Summer 2011

How Does the Collaboration of General and Special Educators Improve the Progress Attainment of Students with Disabilities?

Ketrina L. Jordan
Kennesaw State University

Follow this and additional works at: http://digitalcommons.kennesaw.edu/etd

Part of the Educational Assessment, Evaluation, and Research Commons

Recommended Citation
HOW DOES THE COLLABORATION OF GENERAL AND SPECIAL EDUCATORS IMPROVE THE PROGRESS ATTAINMENT OF STUDENTS WITH DISABILITIES?

by

Ketrina L. Jordan

A Dissertation

Presented in Partial Fulfillment of Requirements for the Degree of Doctor of Education In Teacher Leadership for Learning Inclusive Education In the Bagwell College of Education Kennesaw State University

Kennesaw, GA 2011
The dissertation of
Ketrina Jordan
CANDIDATE NAME/FSU ID

Titled: How Does the Collaboration of General and Special Educators Improve the Progress Attainment of Students with Disabilities?
submitted to the Bagwell College of Education in partial fulfillment of the requirements for the degree of:

Doctor of Education

has been read and approved by the Committee:

Dissertation Chair Signature: [Signature]
DATE: 4-13-11

Committee Member Signature: [Signature]
DATE: 6-13-11

Committee Member Signature: [Signature]
DATE: 6-13-11

Committee Member Signature: [Signature]
DATE: 6/13/11
Copyright by
Ketrina L. Jordan
2011
ACKNOWLEDGMENTS

“For I know the plans I have for you,” declared the Lord, “plans for prosperity and not for disaster, plans to give you a future full of hope.” Jeremiah 29: 11-12.

I want to thank God for making plans for me.

The printed pages of this dissertation hold far more than the culmination of years of study. These pages also reflect the relationships with many generous and inspiring people I have met since beginning my graduate work. The list was long, but I cherish each contribution to my development as a scholar and as a teacher.

I owe my deepest gratitude to my husband, Jim, whose unwavering confidence in me has inspired me to be more than I could have ever imagined. I love you with all my heart.

To Jessica and Travis, thank you for letting Momma go to “Big Girl School”. Your love, support, and constant patience taught me about sacrifice, discipline, and compromise. You two are the loves of my life.

Dr. Susan Brown, my mentor and dear friend, I thank you for your encouragement and your direction on those times that I just didn’t know which way to go next. This dissertation would not have become a reality if not for your belief in me. You pushed me to go further and to be better. Thank you for persevering with me as my advisor throughout the time it took me to complete this research and write the dissertation.

Dr. Deborah Wallace, my confidant and inspiration, you have shown me that with hard work and perseverance, anything is possible. You generously gave your time and
expertise to enhance my work. I thank you for your contribution and your good-natured support.

Dr. Binyao Zheng provided me with “straight forward” advice. You helped to keep me focused during those times that I felt like I wanted to study all of education. I am so grateful for your assistance. Dr. Zheng is a man of few words but has abundant heart.

It was a pleasure to have been a part of the inaugural cohort that started in January 2007. I have faith that through all the tragedies, losses, tears, and fears - we are stronger. I am also grateful for the support and advice from the instructors in the Teacher Leadership program at Kennesaw State University. You all gave the cohort an opportunity to fly.

Especially, I need to express my gratitude and deep appreciation to all my “sisters” whose friendship, knowledge, and wisdom have supported, enlightened, and entertained me over the many years of this journey. You women of valor have consistently helped me keep perspective on the important things in life and helped me to deal with reality. For my friends, you are all my inspiration.

Lastly, I would like to thank the collaborating teachers who participated in my research study with interest and enthusiasm. I have learned so many wonderful things about collective capacity from you. God Bless you for your extra efforts.
ABSTRACT

HOW DOES THE COLLABORATION OF GENERAL AND SPECIAL EDUCATORS IMPROVE THE PROGRESS ATTAINMENT OF STUDENTS WITH DISABILITIES?

by

Ketrina L. Jordan

“I think that my kids have been very successful in the inclusion classroom this year. I have seen a lot of growth” (SL). This statement was from a special education teacher who served students with disabilities in the general education math classroom. This teacher collaborates with the general education math teacher. For this co-teaching team, the experience has been a positive one. The purpose of this mixed-methods study was to research the collaboration of co-teachers, like SL and her team-mate, in a suburban elementary school, uncovering benefits and costs of collaboration.

Data was collected over one school year utilizing quantitative data collection such as math benchmark assessments; and qualitative data such as observation checklists, and structured interviews. The focus of the research analysis was trifold. Foremost, to disclose factors teachers reported to facilitate and hinder both the collaborative process and student achievement. Secondly, to determine what effect student disability status and teaching environment had on math progress attainment. Finally, the research was to highlight the strength of the relationship, if it exists, between instruction method, disability status and progress attainment.
The results of this study indicated that students without disabilities (GENED) in inclusion classrooms progressed as well as or above the mean of students without disabilities (GENED) within the non-inclusion classroom in third grade, fourth grade and fifth grade. Results also indicated that the rate of progress attainment was higher for students with disabilities (SWD) in inclusion classrooms than for students with disabilities (SWD) in non-inclusion classrooms. In third grade, the difference was 21%. In fourth grade, the difference was 10% and in fifth grade, the difference was 9%.

Throughout the research process, the teacher-researcher gathered a great deal of valuable information about collaboration and co-teaching. The teacher-researcher discovered, through her direct participation, that you must be willing to compromise, collaborate, and cooperate in order for co-teaching to be successful and to have an impact on student progress attainment. Collaboration of co-teachers is a self-less practice with enormous potential for promoting academic achievement for all levels of learners.

Key words: benchmark assessment, collaboration, collaboration of special education and general education teachers, inclusion
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>....................................................................................................................</td>
<td>iv</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>.............................................................................................................</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>.........................................................................................................</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>.........................................................................................................</td>
<td>ix</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>1. INTRODUCTION ........................................................................................</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Statement of the Problem ........................................................................</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Research Questions ..................................................................................</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Purpose and Significance of Study .......................................................</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Local Context .........................................................................................</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Conceptual Framework .............................................................................</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Review of Relevant Terms .......................................................................</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Overview of the Methodology ..................................................................</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Organization of Study ............................................................................</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2. REVIEW OF THE LITERATURE ..................................................................</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Introduction .............................................................................................</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Conceptual Framework .............................................................................</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Six Key Components of Successful Collaboration ...................................</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Component 1: School Culture and School Climate ...................................</td>
<td>13</td>
</tr>
</tbody>
</table>
Component 2: Clear Goals....................................................14
Component 3: Attention to Results........................................14
Component 4: Use of Time and Structures.............................15
Component 5: Deprivatization...............................................15
Component 6: Reflective Dialogue about Practice.......................17

Studies of Collaboration.....................................................19
Perceptions.............................................................................20
Facilitation of Collaboration.................................................22
Hindrances to Collaboration..................................................24
Effects Collaboration Had On Student Achievement..................26
Collaboration and Distributed Leadership..............................28
Summary.................................................................................29

3. METHODOLOGY..................................................................31
Research Questions..............................................................31
Research Design and Methods..............................................31
Setting................................................................................32
Overall and Sample Populations............................................36
Access to Site.........................................................................39
Value of Specific Methodology..............................................41
Instrumentation.................................................................41

