PDE) and all school districts and teachers use the Pennsylvania standards to develop their curriculum and instruction. For each Pennsylvania standard, the PDE developed assessment anchors and eligible content to help align curriculum, instruction, and assessment practices (International Center for Leadership in Education, 2006). The results from the PSSA tests are used for the dependent variable in this study, which is student achievement. For AYP reporting in Pennsylvania, the rankings from highest to lowest are Made AYP, Warning/Making Progress, School Improvement I, School Improvement II, Corrective Action 1, and Corrective Action II.

School #1 had 710 students and 19% were identified as students with disabilities, while 35% were economically disadvantaged. The student demographics were 97.1% Caucasian, 1.0% African-American, and 1.9% Other. The school had a nine period bell schedule and classes were
43 minutes long. For the 2011-2012 test administration, the school was found to be in School Improvement II for AYP reporting.

School #2 had 1325 students and 17% were identified as students with disabilities, while 43.2% were economically disadvantaged. The student demographics were 95.3% Caucasian, 3.6% African-American, and 1.1% Other. The school followed an eight period bell schedule and classes were 43 minutes long. For the 2011-2012 test administration, the school was found to be in Warning for AYP reporting.

School #3 had 1150 students and 17% were identified as students with disabilities, while 75% were economically disadvantaged. The student demographics were 55% Caucasian and 45% African-American. The school followed an eight period bell schedule and classes were 44 minutes long. For the 2011-2012 test administration, the school was found to be in Corrective Action II for AYP reporting.

School #4 had 984 students and 14% were identified as students with disabilities, while 38% were economically disadvantaged. The student demographics were 88.1% Caucasian, 6.4% African-American, and 5.5% Other. The school followed a nine period bell schedule and classes were 44 minutes long. For the 2011-2012 test administration, the school was found to be in Warning for AYP reporting.

School #5 had 338 students and 23% were identified as students with disabilities, while 49% were economically disadvantaged. The student demographics were 96.7% Caucasian and 3.3% African-American. The school followed a five period bell schedule and classes were 85 minutes long. Courses were for one semester. For the 2011-2012 test administration, the school was found to be in School Improvement I for AYP reporting.
School #6 had 519 students and 16% were identified as students with disabilities, while 37% were economically disadvantaged. The student demographics were 96.7% Caucasian, 2% African-American, and 1.3% Other. The school followed an eight period bell schedule and classes were 42 minutes long. For the 2011-2012 test administration, the school was found to be in School Improvement I for AYP reporting.

School #7 had 1031 students and 19% were identified as students with disabilities, while 18.5% were economically disadvantaged. The student demographics were 94.3% Caucasian, 2.3% African-American, and 3.4% Other. The school followed an eight period bell schedule and classes were 42 minutes long. For the 2011-2012 test administration, the school was found to be in Warning for AYP reporting.

School #8 had 1045 students and 14% were identified as students with disabilities, while 46% were economically disadvantaged. The student demographics were 70.7% Caucasian, 24.0% African-American, and 5.3% Other. The school followed a seven period bell schedule and classes were 45 minutes long. For the 2011-2012 test administration, the school was found to be in Corrective Action I for AYP reporting.

Treatment fidelity was addressed by conducting interviews with principals at each school. Each principal was contacted through email. The time and place of the interviews were based upon the principal’s request. Follow up phone calls were made to the principals that did not initially respond to the email. Three interviews were conducted face-to-face and five interviews were conducted over the phone. One principal resigned from his position so one of the assistant principals agreed to be interviewed. Consent forms were signed. The researcher wrote notes during the interview for later review. During the interviews, the equality of co-teaching across the schools was addressed. The co-taught classes available to students with disabilities were
The process and criteria used to determine placement of students with disabilities into math and English classes were discussed. The methods of co-teaching were described by each principal, including the responsibilities of the second teacher. The accountability for both teachers was explained to the researcher.

The principals were questioned on the availability of co-taught classes for students with disabilities, particularly math and English classes. In each of the eight schools, co-taught and general education classes were available for English and math for all three years covered by the respective PSSA tests. Some schools also offered additional co-taught classes beyond the classes scheduled for the PSSA tests. For example, School #8 also offered biology, physical science, world cultures, and basic American history in a co-taught format. School #6 also offered earth science, world history, and U.S. history classes in a co-taught method. School #7 only offered co-teaching for the PSSA tested courses, but the principal stated he would provide additional co-taught classes across other curriculums if he had additional special education teachers.

Each principal described the criteria used to determine placement for students with disabilities into math and English classes. A variety of factors were considered when placing students with disabilities in classes at each school. The principals noted that they always considered the least restrictive environment when discussing placement during an IEP meeting. All schools regarded the identified disability as a factor in placing a student with a disability into a co-taught class. The schools considered previous test scores and course grades, as well as teacher recommendations when deciding where to place a student. The principal at School #2 noted that a parent request was also used to place a student in a co-taught class. School #5’s principal stated that since they were a small school, they used data carefully when making placement decisions due to the small quantity of co-taught classes available. The assistant
principal at School #4 stated that if a student excelled in a particular subject, the student was moved out of the co-taught environment. The assistant principal also stated that if a student with a disability was in a general education classroom and was struggling, the student would be moved to a co-taught classroom.

The method of co-teaching was described by each principal. Schools used special education teachers for specific content areas year after year so the special education teacher could also become a master of the content, like the general education teacher. For example, principals assigned a particular special education teacher to math classes each year and did not change to English or science classes in other years. All of the schools described the special education teacher as an active participant in the classroom and not as an observer, as one co-teaching model described. The principal at School #4 shared that teachers and administrators were previously trained by Friend, one of the main contributors to co-teaching research as seen in previous chapters of this manuscript.

The model of co-teaching used at all schools was a combination of two models. All schools used a combination of the team teaching model and one teach-one assist model. The co-taught classrooms allowed for a smaller teacher-student ratio since there were two teachers in the room to help the students instead of one teacher. For example, with a class of 25 students in a general education class, only one teacher was available to help the students. In a class of 25 students in a co-taught class, there were two teachers available to help the students. The co-taught classrooms also allowed for a teacher that was considered a content expert and another teacher that was considered an expert in the process of learning. Teachers shared the responsibility of developing lessons and delivering instruction. The teaming model allowed both teachers to actively participate in the instruction for the day. The one teach-one assist model
allowed one teacher to lead the lesson for the day while the other teacher provided individual assistance to students. The principals’ descriptions of the classes revealed when the one teach-one assist model was used, the special education teacher was normally the one to take on the assistant role and the general education teacher was the one to teach the lesson for the day. Once the lesson was presented, both teachers provided assistance to the students as they completed their assignments.