Benchmark Math Assessment..............................................41
Co-Teaching Observation Checklist......................................42
Structured Teacher Interviews............................................42
Quantitative Methods.........................................................42
Data Collection............................................................................43
Qualitative Methods........................................................................45
Data Collection............................................................................48
Validity of Interpretation.................................................................51
Limitations and Delimitations............................................................52
Ethical Considerations.......................................................................52
4. FINDINGS....................................................................................54
Data Description.............................................................................54
Research Question One......................................................................54
Research Question Two.....................................................................69
Research Question Three.................................................................71
Research Question Four.....................................................................80
  Culture and Climate.......................................................................81
  Time and Structures......................................................................82
  Reflective Dialogue.......................................................................82
Research Question Five.......................................................................83
  Alignment of Instruction............................................................83
  Differentiation of Instruction.......................................................86
Research Question 6..........................................................................87
  Co-Teaching Checklist...................................................................87
  Theme 1. The Basics: Meaningful Roles for Each Co-teacher..........89
  Theme 2. Strategies to Promote Success for All Students.............89
  Theme 3. Evidence of Success.....................................................90
5. DISCUSSIONS, CONCLUSIONS, AND IMPLICATIONS

Review of the Methodology

Statement of the Problem

Discussion of Findings

Research Question One

Research Question Two

Research Questions Three, Four, Five, and Six

Discussion of Co-teacher Interviews

Limitations of Findings

Researcher Comments

Teacher-Researcher Status

Perceptions of the Collaborator

Culture and Climate

Clear Goals

Attention to Results

Time and Structures

Deprivatization

Reflective Dialogue about Practice

Teacher-Researcher Reflections

Implications for Future Practice in Local Context

Development of Co-teacher Collaboration Teams

Implementation of Co-teacher Collaboration Teams

Implications for Future Research
REFERENCES .......................................................................................................................... 115

APPENDIX A - Co-Teaching Participant CONSENT FORM .............................................. 132

APPENDIX B - Co-Teaching Observation Checklist ......................................................... 136

APPENDIX C - Structured Teacher Interview ................................................................. 139

APPENDIX D - Theme Analysis of Co-Teaching Observation Checklist ................. 143
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Demographics of Southern Elementary School</td>
<td>32</td>
</tr>
<tr>
<td>2.</td>
<td>Demographics of Co-Teaching Teams at Southern Elementary School</td>
<td>38</td>
</tr>
<tr>
<td>3.</td>
<td>Data Collection Tools: Qualitative Data</td>
<td>49</td>
</tr>
<tr>
<td>4.</td>
<td>Students by Disability Status, Grade Level, and Instructional Environment</td>
<td>55</td>
</tr>
<tr>
<td>5.</td>
<td>Third Grade Fixed Effect Estimates</td>
<td>59</td>
</tr>
<tr>
<td>6.</td>
<td>Fourth Grade Fixed Effect Estimates</td>
<td>62</td>
</tr>
<tr>
<td>7.</td>
<td>Fifth Grade Fixed Effect Estimates</td>
<td>64</td>
</tr>
<tr>
<td>8.</td>
<td>Rate of Progress Attainment by Grade, Disability Status, &amp; Environment</td>
<td>66</td>
</tr>
<tr>
<td>9.</td>
<td>Fixed Effects Estimates and Contrast Table</td>
<td>69</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sample of empirical growth plots (20 student probes)</td>
<td>56</td>
</tr>
<tr>
<td>2.</td>
<td>Plots of linear least squares progression</td>
<td>57</td>
</tr>
<tr>
<td>3.</td>
<td>Third grade change trajectory (estimated growth progressions)</td>
<td>60</td>
</tr>
<tr>
<td>4.</td>
<td>Fourth Grade change trajectories (estimated growth progressions)</td>
<td>62</td>
</tr>
<tr>
<td>5.</td>
<td>Fifth Grade change trajectories (estimated growth progressions)</td>
<td>65</td>
</tr>
<tr>
<td>6.</td>
<td>Estimated benchmark scores by grade level</td>
<td>67</td>
</tr>
</tbody>
</table>
CHAPTER ONE
INTRODUCTION

Statement of the Problem

Students with disabilities are being educated in the general education classroom. To the surprise of many educators, the law requires that they are educated there. The inclusion of students with disabilities has become a phenomenon that has gained much attention from the education community. This spike in interest was due to legislation that mandates students with disabilities be educated in the least restrictive environment which for many students was the general education classroom.

Schools are searching for alternatives to meet the mandates of special education legislation that requires the inclusion of students with disabilities in the general education classroom. Many schools have responded by choosing the collaboration of general education and special education teachers “as a means for promoting effective instruction in inclusive classrooms” (Scruggs, Mastropieri, & McDuffie, 2007, p. 392).

Inclusion meant that “students with disabilities are supported in chronologically age-appropriate general education classes in their home schools and receive the specialized instruction delineated by their individualized education programs (IEP’s) within the context of the core curriculum and general class activities” (Exceptional Student Education, n.d.). “Implemented to provide support for increasing the inclusion of students with disabilities, co-teaching usually consists of one general education teacher paired with one special education teacher in an inclusive classroom of general education students with disabilities.”
and special education students” (Scruggs, Mastropieri, & McDuffie, 2007, p. 392).

In trying to capture the notion of collaboration in one sentence, Dr. Harriett Bessette and the teacher-researcher brain-stormed and came up with this adage: “Collaboration is not a ‘thing’ - it is a way of doing things” (personal communication, October, 2009). Collaborating, with the purpose of teaching students with disabilities, requires teachers to share responsibility for planning, evaluating progress, implementing, and monitoring students’ individualized education programs (IEP). Montiel-Overall (2005) stated “Collaboration is a trusting, working relationship between two or more equal participants involved in shared thinking, shared planning and shared creation of integrated instruction” (Section A: Defining Collaboration, para. 9). “Collaboration, to work successfully, must be well planned and engage a thoughtful process for educators to implement successfully. There are many factors which impact a collaborative process. Creating effective collaborative relationships takes time, patience and willingness for educators to work” (Chapple, 2009, p. 4), together, equally.

The style of interaction between and among individuals was a major component of collaboration. Garderen, Scheuermann, Jackson, and Hampton (2009) stated:

Special education and mathematics teachers are under pressure to respond to the needs of an increasingly diverse range of students in mathematics. One way for them to meet the instructional needs of struggling learners is through collaboration where, ideally, the knowledge one teacher brings can address the gaps of the other. (p. 56)

Garderen, Scheuermann, Jackson, and Hampton (2009) cited, “Recent surveys have shown that special education teachers often lack the mathematical content knowledge, whereas mathematics teachers have limited knowledge of specialized
practices that can assist students struggling with mathematics, including those with disabilities” (pp. 56-57).

The topic of teacher collaboration, particularly co-teaching, between general and special educators has gained attention in academic research partly due to the controversial issue of inclusion of students with disabilities in the general education classroom (Bunker, 2008).

Research Questions

This dissertation research investigated collaboration of teachers and the effect it had on the rate of math progress attainment. It also explored co-teachers’ depiction of how the collaborative process affects student achievement, the factors that can be attributed to facilitate or hinder collaboration with peers, and factors the co-teachers believed facilitated or hindered collaboration for student achievement. The research questions are listed below:

1. How does disability status and instructional environment influence the rate of math benchmark progress attainment of third, fourth and fifth grade students?
2. How do co-teachers describe the effect collaboration had on student achievement in math?
3. What factors do co-teachers report facilitate collaboration with colleagues?
4. What factors do co-teachers report hinder collaboration with colleagues?
5. What factors do co-teachers report facilitate change in student achievement?
6. What factors do co-teachers report hinder change in student achievement?

Ho1: There was no difference in progress attainment in math achievement scores for students in inclusive math classes and those in traditional math classes.
Purpose and Significance of Study

McLeskey and Waldron (2002) advocated for collaborative strategies to be researched so the information could be used to improve the process because there a shortage of research detailing the relationship between collaboration of co-teachers and improved student achievement. The teacher-researcher found a lack of empirical research. This dissertation study initiated the search for strategies, and examples of successful collaborative models. The investigation generated the research questions for this study.

The purpose of this research was to examine how general education and special education co-teachers at Southern Elementary School could help students with disabilities improve their academic performance through collaboration. The teacher-researcher presented a reflection of what was going on in the school. What did the co-teachers believe was essential to the collaborative process? How had the collaborative process contributed to the co-teachers’ instruction? How had collaboration contributed to the learning of the students? What did the researcher learn from the interviews, observations, and student data? What were the components for a successful inclusion program?

This research answered questions about the effects of math on students with and without disabilities and the co-teachers who teach them (inclusion and non-inclusion). The existing literature on inclusion of students with disabilities had positive declarations and enthusiastic anecdotal reports. Upon closer examination, however, there was uncertainty and some issues need further clarification. The relationship between co-teacher collaboration, inclusive education, and student academic achievement was still unclear.
Researchers agreed that much of the reported success of collaboration had to do with co-teacher effectiveness or subjective reports on school improvement plans. In the research, reports of growth in student achievement included little about the framework or structure of collaboration, and frequently, related factors were not considered (Abel, 2005; Fulton, Burns, & Goldenberg, 2005).

Local Context

This dissertation was within the local context. This study had the potential to contribute to school improvement initiatives at Southern Elementary School, a suburban elementary school in the Southeastern part of the United States. The teacher-researcher selected Southern Elementary School based on convenience. The teacher-researcher served as a special education inclusion co-teacher in the fifth grade. She had access to the faculty, students, and resources within the school. The school consists of three grade levels; third, fourth, and fifth.

Southern Elementary School’s percentage of students meeting or exceeding reading state performance standards resulted in the school being considered a high-performing school in reading. However, Southern Elementary School’s 2009-2010 targeted learning gains were not achieved in math based on percentages of students with disabilities’ not meeting the standards on the state-mandated assessment in math.

There was a discrepancy between reading and math achievement on the state-mandated test. Southern Elementary School had 66.5% of students with disabilities who met or exceeded the state reading performance standards. In math, 47% of students with disabilities met or exceeded the state performance standards. The discrepancy between reading and math achievement for students with disabilities was almost 20 percentage
points. So, in the fall of 2009, the anticipated challenges of students with disabilities meeting the mathematics performance standards prompted conversations about the need for possible changes in teaching approaches to continue to meet the needs of the diverse student population. Beginning of the 2010-2011 school year, resources were allocated to support the development of professional learning communities through co-teacher collaboration. The school decided to meet this challenge by requesting assistance from Georgia Learning Resources System (GLRS). GLRS contracted to provide the Southern Elementary School with a model of support which consisted of a combination of site-based face-to-face professional learning, classroom observations with feedback, and support with assignments that focused on improving instruction. The support also provided effective co-planning, co-teaching in a standards-based classroom, progress monitoring, and differentiating instruction in math (Georgia Learning Resources System, 2011).

Conceptual Framework

One strategy to diminish the concerns and limitations identified in the literature was to develop a theoretical framework that incorporates key features reported being successful. Six components for success emerged from the research literature of co-teacher collaboration models conducted by Bunker (2008) and Rose (2008). Using their precepts and their conceptual framework, this study was an attempt to document whether co-teacher collaboration was responsible for an increase in rate of progress attainment (progress made from benchmark one to benchmark three - ROPA). The study helped to identify factors that served to facilitate or hinder the collaborative processes and increases in student achievement.
The components were identified according to concepts adopted by Bunker (2008) and Rose (2008). Each of the six components are defined and discussed in the next chapters. Below are the six components, noted to contribute to successful collaboration.

- School Culture and Climate
- Clear Goals
- Attention to Results
- Time and Structures
- Deprivatization
- Dialogue about Practice

Review of Relevant Terms

*Benchmark assessment*: “short tests administered throughout the school year that give teachers immediate feedback on how students are meeting academic standards. Regular use of benchmark assessments was seen by many as a tool to measure student growth and design curriculum to meet individual learning needs” (Learn NC: Education Reference, n.d.).

*Collaboration*: “the cooperation which occurs during the conscious partnering of two or more individuals striving to reach a common goal through joint problem solving and decision making” (Hebert, 1998, p. 49).

*Co-Teaching*: “a service delivery option for providing special education or related services to students with disabilities or other special needs while they remain in their general education classes” (Friend & Cook, 2010, p. 109).

*Curriculum*: a set of subjects, but also may include the learning experiences, skills, and abilities students are expected to learn.
**General education:** refers to students without diagnosed disabilities (non-special education), term previously called ‘regular’ education.

“**General education teacher:** a teacher who has completed the requirements for licensure in the area of general education. A general education teacher provides instruction in one or more subject areas to students with and without disabilities” (Atkins, 2009, p. 4).

“**Inclusion:** the full participation of students with special learning needs and disabilities in the daily life, curriculum, and learning activities of same-age peers in general classrooms” (Atkins, 2009, p. 4).

“**Inclusive classroom:** a classroom shared by general education students [students without disabilities] and special education students [students with disabilities]. Grade level curriculum is taught to all students” (Atkins, 2009, p. 4)

**Rate of progress attainment (ROPA):** progress made from benchmark one to benchmark three

**Special education:** services offered to children who have one or more of the following disabilities: specific learning disabilities, speech or language impairments, emotional disorder, hearing impairments, orthopedic impairments, visual impairments, autism, combined deafness and blindness, traumatic brain injury, and other health impairments

“**Special Education Teacher:** a teacher who has completed the requirements for licensure in the area(s) of special education, a special education teacher provides specialized instruction to students who have an individualized education plan (IEP).
These specialized services can be provided in the regular classroom, a pull-out setting (special education classroom) or a combination of the two” (Atkins, 2009, p. 5).

Overview of the Methodology

The research design chosen was a mixed methodology study utilizing both quantitative and qualitative methods. The teacher-researcher chose to use mixed-method research to triangulate (to facilitate validation of data), to clarify and illustrate results from one method with the use of another, to provide value and detail to the study uncovering features of each method, and to give a comprehensive perspective in terms of quality and scale (Tashakkori & Creswell, 2007).