Five principals described a combination of team teaching and one teach-one assist co-teaching models. School #4 tried to use the team teaching approach as much as possible and used the one teach-one assist model when needed. School #4 allowed the teachers to choose the co-taught teacher teams. School #6 used team teaching the most in math classes and while the English classes used teaming, they also used one teach-one assist. In School #8, the general education math teacher normally taught the main lesson and the special education teacher assisted, but both teachers developed the lessons. For English classes in School #8, there was more of dual responsibility for instruction. At School #7, the general education teacher normally provided the main lesson and the special education teacher assisted, but the special education teacher was also responsible for creating the lessons.

Original principal interviews indicated that three principals considered their co-teaching model as team teaching. The principal at School #5 stated that the teachers team teach and that the special education teacher normally made all of the adaptations that were needed in the class. In this school, the teachers shared a classroom and both names were posted outside the door in an effort to show that it was a team environment. School #3 also used a team teaching approach in the co-taught classes. The only difference in this school was that the special education teachers created the schedules for the students with disabilities. The school did not have many special
education teachers and wanted to make sure that co-teaching could occur in the classes that were needed and still allow for one free class period for a prep to work on IEP data. At School #1, the principal stated that both teachers provided instruction and worked together to develop lesson plans that were later reviewed. The principal stated that the teachers in School #1 worked hard to make sure neither teacher was viewed as an aide in the class. A second interview was conducted with these principals at School #1, School #3, and School #5 in order to determine their definition of team teaching. All three principals stated that their goals were to use the team teaching model for the majority of the time, but realize the method actually used in the classroom does also include one teach-one assist. Each principal allowed the two teachers to determine what method to use each day depending on the lesson for the day, but fully expected all partners to use team teaching as much as possible. The principals stated on the days when only one teacher was presenting, the second teacher was assisting students and not merely an observer.

During the interviews, principals shared their expectations for teacher accountability. In all schools, the general education teacher and the special education teacher were held accountable for the state test scores. In the co-taught classrooms, both teachers were expected to work with all students. When math or English meetings were held, the respective special education teachers were expected to attend as well. When the students’ scores were released, both teachers analyzed the data to determine their areas of strengths and weaknesses. They were expected to adjust their lesson plans in order to improve their areas of weaknesses. In fact, School #3, recently began to include co-teaching as part of the teacher evaluation system. In addition to state test scores, School #4 included both teachers’ names on student report cards.

From the principal interviews, the researcher concluded that the implementation of the second teacher in each co-taught class was similar. The co-teaching method was a combination...
of team teaching and one-teach one-assist. The course selection and placement decision was similar. The teachers’ responsibilities and accountability for co-taught classes were also similar. Considering the similarity in the additional special education teacher for the co-taught classes, the researcher determined that these schools were comparable.

**Instrumentation**

Results from the Pennsylvania standardized testing program were used. The PSSA Grade 11 Math and PSSA Grade 11 Reading test results were analyzed for the spring of 2012 administration. “The annual Pennsylvania System of School Assessment (PSSA) is a standards-based, criterion-referenced assessment used to measure a student's attainment of the academic standards while also determining the degree to which school programs enable students to attain proficiency of the standards” (Pennsylvania Department of Education, 2012c, para 2). These tests were administered in March of the students’ junior year of high school. The PSSA tests included multiple choice questions and open-ended response questions. Student results were released in the summer of the same year the test was administered. Pennsylvania offered a modified test, PSSA-M, for a small percentage of students with disabilities. The PSSA-M tests were not considered in this study.

The 11th grade PSSA test results for math and reading fell into four categories: below basic, basic, proficient, and advanced. Proficient and advanced scores were considered passing. Below basic and basic scores were considered not passing. For mathematics, below basic was 700 – 1166, basic was 1167 – 1303, proficient was 1304 – 1508, and advanced was 1509 and up (Pennsylvania Department of Education, 2012d). For reading, below basic was 700 – 1111, basic was 1112 – 1256, proficient was 1257 – 1491, and advanced was 1492 and up (Pennsylvania Department of Education, 2012d).
Validity and reliability reports for each test each year were posted on the Pennsylvania Department of Education’s website. Guidelines for administering the tests were developed by the Pennsylvania Department of Education and helped confirm the reliability and validity of the test results. A study conducted by Thacker of the Human Resources Research Organization (2004) found that “internal consistency reliability statistics are very high” (2004, p. 6). Some changes were made to PSSA tests beginning in June 2005 in order for the tests to become more valid and reliable, including changes that limited the number of reporting categories for math and reading (Pennsylvania Department of Education, 2012d). The reliability score for the 11th grade math test for 2012 was .94 (Data Recognition Corporation, 2012). The reliability score for the 11th grade reading test for 2012 was .88 (Data Recognition Corporation, 2012). “Decision consistency answers the following question: What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test” (Data Recognition Corporation, 2012, p. 284). The validity as decision consistency for the 11th grade math test for 2012 was .74 (Data Recognition Corporation, 2012). The validity as decision consistency for the 11th grade reading test for 2012 was .64 (Data Recognition Corporation, 2012). The reliability for the sample used in this study could not be determined due to how the data was provided.

**Procedures**

Various approvals needed to be received throughout the course of this study and permission to conduct the study had to be granted prior to any data collection. During the planning stages of the study, the researcher developed a prospectus. With the prospectus, the researcher secured permission to move forward from the assigned research consultant from Liberty University. A dissertation committee, including a dissertation chair, was assembled.
The researcher developed the research proposal. The researcher successfully defended the proposal to the committee.

Once the research and design were approved by the committee, the researcher secured agreements from schools to participate in the study. The researcher used the Pennsylvania Department of Education’s website to retrieve school report card information on some schools. The school report card noted if the disability subgroup was too small to be considered for AYP purposes. The researcher contacted the director of special education or the superintendent of the identified schools using a request to participate letter as a template for each school (see Appendix A). If an email address was available on the district’s website, an email was sent. If an email was not available, a letter was mailed. The participation letter included a brief description of the study and inquired about co-teaching methods used at the high school. If co-teaching models were used in math and English classes, the researcher made a request for the school to participate in the study. A list of the needed data fields were described so the school staff member understood the data request. Follow up phone calls were made to school members that did not initially respond. If an agreement to participate was received, the researcher requested a letter of support from the school system. Nine schools agreed to participate and sent letters of support, but one was later removed due to not meeting the research criteria (see Appendix B).

Once all schools had a chance to respond, the researcher completed the application process for Liberty University’s Institutional Review Board (IRB). After the IRB reviewed the application and suggested changes, the changes were completed by the researcher in a timely manner. IRB approval was received and stated that the study was exempt from further IRB review (see Appendix C). This gave permission for the data collection to begin.
Data collection was facilitated by the researcher. The researcher requested archival data from the contact person at each school district. An excel file was emailed to each contact person. The researcher requested archival data from the contact person at each school district. An excel file was emailed to each contact person. The template had the necessary fields noted, along with a brief instruction sheet. The contact person needed to identify the 11th grade students with disabilities from the spring 2012 test administration. Each student’s identity was protected by only using a number to identify the student data. After the students were identified, each student’s gender, type of disability, IQ from the latest eligibility evaluation, placement in each high school math class, placement in each high school English class, 11th grade PSSA math score, and 11th grade PSSA reading score needed to be entered into the excel template. For the PSSA scores, both numerical and categorical data were entered.