There were 405 students included in the analysis, including 350 students without disabilities and 55 students with disabilities. Student benchmark math data were used from the following eligibility categories of students with disabilities: Autism, Emotional and Behavioral Disorder, Other Health Impairment, Significant Developmental Delay, Specific Learning Disability, and Speech-Language Impairment. The number of students in each category was not listed here because there were students who qualified for services under multiple categories. The quantitative data were used to determine the relationship between instructional environment and progress attainment on benchmark assessment scores of students with and without learning disabilities. There were three sets of data, first, second, and third benchmark scores for a given assessment. This research used grounded theory techniques to develop a theory revealed by data (Creswell, 2007). Themes revealed in the interviews, student assessment data, and observations were examined to develop conclusions grounded in data.
The dissertation study was conducted in an elementary school and focused on current, co-teaching partnerships between regular education teachers and special education teachers who co-teach in an inclusion classroom. Data for this study were collected during the 2010-2011 school year. Structured, individual interviews were audio taped with each co-teacher participant. Classroom observations of the co-teacher team as they co-taught in the general education classroom took place during the course of study. The research investigated what impact co-teacher collaboration had on rates of progress attainment (ROPA). It also investigated the effects of co-teaching on the academic progress of students in a math inclusion classroom and students who were not in an inclusion math class.

Organization of Study

This dissertation consists of five chapters. The first chapter provided a background of the proposed study, established the problem statement, outlined the purpose of the study, and stated its significance. In addition, Chapter One gave a general idea of the methodology, identified the key research questions, and outlined the organization of the dissertation. Chapter Two described the conceptual framework of the study, and provided a summary of empirical research on inclusion of students with disabilities in general education classes, teacher collaboration, and co-teaching. Chapter Three included the elements of research design and methodology descriptions, detailed the site selection and identification of study participants, reviewed the role of the teacher-researcher, and described data collection and analysis methods. Chapter Four included a summary of findings. Chapter Five provided conclusions and implications for policy and practice. It also gave suggestions for future research.
CHAPTER TWO
REVIEW OF THE LITERATURE

Introduction

How can special education and general education co-teachers help students with disabilities improve their academic performance through collaboration? Are students learning in inclusion classrooms? Have co-teachers actually learned to collaborate? What can a school do to assure the success of students with disabilities without hindering the learning and progress of all students?

With the increase of students with disabilities included in general education classrooms, effective collaboration between general and special educators had become even more essential. Friend and Cook (2010) found, “The literature is filled with adages about the power and desirability of teachers' working collaboratively” (p. 29). Advocates of collaboration endorsed the theory that when co-teachers target how children learn, student work becomes fundamental to the business of teaching and learning. Villa and Thousand (1996) declared “collaboration enables school personnel to meet diverse student needs through shared expertise and ownership of problem definitions and solutions” (p. 170).

What does collaboration look like? Teachers collaborate on many different levels during the day. They may collaborate with a co-teacher or paraprofessional in the classroom. Sometimes teachers meet in professional learning communities and talk about student work and progress. That was collaboration, as well. What happens in a successful
collaboration can be stronger than what happens when teachers work alone (DuFour, 2003). There are multiple models of teacher collaboration, including “teacher study groups, teacher-researcher partnerships, professional learning communities, peer coaching, collaborative consultation, co-teaching, collaborative problem solving, and teacher mentoring” (Brownell, Adams, Sindelar, Waldron, & Vanhover, 2006, p. 170). In this study, co-teaching was the model used.

Research suggested collaborative teams create structures in which educators analyze and improve classroom practice. Teams must ask questions to promote deep levels of learning, which leads to higher achievement (Schmoker, 2003). Specified goals, strategies, materials, pacing, concerns, and results are examples of the structures (DuFour, 2004). DuFour found that all teachers need to belong to a team which focuses on student learning. He also said educators must base what they found to be effective on student academic measures. Teams should establish student-centered, measurable goals and identify current student achievement using common assessments. The data produced should be collected, analyzed, discussed and serve as the beginning of improved co-teacher practice.

Conceptual Framework

Bunker (2008) and Rose (2008) developed a framework which incorporated key components noted to contribute to successful collaboration. Bunker (2008) and Rose (2008) granted the teacher-researcher permission to use the framework for this study. Following is a description of the framework of the six components that Bunker and Rose used in their 2008 dissertation studies.
Six Key Components of Successful Collaboration

Component 1: School Culture and School Climate

It was crucial to realize that values, culture, practices and structures are what set cultures apart. Cultures can have unusually distinctive and individual ways of working. Some schools are particularly authoritarian while others are nurturing. “Teaching practices, diversity, and the relationships among administrators, teachers, parents, and students contribute to school climate. Although the two terms are somewhat interchangeable, school climate refers mostly to the school's effects on students, whereas school culture refers more to the way teachers and other staff members work together” (School Culture and Climate, n.d., para. 1).

Senge (1990) said, “The practice of shared vision involves the skills of unearthing shared ‘pictures of the future’ that foster genuine commitment and enrollment rather than compliance” (p. 9). Senge (1990) said a vision must be shared for it to be sustainable. A shared vision had the capacity to be inspirational and reassuring (Hughes & Kritsonis, 2006). Achinstein (2002) reported that shared vision and common values are essential to the effectiveness of collaborative teacher communities.

“In a collaborative culture, members of the school community work together effectively and are guided by a common purpose. All members of the community - teachers, administrators, students and their families - share a common vision of what the school should be like” (Turning Points: Guide to Collaborative Culture and Shared Leadership, 2001, p. 3).
Component 2: Clear Goals

Clear goals of a school serve to establish direction. Goal statements must be research-based and developed by the group with a focus on the basics, used as an outline for improvement, and widely shared (DuFour, 2004). Setting clear goals helps the school to guide the mission of the school. It allows for the celebration of small successes and the establishment of priorities. Goals can be used to assess progress toward a vision. The school goals are based on student achievement. To monitor goal progress, the school can seek the answer to this question: What do we want students to know and how will we assess progress? Periodic benchmark assessments helped to guide instruction. Teachers have data that show strengths and weaknesses and what they need to work on to meet the standards. These goals provide short-term priorities and steps to take to achieve the “benchmarks”.

Component 3: Attention to Results

All effective, collaborative, learning communities are results driven (DuFour, 2004). The communities focused on increasing student achievement, developing and testing hypotheses, and evaluating theories. In a collaborative community, the emphasis was not only on the goals of an individual, it was making the goals of the group a priority. Schools are judged by what students know and what they can do. Once the student outcomes have been established, it must be decided what knowledge and skills need to be taught to help students achieve the district's standard of success. What teachers need to learn and do then, becomes the school’s professional development curriculum.
Component 4: Use of Time and Structures

Supovitz and Christman (2005) and Sather (2005) reported that teachers, researchers, and policymakers often indicated the lack of time to be the greatest challenge to professional development. “Regularly scheduled mutual planning time is an important opportunity for co-teachers to communicate in order to plan and to replace traditional practices with inclusive ones” (Fennick & Liddy, 2001, p. 237). Co-teacher collaboration usually takes place before or after school or in the summer, intruding on teachers’ personal time; or during planning times, encroaching on the time needed for other tasks; and even on a school-wide staff development day (MacNeil, Prater, & Busch, 2009).

A school’s schedule often does not incorporate time for teachers to consult or observe colleagues. Maybe there was no scheduled time to participate in professional learning. Administrators often discourage anything that takes teachers away from working directly with students. Teachers commonly feel guilty about being away from their classrooms for professional development activities (DuFour, 2004).

Giving teachers time to meet does not automatically modify teaching practices. To improve instructional practices, “teachers needed a variety of structures, including time, leadership, resources, incentives, organizational arrangements and ongoing professional development to support their growth” (Supovitz, 2002, p. 1597).