Placement of students with disabilities was the independent variable in the study. Placement in math classes was computed separately from placement in English classes. Placement was a general educational classroom or a co-taught classroom. Placement in a general education class or a co-taught class for each year in grades nine through 11 were considered for math and English classes. The PSSA tests covered three years of instruction so all three years of placement were considered in the study. Only students that were consistently placed in a co-taught class or a general education class for the three years were used in the data analysis. Student achievement was the dependent variable, and was determined by the PSSA 11th grade reading and math test scores from the spring of 2012 administration. Each school system was asked to return the completed excel spreadsheet with the aforementioned data.

As each data file was received from the school district’s contact person, the researcher contacted the principal of the high school in order to request an interview. A consent form was sent to the principal (see Appendix D). Seven principals and one assistant principal signed
consent forms for interviews to be conducted with the researcher (see Appendix E). The assistant principal at one school was interviewed because the principal resigned and left the district before the end of the year. Five interviews were conducted over the phone and three interviews were conducted face to face. The researcher took notes during the interviews. The researcher later contacted three of the principals again to get clarification on the method of co-teaching that was used during the three years of student placement. These additional questions were answered over the phone.

The researcher combined the excel spreadsheets into one file. The placement columns were replaced by one column for English and one column for math. All other columns as received were combined into one spreadsheet. If a student file was unusable due to the research criteria, the student file was deleted. Student files were deleted for class placement in a special education class, non-consistent class placement, use of an alternate exam, or missing data.

The researcher used the excel spreadsheet to complete the matching procedure. The spreadsheet was sorted on three levels, which were gender, primary disability type, and IQ. A math pair column and an English pair column were created. The math was paired first by starting at the top of the spreadsheet. Looking at the same gender and disability type, the IQ was matched within 7.5 points. The researcher found the pair that had general class placement and co-taught class placement with the IQ the furthest apart but within the 7.5 range. The pair was numbered as one on the newly created math pair column. This process was repeated for each gender and disability type until all student data files were exhausted. The process was repeated for the English pairs. Pairs were found for 67 math groups and 68 English groups. Using a laptop and the purchased IBM SPSS Statistics version 21 program, the researcher entered the information for all 159 students into SPSS for data analysis.
Data Analysis

The researcher used spring 2012 reading and math PSSA results for 11th grade students with disabilities from the eight schools. The reading and math scores were analyzed separately. The comparison was based on placement in general education classes or co-taught classes. In order to control for the selection threat to validity, subject matching was used by pairing gender, disability type, and full-scale IQ of students across groups. Once matched, the data from each school was combined into one cluster. Non-matched records were deleted from the study.

Some statistical checks were completed prior to the analysis of variance. For sound measurement testing, descriptive statistics on the data were computed. The mean and standard deviation from the general education class and the co-taught class were calculated for the PSSA test result. This was completed separately for math and English. Size adequacy was determined by having an adequate sample size as identified by Cohen (1992). “All statistical procedures have underlying assumptions, some more stringent than others” (Garson, 2012, p. 7).

Assumption tests for homogeneity of variance and normality were conducted. Levene’s test for equality of variance was used to assess the homogeneity of variance. To address the assumption test for normality, the skewness of the data was determined by a histogram and normality plot. This was followed with a Kolmogorov-Smirnov test and Shapiro-Wilk test to support the visual data from the histogram and normality plot. Completing these assumption tests helped to ensure that it was appropriate to analyze the data.

The t-test and analysis of variance (ANOVA) could both be used to test the differences in two means. Zhang (2009) states that the t-test is a hindrance to educational researchers. According to Howell (2008), the ANOVA is the most used statistical measure. Due to these reasons, ANOVA was chosen for this research. ANOVA tests were conducted on each
hypothesis to determine if placement had differential effects on the students’ state math and reading achievement scores. An ANOVA test is “a statistical technique for testing for difference in mean of several groups” (Howell, 2008, p. 375). The results from the 2012 PSSA tests were used to compare placement in general education classes with co-taught classes.

The effect size was computed in order to show the magnitude of the finding as suggested by the American Psychological Association (2010). The final effect size was calculated using eta squared, which showed “what percentage of the variability among observations can be attributed to group effects” (Howell, 2008). Eta squared was then converted to a function of $f$ as described by Cohen (1988). This was completed in order to determine the final effect size as small, medium, or large as also described by Cohen (1988). Tables and figures were created to visually represent the various stages in the data analysis.
CHAPTER FOUR: FINDINGS

The purpose of this causal-comparative study was to determine if significant differences existed with regard to 11th grade PSSA reading and 11th grade PSSA math mean scale scores between students with disabilities in co-taught classes and students with disabilities in general education classes. The purpose of this chapter is to provide the results of the two research hypotheses. The participants in this study were 134 math students with disabilities and 136 English students with disabilities from eight high schools in southwestern Pennsylvania. Each group was matched on gender, type of disability, and full-scale IQ. This chapter has provided information on descriptive statistics, size adequacy, assumption testing, results of hypothesis one, results of hypothesis two, and a results summary.

Descriptive Statistics

For sound measurement testing, descriptive statistics on the data were computed. The mean and standard deviation from the general education class and the co-taught class were calculated for the PSSA test results. This was completed separately for math and English. The results are listed in Tables 4.1 and 4.2. For the 2012 Math PSSA, students with disabilities placed into a general education math class achieved a mean score of 1264.24 and students with disabilities placed into a co-taught math class achieved a mean score of 1128.48. For the 2012 reading PSSA, students with disabilities placed into a general education English class achieved a mean score of 1217.79 and students with disabilities placed into a co-taught English class achieved a mean score of 1115.19.
Table 4.1

*Descriptive Statistics for 2012 Math PSSA Tests*

<table>
<thead>
<tr>
<th>2012 Math PSSA</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education Classroom</td>
<td>67</td>
<td>1264.24</td>
<td>207.39</td>
</tr>
<tr>
<td>Co-taught Education Classroom</td>
<td>67</td>
<td>1128.48</td>
<td>182.39</td>
</tr>
</tbody>
</table>

Table 4.2

*Descriptive Statistics for 2012 Reading PSSA Tests*

<table>
<thead>
<tr>
<th>2012 Reading PSSA</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education Classroom</td>
<td>68</td>
<td>1217.79</td>
<td>229.18</td>
</tr>
<tr>
<td>Co-taught Education Classroom</td>
<td>68</td>
<td>1115.19</td>
<td>206.10</td>
</tr>
</tbody>
</table>

**Size Adequacy**

In planning the analysis of variance research as shown by Cohen (1992), the sample size of 64 was set using a level of significance at 0.05 to determine if the null hypothesis could be rejected, the power was set at 80%, and a medium effect size was expected. For the final analysis, there were 67 pairs for math and 68 pairs for English, so the sample size expectation was met.
Assumption Testing

Assumption tests were conducted for homogeneity of variance and normality. The test results are below.