Component 5: Deprivatization

Another obstacle to collaboration was the tradition of teacher isolation (deprivatization). As a rule, a teacher was confined to his/her classroom where they follow a schedule that included only the teacher and students (Friend & Cook, 2010). Rarely does the individual teacher get an opportunity to work with peers in an attempt to
improve their practice. With the focus on student learning and a mandate to achieve high test scores, the individual teacher was seldom provided the chance to view other classrooms and teachers and/or attend professional development, except on their own time.

The ongoing isolation of special education teachers from their general education colleagues can promote a sense of bias in schools where a lack of equality becomes a dominant issue (Friend & Cook, 2010). Administrators are under pressure to find time in the school day to build in collaborative time, but not at the expense of student instructional time. This sense of isolation leads teachers to focus simply on their own situation instead of the overall picture. This isolation also leads to a lack of shared knowledge regarding current and best practices, a lack of opportunity to share successes and failures with peers, and a tendency of teachers to view collaboration as a threat to their autonomy. Often, teachers are so accustomed to working in isolation, that a collaborative atmosphere becomes a threat.

Since the basic idea of collaboration was collective inquiry, and reflective discussion, teacher isolation becomes impossible in a building where a true collaboration exists. Therefore, creating this collaborative atmosphere had often been described as the most beneficial factor for a successful school improvement plan (DuFour, 2004). However, care must be taken not to simply “throw teachers together” in an attempt to build a collaborative atmosphere.

While teachers often speak of having to be flexible and open-minded, when it comes to critically reflecting on their own teaching practices and methods, they often fall short. In order to work collaboratively, teachers will have to stop worrying about losing
authority or that someone may have a better idea (and automatically assuming that their own idea was not significant and/or not feasible) and work toward the goal of student achievement (Talbert & McLaughlin, 2002). Breaking out of this pattern of isolation requires a sustained and concentrated effort. This meant making a conscious attempt at being nonjudgmental and keeping an open mind to new ideas and/or suggestions.

Collaboration does not end with the simple formation of teams. True collaboration occurs when the group was no longer isolated and had agreed upon outcomes with measurable goals and objectives. Student learning and achievement was at the center of all collaborative efforts by teachers, and no one teacher can or should do it alone. Guskey (2005) wrote “Deprivatization prevents shared decision making. Collaborative teacher teams who deprivatize their practice counteract this isolationism and provide concrete means for conversation” (p. 302).

Component 6: Reflective Dialogue about Practice

The research of Langer and Colton (2005); DuFour (2004); King and Newmann (2000); and Scribner, Sawyer, Watson, and Myers (2007) revealed that reflective teachers are more purposeful about what they do in the classroom, showing concern with their practice that impacts student learning and growth. Throughout the literature, the benefit of a reflective practice for teachers consisted of the ability to analyze and learn from their practice and to identify their own learning needs. DuFour (2004) reported it was first essential to establish clear priorities for reflection that came from educational and social philosophy. Establishing clear priorities can produce implications for impacting teacher practice. The impacts are well documented throughout the literature.
Dieker and Monda-Amaya (1995) outlined benefits that result through reflective practice. First, reflection arms teachers with a tool for making orderly changes in the instructional environment. Second, through reflection a teacher can evaluate the purpose and effectiveness of instruction. Third, reflection was a process for thinking about how to relate content and past classroom practices to make changes in instruction. Last, reflection becomes the process for systematically evaluating challenges in teaching/learning to initiate positive solutions. According to Lester (1998) teachers who reflect on their teaching practice not only improve their existing instructional skills, but are also equipped to be lifelong learners themselves.

According to DuFour (2004), not only do reflective teachers build connections between theory and practice and develop new knowledge and understandings, they develop a greater sense of empowerment as they recognize and tap into their own internal capacities. Reflection can be challenging due to a large class size, high-stakes accountability, and curriculum demands. All of this may make it difficult for teachers to be truly reflective in their practice. Too often the reality was that teachers rarely think or talk about their teaching practices and how they impact student success. If reflection was a learned behavior, working teachers may not have developed the ability to reflect critically on their practice (Danielson, 2008). Many teachers, instead of looking judgmentally at their practice, discuss low achievement in terms of outside influences, such as lack of parental involvement, student apathy, and/or low socioeconomic status.

Perhaps many teachers may not see the value in reflection because they may think it takes time away from the day-to-day business of the classroom. The challenge for administrators was to create time and a system for job embedded reflection (Guskey,
2000). This will enable teachers to see the relevance that reflection has on practice. It will serve to connect reflection to their professional growth and student success.

Many schools are using the development of collaborative teams as a fundamental strategy to improve teaching and student learning. These efforts based on the theory that teachers that are personally invested in schools are the supreme solution to the problems driving school reform (Schmoker, 2007). We must ensure that the collaborative co-teacher processes, we envision now, provide enduring understanding and achievement of all students.

Studies of Collaboration

Much of the current research suggested that when co-teachers collaborate, asking and answering questions informed by data from their own students, their knowledge grows and their practice changes. General education teachers stated that collaboration with their special education team-mates increased their skills in adapting/modify the curriculum and improving classroom management (Austin, 2001).

Horn (2006) found in a study with a group of collaborating math teachers that “they are seeing more evidence of students’ understanding challenging mathematics, even among the students without passing grades” (Horn, 2006, para. 11). True collaboration improved the quality of teaching. It considerably increases student achievement and can give schools immediate dividends in the professional development of mathematics teachers and leaders (Schmoker, 2005).

Kazemi and Franke’s (2004) research study described teachers’ collective work in which they developed a deeper understanding of their own students’ mathematical thinking. “The knowledge and beliefs that teachers constructed, however, emerged from
their contributions to the creation and continual development of the practice of workgroup meetings and their classroom communities” (Kazemi & Franke, p. 241).

In Olverson and Ritchey’s (2007) reported on using collaboration and student assessment data to improve student achievement. They found “teachers utilized the results from the assessments to monitor which instructional strategies were more effective based on the data and academic gains” (Olverson & Ritchey, 2007, para. 2). The teacher-researcher used this format of analysis for this study.

Marsh, Pane, and Hamilton (2006) learned from their research that when co-teachers meet to discuss data they want data that are timely, and data they feel accurately measures student learning. When co-teachers are considering altering their teaching practice, they want data that are relevant (Cochran-Smith, 2008). Co-teachers agreed that student work and periodic benchmark assessments are more valuable to instructional practices than standardized test scores. Data can point to problem areas, but it provided little guidance for improvement. Those beliefs have not changed district and even school improvement plans’ use of local or state standardized test data to conduct annual progress monitoring reviews (Marsh, Pane, & Hamilton, 2006).

“Most teachers reported that the co-teaching strategies were beneficial not only to students with disabilities, but with other struggling students. The interview and test data supported an increase in student learning in the co-taught classroom for regular education students” (Rigdon, 2000, p. 65).

Perceptions

Daane, Beirne-Smith, and Latham (2000) studied the perceptions of general and special educators using survey and semi-structured interviews. This study was designed
to address co-teachers’ collaborative efforts, instruction of students with disabilities, teacher readiness for meeting the needs of students with disabilities, and achievement. The study reported that the general and special education teachers were collaboratively planning IEPs and using team teaching in inclusive classrooms.