Homogeneity of Variance

The Levene’s test for equality of variance was used to assess the homogeneity of variance. The results of Levene’s test for the math scores, $F(1, 132) = 1.39, p = .24$, indicated that the variances of the two populations are assumed to be approximately equal. Since the significance level was greater than 0.05, the assumption of homogeneity of variance was not violated for the math pairs. The Levene’s test for the reading scores, $F(1, 134) = .328, p = .57$, indicated that the variances of the two populations are assumed to be approximately equal. This significance was also greater than 0.05 so the assumption of homogeneity of variance was not violated for the English pairs.

Normality Testing

To address the assumption test for normality, the skewness of the data was determined by a histogram and normality plot. Upon reviewing the histograms in Figures one and two, math class placement and English class placement appeared to be approximately normally distributed.
Math Class Placement

Figure 1. Histogram for 2012 Math PSSA scores by math class placement.

English Class Placement

Figure 2. Histogram for 2012 Reading PSSA scores by English class placement.

From observing the normality plots in Figures three and four, math class placement and English class placement appeared to be approximately normally distributed.
Math Class Placement

Figure 3. Normality plot for 2012 Math PSSA scores by math class placement.

English Class Placement

Figure 4. Normality plot for 2012 Reading PSSA scores by English class placement.

In addition to visual representations to determine normality, Kolmogorov-Smirnov tests and Shapiro-Wilk tests were completed. Results from the normality tests are shown in Table 4.3 for math PSSA scores and Table 4.4 for reading PSSA scores. These results indicated that the
math PSSA scores did not deviate significantly from a normal distribution and reading PSSA scores did not deviate from a normal distribution.

Table 4.3

Tests for Normality for Math PSSA Scores

<table>
<thead>
<tr>
<th>Math Class</th>
<th>Kolmogorov-Smirnow</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic df Sig.</td>
<td>Statistic df Sig.</td>
</tr>
<tr>
<td>General</td>
<td>.06 67 .20</td>
<td>.98 67 .41</td>
</tr>
<tr>
<td>Co-taught</td>
<td>.08 67 .20</td>
<td>.97 67 .12</td>
</tr>
</tbody>
</table>

Table 4.4

Tests for Normality for Reading PSSA Scores

<table>
<thead>
<tr>
<th>English Class</th>
<th>Kolmogorov-Smirnow</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic df Sig.</td>
<td>Statistic df Sig.</td>
</tr>
<tr>
<td>General</td>
<td>.09 68 .20</td>
<td>.98 68 .17</td>
</tr>
<tr>
<td>Co-taught</td>
<td>.10 68 .19</td>
<td>.97 68 .16</td>
</tr>
</tbody>
</table>

Based on the assumption tests for homogeneity of variance and normality, the researcher concluded that normality existed. ANOVA analysis was conducted for each of the null hypotheses.
Results of Hypothesis One

The first hypothesis stated that there would be a statistically significant difference in the mean PSSA 11th grade reading test achievement score of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes. The score from the 2012 PSSA reading tests was the dependent variable. The English class placement in a general education English class or a co-taught English class was the independent variable. Assumption tests were completed prior to conducting the ANOVA.

An analysis of variance test was conducted to determine if English class placement had differential effect on the students’ reading scores. The analysis of variance revealed a significant difference in the between the groups at an α = .05 level, $F(1, 134) = 7.54, p = .007$. The null hypothesis was rejected. Eta squared was used to determine the final effect size for this part of the study. The effect size was 0.05, which was in the higher range of a small effect size as interpreted from Cohen (1988). This effect size demonstrated that the variation in PSSA reading scores may have a small association with the placement of students with disabilities.

Results of Hypothesis Two

The second hypothesis stated that there would be a statistically significant difference in the mean PSSA 11th grade math test achievement scores of students with disabilities placed in general education classes compared to students with disabilities placed in co-taught classes. The score from the 2012 PSSA math test was the dependent variable. The math class placement in a general education math class or a co-taught math class was the independent variable. Assumptions tests were completed prior to conducting the ANOVA.

An analysis of variance test was conducted to determine if math class placement had a differential effect on the students’ math scores. The analysis of variance revealed a significant
difference in the between the groups at an $\alpha = .05$ level, $F(1, 132) = 16.19, p < .001$. The null hypothesis was rejected. Eta squared was used to determine the final effect size for this study. The effect size for the math pairs was 0.11, which was a medium effect size as interpreted from Cohen (1988). This effect size demonstrates a moderate practical significance.

**Results Summary**

Student performance on the 11$^{th}$ grade PSSA math and reading tests were compared to student placement in general education or co-taught classes in the respective content area. Matching was used in this study based upon gender, type of disability, and full-scale IQ. The results of this study indicated that there was a significant difference in student achievement when students were placed in co-taught math classes or placed in a general education math classes. The co-taught students did not outperform the general class placement students in math. For the second hypothesis, the results of this study indicated that there was a significant difference in student achievement when students were placed in co-taught English classes or placed in a general education English class. The results of this study indicated that the co-taught students did not outperform the general class placement students in reading.
CHAPTER FIVE: DISCUSSION

The results of the study are discussed in Chapter Five. The summaries of findings were noted for both research questions. A discussion of the findings and implications were stated. The limitations were reviewed. Recommendations for future research were suggested.

Summary of Findings

No Child Left Behind has brought additional awareness to achievement gaps. This research investigated the achievement of students with disabilities that were placed into general education and co-taught education classrooms. Students with disabilities were paired on gender, primary disability, and IQ. The treatment of having an additional teacher in the classroom was investigated as one way to help raise student achievement for students with disabilities.

Research Question One

The purpose of this causal-comparative study was to determine if significant differences existed with regard to 11th grade PSSA reading mean scale scores between students with disabilities in co-taught English classes and students with disabilities in general education English classes. From the eight participating schools, 69 English students were paired into each group. One group was taught high school English co-taught English classes. The other group was taught high school English in general education English classes. The pairs were matched on gender, type of disability, and full-scale IQ.

The results of the ANOVA test indicated that the students with disabilities placed into general education English classes scored significantly higher on the 2012 PSSA reading test than those students with disabilities that were placed into co-taught English classes. Students with disabilities placed into general education English classes had a group mean score that was 102.6 points higher on the 2012 PSSS reading test. This result has indicated that the extra co-teacher in the co-taught English classes did not increase reading PSSA scores.
**Research Question Two**

The second purpose of this causal-comparative study was to determine if significant differences existed with regard to 11th grade PSSA math mean scale scores between students with disabilities in co-taught math classes and students with disabilities in general education math classes. From the eight participating schools, 68 students were paired into each group. One group was taught high school math in co-taught math classes. The other group was taught high school math in general education math classes. The pairs were matched on gender, type of disability, and full-scale IQ.