Co-teachers usually have positive perceptions about collaborative teaching. Chapple’s (2009) study examined general educators’ perceptions about collaborative teaching and found that co-teachers perceive themselves as incompetent when it comes to implementing a truly collaborative practice.

Foley and Mundschenk (1997) examined general educators’ perceptions about collaborative teaching and found that co-teachers feel that they have inadequate collaboration skills. DeSimone and Parmar (2006) examined middle school mathematics teachers’ perceptions of teaching students with learning disabilities (LD).

The findings revealed three central issues: (1) teachers had a limited understanding of the mathematics learning needs of students with LD; (2) teacher collaboration was judged to be the most beneficial and available resource by general educators teaching students with LD in inclusive mathematics classrooms; and (3) teachers did not feel that teacher education programs at the preservice level and professional development at the inservice level were adequate in preparing them for teaching students with LD in inclusive mathematics classrooms. (DeSimone & Parmar, 2006, p. 98)

The teacher-researcher believed that it was crucial to develop an understanding of what perceptions general and special educators have about factors that contributed to the success of the collaborative teaching models. The hope was to gain a better understanding of collaboration by examining how they conceptualize their interactions with one another. The broad idea of co-teacher collaboration had benefits. A discussion of the benefits and challenges with teacher collaboration may have helped teachers to understand the concept of co-teacher collaboration.
Facilitation of Collaboration

Positive outcomes were documented for co-teachers. In their structured-interviews, co-teachers stated that because there are two highly-qualified teachers in the classroom, they are more effective, and more students were served each day (students with and without disabilities). The positive changes experienced by the co-teachers rolls over into the classroom, often as a more positive environment for learning. Guarino, Santibanez, and Daley (2006) and McClure (2008) believed that there was a link between co-teacher collaboration and student achievement, but more research was necessary. When special education and general education teachers spend more time together they decreased their sense of isolation and improve their understanding of each other’s programs and services.

Cole, Waldron, and Majd (2004) wrote that the stigmatization of students with disabilities can stop when the students with disabilities remain in the general education classroom versus leaving, calling attention to themselves. Effective co-teacher collaboration helps to ensure that special needs of a student were accommodated within the classroom context. Collaboration can be a benefit for students with disabilities making the transition from a more restrictive to a less restrictive environment. Many students without diagnosed disabilities benefit when teachers collaborate. Depending on the approach used by the collaborating teachers, students without disabilities have the opportunity to be grouped for small-group instruction, benefitting from the additional teacher in the general education classroom (Friend & Cook, 2010). The co-teachers learn from each other, so in turn, they pass that knowledge on to all students. McClure (2008) confirmed the notion that instruction for students with disabilities was enhanced when
co-teachers collaborate to share instructional goals, plan and deliver instruction, and monitor student progress.

It was vital that co-teachers have a support system such as a mentoring or professional group in which they are able to share insights and support. One of Copland and Knapp’s (2006) five tenets for successful school reform was building learning communities that value education. To achieve this goal, co-teachers must be trained. Lohrmann and Bambara (2006) conducted a case study of general education teachers who included students with developmental disabilities in their classrooms and discovered ongoing supports and resources played a crucial role in the success of inclusion. Copland and Knapp (2006) emphasized that ongoing staff development must be provided to maintain this arrangement once it was achieved.

Senge (1990) wrote that businesses needed to reform themselves into learning organizations to be able to grow in organizational capacity. Educational leaders soon adopted the idea of a learning organization. Senge (1990) recognized schools as being “a place where learning can be dedicated to the idea that all those who are involved with it, either individually or as a team, can strive to enhance and expand their awareness and capabilities” (p. 219).

Leithwood and Louis (1998) reported it would take a learning organization that learned continuously to meet future needs. In organizations, teams, not individuals, are the primary learning components (Senge, 1990). Senge claimed individuals within a successful team grow faster than if they were not in a team. Collaborative learning teams should design strategies to ensure struggling students receive extra time and support, no matter who the teacher (DuFour, 2004; Wells & Feun, 2007).
Jennings (2006) claimed for schools to improve, a staff must develop the ability to function like a collaborative learning community. To function like a collaborative learning community, they must develop a collaborative culture. Relationships among the members are extremely beneficial to successful teacher learning in the community. This was true in the development of co-teacher teams, as well. Because of this mutually connected relationship, members explicitly recognized the "groupness," "wholeness," "togetherness," or "sharedness." In this paper, the collaborators were co-teachers. They share their teaching workload and responsibilities at the same time. Co-teachers need such "sharedness" or "togetherness" to work effectively. Walther-Thomas, Korinek, McLaughlin, and Williams (2000); Morrissey (2000); DuFour (2004); and Klingner (2004) agreed that collaboration was a large component of vertical teams and collaborative learning communities. Collaboration had extensive and varied contributions.

In Vescio, Ross, and Adams’ (2006) review of studies examining the effectiveness of learning communities, it was found that collaboration improved, and co-teachers became more focused on student learning. This change in teacher culture encouraged teachers to share, to reflect, and to embrace change. Six of the studies reported improved student achievement scores; implying collaborative learning communities can cause a positive change.

Hindrances to Collaboration

If asked what the principal obstacle was to teacher collaboration, collaborating co-teachers would say time. Khorsheed (2007) reported the “time teams needed to examine student work, analyze assessment data, and plan common lessons” (p. 44) was noted as
an obstacle in numerous collaborative reports about collaboration. In some schools, teachers take time away from their classrooms to collaborate with teachers. The lack of sufficient time can lead to hurried problem-solving and ineffective ideas. The absence of time can prevent teachers from efficiently working like co-teachers. There was no perfect solution to the problem of insufficient time to collaborate, but schools are beginning to generate creative ways to use time within demanding schedules (Khorsheed, 2007).

Second principal hindrance to collaboration was time and money it takes to train co-teachers. Many teachers have a natural ability to collaborate (work cooperatively) without any training. Still others need training. They may need skills that were never needed before, such as, communication and conflict resolution. They may also need information on how to listen to one another, and how to manage confrontation (Leonard & Leonard, 2003). Time must be set aside to develop these skills. Without adequate time, collaboration was unlikely to be sustained. Training and professional development must be considered when making the decision to collaborate.

The next hindrance was to teachers who are most comfortable working in isolation. Traditionally, teachers were satisfied with working alone where they receive little input from others. When considering collaboration, teachers who are comfortable with being on their own, may find collaboration a bit terrifying. Another hindrance to collaboration was the possibility of confrontation and conflict among co-teachers. The more time adults spend together the more likely differences will develop. Many teachers are uncomfortable with confrontation and conflict; they may find it uncomfortable and may prefer to evade facing issues as an alternative to participating in a disagreement (Friend & Cook, 2010).
The misconceptions of collaboration are: teachers believed they do not have vital contributions to make, it would take too much time, and that their skills would be evaluated or judged (Cook & Friend, 2010). Administrators need to pay attention to these issues.

Effects Collaboration Had On Student Achievement

Most of the existing research provided little proof of cause-and-effect relationships. Goddard, Goddard, and Tschannen-Moran (2007) conducted a study “to review the literature and empirically test the relationship between a theoretically driven measure of teacher collaboration for school improvement and student achievement” (Goddard, Goddard, & Tschannen-Moran, 2007, p. 877). The “results provide preliminary support for efforts to improve student achievement by providing teachers with opportunities to collaborate on issues related to curriculum, instruction, and professional development” (Goddard, Goddard, & Tschannen-Moran, 2007, p. 878). There was evidence collaboration had provided the opportunity and best practice to improve student achievement, but it was still difficult to find examples of collaboration as practice (DuFour, 2004).