The results of the ANOVA test indicated that the students with disabilities placed into general education math classes scored significantly higher on the 2012 PSSA math test than those students with disabilities that were placed into co-taught math classes. Students with disabilities placed into general education math classes had a group mean score that was 135.76 points higher on the 2012 PSSS math test. This indicated that the extra co-teacher in the co-taught math classes did not increase math PSSA scores.

**Assumptions and Limitations**

There were a few assumptions in this study. One assumption involved the independent variable, student placement. Both teachers in the co-taught classes were expected to take full responsibility for student achievement for all students in the class. Without this, students with disabilities may not have received all of the services they were expected to receive. In order to address fidelity of treatment, interviews with the principals of each school were conducted in order to investigate the models of co-teaching taking place. The special education teacher was expected to be highly qualified and able to teach the math content in the math class and the reading content in the English class. All of the students in this study were expected to be
properly identified by the school as a student with a disability. Another assumption involved the dependent variable, student achievement. The schools were expected to have followed the standardized administration procedures for the spring 2012 test administration to present valid test scores. The math and reading PSSA tests used in this study were expected to show the level of mastery of the content that was taught in the classes over the expected three years of ninth grade to eleventh grade.

Threats to validity can raise questions about the conclusion of a study (Creswell, 2009). Internal validity can effect “the extent to which variables other than the treatment variable provide plausible explanations of the experimental results” (Gall et al., 2007). The most severe internal threat to validity in this study was the selection of independent variables and potential for difference. In order to control for the selection threat to validity, subject matching was used by pairing gender, primary disability type, and full-scale IQ of students across groups. Non-matched records were deleted from the study. Placement of students with disabilities was dependent upon the least restrictive environment law and the decision was made by an IEP team. This threat was controlled by the fact that a student was placed where the student was expected to achieve at proficient levels given the specially designed instruction based on the IEP and also by the subject matching on three criteria. The internal threat to validity was also controlled by the fact that the teachers in all placements were expected to teach the same curriculum standards so all students could have access to the curriculum. This was described by Kurz, Elliott, Wehby, and Smithson (2010) when they stated, “the inclusion of students with disabilities in the same large-scale assessments as their general education peers is based on the assumption that all students have a comparable opportunity to learn the assessed content” (p. 131). One concern with this threat was students that experienced some difficulties were normally placed into a co-
taught class and students that have been successful in previous years were placed into a general
education class. This may skew the overall performance of the student in co-taught classes and
student performance on the PSSA tests may be due to factors that existed prior to placement in
taught classes. Pre-tests were not available to determine a student’s performance prior to the
taught class. Even if a pre-existing gap existed between the two groups, the study results
show that co-teaching was unsuccessful at eliminating the gap. In fact, for this study placement
into a co-taught class does not seem to have a positive impact on student achievement, and
ultimately may have even contributed to a lower achievement score on the PSSA tests.

There were additional threats to validity in this study. A threat to the internal validity of
the study was mortality (Creswell, 2009). This involved students moving into and out of the
class or school. This was controlled by removing students that did not have all of the placement
data during data collection. Another threat was that one school had a different bell schedule.
School #5 used a block schedule which made classes approximately double the length of time
per day. Comparing the average scores for the reading and math PSSA tests for each school,
school #5 ranked the lowest on both tests. School #5 was 39 points below the next two lowest
schools in math and 10 points below the next lowest school in reading. While the difference is
not significant, it is possible that the schedule was a factor in the performance of the students at
school #5.

External validity refers to the extent that the findings can be generalized to a larger
population (Gall et al., 2007). Population validity was a concern in this study (Gall et al., 2007).
Since the research was only conducted in eight high schools in southwestern Pennsylvania,
generalizations to a larger population were not made. To ensure validity, the sample had a
sufficient size. Another population validity concern was whether there was the high quantity of
special education students in the co-taught math and English classes. If large numbers of students with disabilities were placed into a single classroom, this would not be considered inclusion, but rather a special education cluster in the general education classroom, and this arrangement would be hard to manage (Causton-Theoharis & Theoharis, 2008). The quantity of students with disabilities in one classroom could not be controlled in this study, as data from previous years were used and placement decisions could not be changed. Another threat to external validity was the experimenter effect (Gall et al., 2007). The treatment was having the additional teacher in the classroom to help with instruction for the students with disabilities that were placed in a co-taught class. The instructional strategies used by the teachers and the levels of expertise of the teachers were not considered. While only a combination of team teaching and one teach-one assist were used in all schools, this was a treat to validity and it was addressed by the specificity of the study. External validity was controlled for by not making any generalization from the findings.

**Discussion**

Scores from math and reading PSSA tests for students with disabilities were matched based upon gender, primary disability type, and IQ. The results of this study showed that students with disabilities that were placed into a general education math or English class achieved higher scores on the respective PSSA tests when compared to students with disabilities that were placed into co-taught classes. These findings cannot be generalized to a larger population, however. For the eight small schools in southwestern Pennsylvania that participated in this study, having an extra special education teacher in the co-taught classrooms did not make a difference for student achievement scores on the 11th grade PSSA tests. Pre-tests were not available so student growth compared to student placement for students with disabilities could not be determined.
Other factors were not considered in this research due to the ex post facto design. The matching criteria for this study were based upon archival data. Other controlling variables to match the students, such as self-efficacy of students and parental involvement were not considered. Some factors pertaining to the co-teaching model were not considered, such as the communication among the co-teachers. While the combination of two co-teaching models was identified as being used for all of the co-taught classes in this study, the percent of time used for team teaching and the percent of time used for one teach-one assist model were not computed. Observations were not completed for each of the placements. The years of teaching experiences were not computed for the placement options. The administrative support for teachers was not considered. As additional research is built upon this study, the researcher should construct an experimental design to incorporate these components.

Based upon the constructs of this study, the findings contradicted the researcher’s theoretical and empirical findings from literature reviews. The results from this research contradicted the meta-analysis conducted by Murawski and Swanson (2001), which found a moderate effect size for student outcomes when students with disabilities were placed in a co-taught classroom. The findings also contradicted the researcher’s assertion that co-teaching can help a child’s development by way of Bronfenbrenner’s (1979) ecological theory and Vygotsky’s (1997) socio-cultural theory. Based upon the results of this study, alternate theoretical and empirical reasons need to be considered.