There are those who believe that students with disabilities educated in the general education classroom will, somehow, affect students without disabilities’ academic achievement (Hornstra, Denessen, Bakker, van den Bergh, & Voeten, 2010). According to Cole, Waldron, and Majd (2004), the debate becomes, what effects will the general education teacher see? Will the rigor of student work become boring to students without disabilities? Will students with disabilities experience frustration trying to keep up with that same rigor?
Inclusion advocates claimed that academic achievement was enriched when students with disabilities were held to higher standards in a general education classroom. Research had suggested that educating students in general education classrooms results in advancing of academic achievement, higher test scores, and behavior and attendance improved for both students with and without disabilities (McLeskey & Waldron, 2000; Rea, McLaughlin & Walther-Thomas, 2002; Peterson & Hittie, 2003).

There was a lot of literature on the impact of inclusion for students with disabilities but not much for the impact on students without disabilities. Kalambouka, Farrell, Dyson, and Kaplan (2007) conducted an empirical review that studied the relationship between inclusion and the results it produces for students, especially students without disabilities. “Overall, the findings suggest that there are no adverse effects on pupils without SEN of including pupils with special needs in mainstream schools, with 81% of the outcomes reporting positive or neutral effects” (Kalambouka, Farrell, Dyson, & Kaplan, 2007, p. 365). SEN stands for special educational needs.

The vast majority of studies reviewed found no evidence of any harmful consequences on the academic performance of all pupils of placing students with disabilities in general education classrooms (Sharpe, 2001). Detailed analyses studied provided no evidence that inclusion had a negative effect on pupil attainment (Betebenner & Linn, 2009). Most research supports inclusion. “When executed effectively, research shows that inclusion has positive benefits for both students with and without disabilities. Students with disabilities can and do make good progress academically, personally and socially. Such progress is not guaranteed, partly because of the significant difficulties some of them face” (Katz & Mirenda, 2002, p. 15).
Collaboration and Distributed Leadership

While most authors agreed upon various features of collaboration, many do not agree upon the foundational method for its creation and promotion. Fink and Brayman (2006) defined a collaborative learning community as a practice that broadens and distributes leadership in a school. Schools have experimented with distributed leadership by organizing teachers into collaborative learning teams to identify and solve predefined problems that are barriers to student learning. Sheehy (2007) revealed part of the logic behind a collaborative learning community team was that it enables the school to access the distributed and collective knowledge of the school’s staff. Sheehy (2007) reported that collaboration of teachers gives them skills they need to meet the diverse needs of students with and without disabilities. Collaboration served to refocus teachers to become problem-solving teams.

Leadership should not necessarily be shared by all. It should, however, be shared by different people in different times and situations. "Distributed leadership brings various opportunities for learning from each other which allowed teachers to ‘speak the same language’ and enhances professional dialogue among them. It also helps to build collective intelligence by tapping into teachers’ talents and strengths. Shared leadership provides emotional and peer support which increased risk-taking and self-confidence” (Yashkina, 2007, p. 13).

A distributed perspective on leadership suggested that the conditions for student learning may be improved when administrators facilitate teacher participation in meaningful, collaborative activities focused on overcoming barriers to student achievement. Administrators need to foster conditions that support such collaboration,
and they must draw upon the expertise distributed throughout the organization (Gronn, 2000; Sheehy, 2007; Spillane, Halverson, & Diamond, 2001).

It was a common assumption among advocates of school improvement and distributed leadership that teacher collaboration was a worthy foundation that will produce positive results (DuFour & Eaker, 1998; Kruse, 1999; Scribner, Sawyer, Watson, & Myers, 2007). Decisions came from collaborative dialogue, not by a single individual. Collaborative dialogue was what Spillane, Halverson, and Diamond (2001) defined as the social distribution of leadership.

Summary

The review of the literature was based on the idea that co-teaching was an effective form of collaboration. It was fast becoming the way to serve students with disabilities that are required to be in an inclusive general education classroom. The co-teachers collaborated to develop, implement, and evaluate educational programming for students with disabilities.

The review included studies of collaboration which clarified the principles of inclusion, collaboration, and co-teaching with explanations of how co-teaching had progressed through the years in classrooms. In general, teachers had positive perceptions about collaboration, co-teaching, shared responsibility, skills needed to implement collaboration, and role clarification. Co-teachers indicated that the greatest challenge in implementing effective collaboration was the lack of time (Khorsheed, 2007).

There was insufficient literature that connected the academic performance of students with co-teaching. The research indicated that schools that had higher levels of collaboration had higher levels of student achievement. It was apparent that more
research in this area was needed (Mickelson, 2008). A lack of pragmatic research connecting collaborative teaching to student achievement further indicated this dissertation had solid reasoning for conducting a research study.

“It is hoped by understanding the leadership roles and responsibilities of co-teaching, educators may better understand and nurture a co-teaching model that supports students in an inclusive environment” (Sheehy, 2007, p. iii). This study used components identified in the literature as critical to successful collaborative co-teacher models. A framework for collaboration was applied in an elementary school, to answer the following questions:

1. How does disability status and instructional environment influence the rate of math benchmark progress attainment of third, fourth, and fifth grade students?
2. How do co-teachers describe the effect collaboration had on student achievement in math?
3. What factors do co-teachers report facilitate collaboration with colleagues?
4. What factors do co-teachers report hinder collaboration with colleagues?
5. What factors do co-teachers report facilitate change in student achievement?
6. What factors do co-teachers report hinder change in student achievement?
CHAPTER THREE
METHODOLOGY

Research Questions

A framework for collaboration was implemented in an elementary school, to answer the following questions (Achinstein, 2002; Bunker, 2008; & Rose, 2008):

1. How does disability status and instructional environment influence the rate of math benchmark progress attainment of third, fourth, and fifth grade students?
2. How do co-teachers describe the effect collaboration had on student achievement in math?
3. What factors do co-teachers report facilitate collaboration with colleagues?
4. What factors do co-teachers report hinder collaboration with colleagues?
5. What factors do co-teachers report facilitate change in student achievement?
6. What factors do co-teachers report hinder change in student achievement?

Ho1: There was no difference in progress attainment in math achievement scores for students in inclusion math classes and those in non-inclusion math classes.

Research Design and Methods

The research design chosen was a mixed methodology study using both quantitative and qualitative methods. This research used grounded theory techniques to develop a theory revealed by the data (Creswell, 2007). Themes revealed in the interviews, student assessment data, and observations were examined to develop conclusions grounded in the data.
Setting

This study was conducted at Southern Elementary School (pseudonym), a suburban elementary school in the Southeastern part of the United States. The school was selected by the teacher-researcher based on convenience. The teacher-researcher was a special education inclusion co-teacher in the school and had access to the faculty, students, and resources within the school.

Southern Elementary School was established in August 1990. Within five years of the establishment of Southern Elementary School, a large low income apartment complex was built in the school attendance area. The socioeconomic and cultural situation for the school district changed. At Southern Elementary School, 14% free and reduced lunch in 1997 increased to 57% in 2010. The English Language Learner numbers changed from <1% in 1997 to 13% in 2010. Eight years after Southern Elementary School was established, attendance had increased and to accommodate the growth, additions had to be made to the existing building. Table 1 displayed the demographics of the school and students.