The alternate placement for students with disabilities was self-contained classes. Placing students into self-contained, special education classes is not supported by the ecological theory or the socio-cultural theory used in this study, nor is it supported by the least restrictive environment laws protecting students with disabilities. Cruickshank (1977) believed that some
students, including students with learning disabilities, should be placed in self-contained classes. Cruickshank questioned whether placing students in a least restrictive environment placed the student at risk when considering the type and severity of the disability. Schiff, Scholom, Swerdlik, and Knight (2001) stated that inclusion may even be more restrictive than self-contained classes. In a study conducted by Packard, Hazelkorn, Harris, and McLeod (2011), it was found that ninth grade students with learning disabilities that were placed into a special education class achieved at a high rate than ninth grade students with learning disabilities placed into a co-taught class. The current study did not examine student achievement for students with disabilities that were placed into self-contained classes nor did the study investigate the severity of each student’s disability. The alternate theoretical and empirical reasons may explain the results of this study.

The specific reasons for the difference in achievements for students with disabilities in the two placement options were not investigated as part of this study. Districts need to evaluate student achievement in their own districts and consider all programs for students with disabilities, which allows for studies beyond a theoretical base (Signor-Buhl, Leblanc, & McDougal, 2006). Considering the additional personnel cost of co-taught classes, further investigation should be done to determine why the extra teacher in the classroom did not increase student achievement. Improving student achievement of students with disabilities should become part of the school improvement plan so that no student is overlooked (Coladarci, 2005).

When districts evaluate the specific reasons for the differences in achievements for students with disabilities in the two placement options in this study, they need to consider the many factors involved in having an effective co-teaching model. Simmons and Magiera (2007) suggested keeping co-teaching pairs together, having the special education teacher become part
of content departments, and tracking student outcomes. From the principal interviews that were conducted for this study, the co-teachers have met these suggestions. Simmons and Magiera (2007) also suggested common planning time. None of the principals in this study stated that they have common planning times for the teachers. Having common planning time would allow for additional collaboration and time to develop lessons for each class. If common planning time was added, the districts could research the change in results.

Co-teachers need to continue to improve their instruction. Teachers need to sustain their efforts to improve instruction with new approaches or inclusion will not get better (Broderick, Mehta-Parekh, Reid, 2005). Teachers need to have their data disaggregated to determine their areas of strengths and weaknesses. Curriculum should then be adjusted based upon that data. Educators must find “ways to assist students with disabilities in the achievement of proficiency on grade-level academic content standards” (Thompson, S., Lazarus, S., Clapper, A., & Thurlow, M., 2006, p. 137). In order for students with disabilities to achieve on the PSSA test, all of the curriculum must be taught. The curriculum also needs to be presented in a way that encourages students to master the content.

Co-teaching is the service delivery model of choice for a growing number of school districts in the nation (Murawski & Lochner, 2010). Even with the growing number of schools using co-teaching, quantitative research analyzing student achievement is limited. Districts that have a higher academic proficiency on state tests must analyze their methodology and determine if their strategies will work in other districts (Huberman, Nava, & Parrish, 2012). Finding effective strategies that will sustain over time is essential. Effective and continuous professional development is necessary in order to have positive effects with co-teaching (Walsh, 2012). Only one of the eight principals interviewed for this research discussed professional development for
the co-teachers. When teachers receive frequent professional development on co-teaching, they have more confidence in their co-teaching abilities (Pancsofar & Petroff, 2013).

**Implications and Recommendations**

The method of research used for this study should be considered when making a determination about the study. Considering that this research examined student achievement for students with disabilities at small schools, generalizations to larger schools cannot be made. While students with disabilities were paired on gender, primary disability, and IQ in order to address the threat to validity, other considerations should be made. This study did not address self-concept of students or parental involvement. Ju, Zhang, and Katsiyannis (2012) found a causal relationship between self-concept and student achievement for students with disabilities and also found that parent involvement was a predictor for student achievement. This study did not address personnel issues, such as teacher efficacy, teacher experience, or the relationship between the co-teachers. Keefe and Moore (2004) stated that teachers perceive their relationship as the most important factor in the success of co-teaching. A quantitative study on various student and personnel issues related to co-teaching should be completed.

Even with the outcome of this research and the limited amount of quantitative research available, co-teaching should not be eliminated at small schools. Student achievement needs to improve for students with disabilities and the achievement gap needs to close. Student growth is another factor to consider when analyzing student placement. Educators need to build on the quantitative research available on co-teaching and find ways to make co-teaching more effective for student achievement in their schools. There are many studies on educators’ perceptions of co-teaching and recommended logistical strategies. Educators need to consider these as they implement and sustain co-teaching models in their schools so student achievement can increase.
Administrators need to place emphasis on effective co-teaching models. Administrators must help and support to co-teachers (Friend & Cook, 2010).

Since more schools are using co-teaching, additional quantitative research is needed. Continuing research should include what specific instructional strategies should be used in mathematics and English classes in order to increase student achievement for students with disabilities. Quantitative studies need to be designed to explore the effectiveness of the various models of co-teaching. Teacher expectations are a quality to investigate for closing the special education achievement gap. Investigations into the extent of achievement among students with disabilities should be conducted regardless of their settings. An analysis on student achievement for students with disabilities comparing small schools versus large schools should be completed. Ultimately, educators will need to continue to find ways to reach and teach students with disabilities in order to close the achievement gap and increase student achievement. “All teachers must learn to design unique instructional programs that actively support learners with and without disabilities” (Jimenez et al., 2007, p. 44).

Conclusion

Students with disabilities need to improve their academic performance for schools to reach 100% proficiency as required by NCLB. The 100% proficiency should include the subgroups that are too small to be considered in the NCLB accountability standards. Content standards are set forth by the state department of education, but schools need to find ways to close the gap. Each student with a disability requires an individualized plan in the least restrictive environment, but schools also have to find ways to close the achievement gap and increase student achievement. “It remains important for educators, parents, and administrators to consider the potential benefits and shortcoming of class placement options” (Fore et al., 2008, p. 70). Schools must continue to provide a variety of placement options for students with
disabilities (Klingner et al., 1998). This study can help educators to identify the least restrictive environment for students with disabilities at these high schools.
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doi:10.1080/09084280802084010


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doi:10.1177/074193250002100505


doi:10.1177/0022466909341196


doi:10.1348/000709906X156881


Retrieved from the Pennsylvania Department of Education website: http://pde.state.pa.us


APPENDIX A: REQUEST TO PARTICIPATE TEMPLATE

Comparing Student Placement with Achievement for Students with Disabilities

[insert date]

Dear [insert superintendent’s name]:

My name is Patti Mason and I am the principal of Charleroi Area High School. I am presently working on a Doctor of Education degree with a concentration in Educational Leadership through Liberty University. For my dissertation, I am studying inclusion of students with disabilities in classes at the high school level, and I would like to use your high school for part of the research. The purpose of my study is to compare the various placements of students with disabilities in English and math classes to student achievement on the 11th grade PSSA tests in reading and mathematics in southwestern PA high schools. I will closely examine placement in co-taught classes with a content area teacher and a special education teacher versus general education classes with only a content area teacher. It is my hope that this information will be used to determine if the co-teaching service delivery model is making an impact on student achievement and to help educators as they make placement decisions for students with disabilities. The information will also be used to determine if the additional teacher support in the co-taught classroom is a necessary expense in order to increase student achievement for students with disabilities. The procedure will be a quantitative study using a causal-comparative design. My research will pass through a review process by the Institutional Review Board at Liberty University before I am allowed to collect data.

Your high school was selected as a possible participant because the subgroup for students with disabilities is under the 40 student minimum that Pennsylvania requires to separately evaluate for Adequate Yearly Progress. If you agree to participate, I would like data from your school. The data is for all 11th grade special education students that took the PSSA tests in 2011-2012. The data I would like for each student is as follows: type of disability, gender, latest full scale IQ, placement in each English class for 9th through 11th grade, placement in each math class for 9th through 11th grade, 11th grade reading PSSA score, and 11th grade math PSSA score. This information will be collected in a user-friendly excel spreadsheet template, which I will supply to you. Due to the nature of data, I will keep all district names confidential. Students will be identified by you by number only, not a name. I would also like the general demographic information on your entire school, and schools will be identified by only a letter. I would also like to interview the high school principal or designee to gain a better insight of the co-teaching model used at the school. This interview may take up to 30 minutes and his/her name will not be used in the final report.

I plan to collect data from various schools in southwestern Pennsylvania. As I stated before, all data collected will be handled anonymously. There will be no way to connect the data to a person and pseudonyms will be used in the final report, including the school name. Research records will be stored securely and I will have sole access to them on a password protected computer. The data will be kept for three years as required then destroyed. The expected benefit associated with your participation is the information about the impact of co-teaching specifically
for math and English classes at the high school level, which will be shared with you once the study is completed.

I understand how busy you are but I hope you will take the time to participate in this study. This information can help us to find ways to improve student achievement for one subgroup identified under NCLB, while also considering the additional expense to provide a second teacher in co-taught classrooms. If you have any questions, feel free to contact me at 724-809-4291 or plmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Please let me know by [insert date] if you use co-teaching in your high school math and English classes and if you are willing to participate in this study. You may contact me via email or phone (plmason@liberty.edu or 724-809-4291).

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason
Dear Mrs. Mason:

I am pleased to inform you that the School District has agreed to allow the use of our schools and student data as part of your research for studying inclusion of students with disabilities in classes at the high school level. Please contact me at 724-555-1212 or mason@school.org when you are ready to begin the data collection process.

Sincerely,

[Name]

Director of Special Education

The School District does not discriminate on the basis of race, sex, color, disability, national or ethnic origin in administration of its educational or employment policies.
April 1, 2013

To whom it may concern,

My name is [Redacted]. I am the Supervisor of Special Education at [Redacted], Area School District. I was contacted by Patti Mason regarding a dissertation she is planning to conduct through Liberty University. She will be researching the effects of co-teaching on FSSA scores for high school students.

The [Redacted] Area School District is willing to participate in Ms. Mason’s study by sharing data such as IEP subgroup numbers and scores, as well as correlation to scheduled co-taught classes. Confidentiality of students’ personal information will be protected throughout the study.

We are excited to be a part of this study, as it will likely give us a more in-depth look at the direct effect of co-teaching on student performance in standardized testing.

If you have any questions, please feel free to contact me at (724) [Redacted].

Thank you,

[Redacted]
Supervisor of Special Education
April 3, 2013

Dear Mrs. Mason:

I am pleased to inform you that Area School District has agreed to allow the use of our schools and student data as part of your research for analyzing inclusion of students with disabilities in classes at the high school level. Please contact [Redacted] at [Redacted] when you are ready to begin the data collection process.

Principal
March 15, 2013

Dear Mrs. Mason,

I am pleased to inform you that the School District has agreed to allow the use of our schools and student data as part of your research for studying inclusion of students with disabilities in classes at the high school level. Please contact me at [redacted] or [redacted] when you are ready to begin the data collection process.

Sincerely,

[Redacted]
Assistant to the Superintendent
February 25, 2013

Dear Mrs. Mason,

I am pleased to inform you that the School District has agreed to allow the use of our school and student data as part of your research for studying inclusion of students with disabilities in classes at the high school level. Please contact me at 724-555-7890 when you are ready to begin the data collection process.

Thank you,

[Signature]

Director of Special Education
Coordinator of Pupil Services,
[Redacted]
724-555-7241
fax-724-555-7242
March 27, 2013

Charleroi Area High School
100 Penseri Drive
Charleroi, PA 15022

Attn: Dr. Brad Serko, Superintendent

RE: Patty Mason

Dear Dr. Serko:

I, Mr. _______, agree to participate in the co-teaching research study.

Please do not hesitate to contact me if you have questions concerning this matter.

Respectfully,

[Signature]

Director of Pupil Services/SPC Principal
April 4, 2013

Dear Mrs. Mason:

I am pleased to inform you that the School District has agreed to allow the use of our schools and student data as part of your research for studying inclusion of students with disabilities in classes at the high school level. Please contact me at [redacted] when you are ready to begin the data collection process.

Yours sincerely,

[redacted]

Assistant Superintendent for Curriculum and Instruction
School District
To: [Redacted]
Subject: [Redacted]

Area School District

March 13, 2013

Dear Mrs. Manon:

I am pleased to inform you that [Redacted] Area School District has agreed to allow the use of our schools and student data as part of your research for studying inclusion of students with disabilities in classes at the high school level. Please contact Mr. [Redacted] at the High School when you are ready to begin the data collection process.

Thank you,

[Redacted]
Principal
[Redacted] Area High School
[Redacted] Ave
[Redacted]
Phone: (412) [Redacted]
Fax: [Redacted]
Email: [Redacted]

This e-mail communication (and any attachments) may contain confidential or privileged information and is intended only for the individual(s) or entity named above and to others who have been specifically authorized to receive it. If you are not the intended recipient, please do not read, copy or distribute the contents of this communication to others. Please
APPENDIX C: IRB APPROVAL

April 8, 2013

Patricia Mason
IRB Exemption 1532.040813: Comparing Student Placement with Achievement for Students with Disabilities

Dear Patricia,

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 that no further IRB oversight is required.

Your study falls under exemption category 46.101 (b)(2)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, or reputation.

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and that 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,

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

Liberty University | Training Champions for Christ since 1971
APPENDIX D: PRINCIPAL CONSENT FORM TEMPLATE

PRINCIPAL CONSENT FORM

Comparing Student Placement with Achievement for Students with Disabilities

Dear Principal,

My name is Patti Mason and I am the principal of Charleroi High School. I am presently working on a Doctor of Education degree with a concentration in Educational Leadership through Liberty University. I am conducting a research study on the inclusion of students with disabilities in classes at the high school level. The purpose of my study is to compare the various placements of students with disabilities in English and math classes to student achievement on the 11th grade PSSA tests in reading and mathematics in southwestern PA high schools. I will closely examine placement in co-taught classes with a content area teacher and a special education teacher versus general education classes with only a content area teacher. It is my hope that this information will be used to determine if the co-teaching service delivery model is making an impact on student achievement and to help educators as they make placement decisions for students with disabilities. The procedure will be a quantitative study using a causal-comparative design.

In order to reach this goal, I received permission for your school to participate in the study. While the majority of data collection involves student data, I also would like to inquire about the co-teaching model used at your school. You were selected as a possible participant because you are the principal of the school. As part of the data collection I would like to interview you to gain a better insight of the co-teaching model used at the school. The interview may take up to 30 minutes.

The information in this letter is provided for you to decide whether you wish to participate in the present study. The risks for participation in this study are no more than you would encounter in everyday life. You should be aware that you are free to decide not to participate or to withdraw at any time without affecting your relationship with the researcher, Liberty University, your school, or your school district. Participation in the study is completely voluntary and participants will not receive payment for the study. If you take part in the study, you may stop at any time without penalty. You may also ask to have your research withdrawn from the study after the research has been conducted.

I plan to collect data from various schools. All data collected will be handled anonymously. There will be no way to connect the data to a person and pseudonyms will be used in the final report, including the school name. Research records will be stored securely and I will have sole access to them on a password protected computer. The data will be kept for three years as required then destroyed. The expected benefit associated with your participation is the
information about the impact of co-teaching specifically for math and English classes at the high school level.

I understand how busy you are but I hope you will take the time to participate in this study. This information can help us to find ways to improve student achievement for one subgroup identified under NCLB. If you have any questions, feel free to contact me at 724-809-4291 or plmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by ________________.

I have read and understood the above information. I have asked questions and received answer, as needed. I consent to participate in the study.

________________________________________  Signature of the participant  ____________
Name of the Participant (print)  Date

________________________________________  ______________________________________
School District  School(s)

The best time to contact you for a phone interview is: _________________

The phone number to use to contact you is: ____________________________

_________________________  _______________________
Signature of the Investigator  Date

IRB Code Numbers: 1532.040813
APPENDIX E: SIGNED PRINCIPAL CONSENT FORMS

Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-805-4291 or pilmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by June 2013.

I have read and understood the above information. I have asked questions and received answers, as needed. I consent to participate in the study.

Name of the Participant (print) __________________________ Signature of the Participant __________________________ Date 6/18/13

School District __________________________________________ School(s) __________________________

The best time to contact you for a phone interview is: ________

The phone number to use to contact you is: __________________________

Signature of the investigator __________________________ Date 6/18/13

IRB Code Numbers: 1532.040813
Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-899-4291 or pilmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by July 2013.

I have read and understood the above information. I have asked questions and received answers, as needed. I consent to participate in the study.

[Signature] Date

School District School(s)

The best time to contact you for a phone interview is:

The phone number to use to contact you is:

Signature of the Investigator Date

IRB Code Numbers: 1532.040813
Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-809-4291 or
You may also contact my advisor, Dr. Beth Ackerman, at
or at 434-582-2445. Do not hesitate to ask questions about the study
either before or during the time that you are participating. I would be happy to share my findings
with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone
other than the researchers, you are encouraged to contact the Institutional Review Board, 1971
University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by ________________

I have read and understood the above information. I have asked questions and received answer,
as needed. I consent to participate in the study.

Name of the Participant (print)  Signature of the participant  Date

School District  School(s)

The best time to contact you for a phone interview is: ________________

The phone number to use to contact you is: ________________

Signature of the Investigator  Date

IRB Code Numbers:

IRB Expiration Date:
Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-809-4291 or pirmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by June 2013.

I have read and understood the above information. I have asked questions and received answer, as needed. I consent to participate in the study.

Name of the Participant (print)  Signature of the participant  Date

School District

School(s)

best time to contact you for a phone interview

Phone number to be used to

signature of the investigator  Date

I Calls

School #4
Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-809-4291 or plmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackermans@liberty.edu or at 412-393-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by June 2013.

I have read and understood the above information. I have asked questions and received answer, as needed. I consent to participate in the study.

Name of the Participant (print)   Signature of the participant   Date

School District   School(s)

The best time to contact you for a phone interview is: A/4

school #5
Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-809-4291 or plmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by July 2013.

I have read and understood the above information. I have asked questions and received answers, as needed. I consent to participate in the study.

Name of the Participant (print) ____________________________ Signature of the participant ____________________________ Date 7/8/15

School District ____________________________ School(s) ____________________________

The best time to contact you for a phone interview is: N/A

The phone number to use to contact you is: ____________________________

Signature of the Investigator ____________________________ Date 7/8/15

IRB Code Numbers: 1532.040813

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Liberty University

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Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by ______ June 2013 ______.

I have read and understood the above information. I have asked questions and received answer, as needed. I consent to participate in the study:

Name of the Participant (print)  ____________________________ Signature of the participant  ____________________________ Date  6-17-13

School District  ________________ School(s)  ________________

The best time to contact you for a phone interview is: N/A

The phone number to use to contact you is: N/A

Signature of the Investigator  ____________________________ Date  6/13/13

IRB Code Numbers: 1532.040818
Liberty University

under NCLB. If you have any questions, feel free to contact me at 724-809-4291 or pmason@liberty.edu. You may also contact my advisor, Dr. Beth Ackerman, at mackerman@liberty.edu or at 434-582-2445. Do not hesitate to ask questions about the study either before or during the time that you are participating. I would be happy to share my findings with you after the research is completed.

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Thank you, in advance, for your assistance with this research.

Sincerely,

Patricia L. Mason

Please sign and return by ________________.

I have read and understood the above information. I have asked questions and received answer, as needed. I consent to participate in the study.

__________________________  ________________________  ____________
Name of the Participant (print)  Signature of the participant  Date

__________________________
School District

High School

School(s)

The best time to contact you for a phone interview is: ________________

The phone number to use to contact you is: __________________________

__________________________  ________________
Signature of the Investigator  Date

IRB Code Numbers: 1532.040813
APPENDIX F: GUIDING PRINCIPAL INTERVIEW QUESTIONS

1. Please explain the bell schedule at your school, including grading period time frame and length of each class.

2. What process and criteria are used to determine placement for students with disabilities into math and English classes? For example, benchmark scores, previous state tests results, course grades, faculty recommendation, and parent request.

3. What courses have co-teachers included in the class?

4. Do all co-taught classes use the same method of co-teaching (one-teach/one-assist, team teaching, teaching stations, parallel teaching, etc?)

5. Please describe the co-taught English classes at your school.

6. Please describe the co-taught math classes at your school.

7. Is there equal accountability for general education teachers and special education teachers? If yes, please describe. If no, why not?