Table 1

<table>
<thead>
<tr>
<th>Demographics of Southern Elementary School (Grades Third, Fourth, and Fifth)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Students</td>
<td>982</td>
<td></td>
</tr>
<tr>
<td>Poverty Level-Free/Reduced Lunch</td>
<td>560</td>
<td>57%</td>
</tr>
<tr>
<td>English Language Learners</td>
<td>128</td>
<td>13%</td>
</tr>
<tr>
<td>Students with Disabilities</td>
<td>108</td>
<td>11%</td>
</tr>
<tr>
<td>Total Inclusion Rooms in School</td>
<td>8</td>
<td>21%</td>
</tr>
<tr>
<td>Total Non-Inclusion Rooms in School</td>
<td>30</td>
<td>79%</td>
</tr>
</tbody>
</table>
In the summer of 2009, Southern Elementary School contracted a new principal. The principal was not responsible for hiring any of the school staff, but was responsible for the assignment of staff to specific co-teaching teams. The school population had increased 18% over the past 2 years. Over half (57% - 40) of the 69 teaching staff had taught at the school for 10 years, and 90% (62) of the current teaching staff had been at the school for 5 years or longer.

According to the Georgia Department of Education Report Card (GA DOE, 2010), Southern Elementary School’s overall score in reading for students with disabilities was 66.5%. This score meant that 66.5% of students with disabilities either met or exceeded the state performance standards in reading. However, Southern Elementary School’s targeted learning gains were not achieved in math (47% of students with disabilities met or exceeded state performance standards). The discrepancy between reading and math achievement for students with disabilities was nearly 20 percentage points. So, in the fall of 2009, anticipated challenges of students with disabilities meeting the mathematics performance standards prompted conversations about the need for possible changes in teaching approaches to continue to meet the needs of the diverse student population.

At the beginning of the 2010-2011 school year, the system allocated resources to support the development of co-teacher collaboration. The school decided to meet this challenge by attaining assistance from “Georgia Learning Resources System (GLRS), a network of 17 centers throughout Georgia that provide training and resources to educators and parents of students with disabilities” (GLRS, 2011, para.1). Upon request, GLRS contracted to provide the Southern Elementary School with a model of support
which consisted of a combination of site-based face-to-face professional learning, classroom observations with feedback, and support with assignments that focused on improving instruction. The support also comprised effective co-planning, co-teaching in a standards-based classroom, progress monitoring, and differentiating instruction in math (Georgia Learning Resources System, 2011).

Southern Elementary School assigned students to inclusion classrooms according to the student’s individualized education program (IEP). The inclusion classrooms were considered heterogeneous. An inclusion classroom should include services in the general education classroom, curricular expectations appropriate to meet grade level standards and goals/objectives of the students’ IEPs, professional development, and collaboration (McLeskey & Waldron, 2002).

As part of the collaborative math initiative, the school modified the amount of time for math instruction from sixty minutes per day to one hundred five minutes. This schedule provided math instruction 5 days a week in both inclusion and non-inclusion classrooms. During that time, the role of the special educator was to co-teach, instruct small groups of students, and work one-on-one with students, as needed. In addition, the special education teacher co-planned with the general education teacher for at least 30 minutes per week. The math curriculum and time spent teaching math (60 minutes for problem-solving and 45 minutes for skills) in both inclusion and non-inclusion classrooms were identical.

Southern Elementary School’s model of collaboration (co-teaching) and the framework for this study were based on practices reported in the research of Bunker (2008) and Rose (2008). “While many anecdotal reports were promising, questions about
the collaborative model and student achievement remain. This resulted in the
development of a structured collaborative model which incorporates six key components
the literature reports as critical for successful collaborative models” (Bunker, 2008, p.4).
Bunker (2008) and Rose’s (2008) Six Key Components of Successful Collaborative Models are:

- **School Culture and School Climate**: Continuous academic improvement is supported by a shared vision, broad agreement about practices related to curriculum, instruction and assessment, and collaborative practices.
- **Clear Goals**: Goals, based on specific academic strengths and needs of the student population are specific, measurable, and focused on student achievement.
- **Attention to Results**: Co-Teaching teams, composed of grade level teams of teachers, based their success on the academic growth of their students. Teams of co-teachers created student goals and measured results, on a regular basis.
- **Use of Time and Structures**: Time was scheduled for each professional learning community to meet in collaborative co-teacher teams.
- **Deprivatization**: Collaborative teams of co-teachers shared instructional practices and discussed results of formative and summative assessments. Then, the co-teachers celebrated successes and discussed room for improvement.
- **Reflective Dialogue about Practice**: Teams of co-teachers discussed, questioned, congratulated and critiqued professional practice within their
collaborative learning community. This led to the generation of new ideas and instructional practices to increase student success.

Overall and Sample Populations

In the spring of 2010, the principal at Southern Elementary School scheduled meetings with all teachers and staff to discuss details of their specific placement within the school for the following school year. He chose co-teaching teams using teachers’ suggestions and requests. In individual conferences with teachers, the principal discussed the choices that he had made for class placements, co-teaching teams and his philosophy behind his choices.

The co-teaching teams were notified that training had been planned for the 2010-2011 school year. The plan included 2 third grade classrooms (two classes shared one special education teacher), 2 fourth grade classrooms (two classes shared one special education teacher), and 4 fifth grade classrooms (four classes shared two special education teachers). These classes were used to integrate students with disabilities into the general education classroom using the collaborative model.

All co-teaching teams (special and general educator collaborative teams) were invited to participate in the teacher-researcher’s dissertation study. The teams consisted of eleven teachers (four special education teachers and seven general education teachers). The teacher-researcher shared the letter of invitation at a staff meeting in August 2010 (Bunker, 2008). The invitation had information about the data to be collected, promise of confidentiality and anonymity, and who to contact if they had concerns about their participation. After the invitation had been explained, teachers consenting to participate in this study signed a prepared consent letter indicating their interest and willingness
(Bunker, 2008). All of the co-teachers signed the consent forms (11-100%). The Invitation to Participate Letter can be found in Appendix A.

The System’s five-year improvement plan provided an emphasis on accelerated student achievement, effective communication, efficient operations, and accountability. Part of Southern Elementary School’s attempt to meet the System’s Improvement Plan included scheduled time during the school day to collaborate with grade level teams, and a co-teacher observation checklist to report on the process. The meeting time for each collaborative co-teacher team was allocated regardless of the teacher’s decision to participate or not participate in the study.

As participants in the study, co-teachers gave consent to the teacher-researcher to use the math benchmark assessment data generated by the students in their classrooms. Co-teachers who gave consent had the data they generated included in the analysis to assist in answering the research questions. An additional request of participants was to be interviewed. Although participation in the collaborative work was a requirement of the school improvement plan, inclusion of data generated in this study and the structured interviews was described as voluntary and confidential (Rose, 2008). All of the eleven co-teachers gave their consent. Table 2 demonstrated the demographics of participating co-teachers at Southern Elementary School.

Student achievement data came from the central administrative office of the school district. In an attempt to triangulate the data (Creswell, 2007) and to develop statistically significant benchmark test data, the teacher-researcher chose to incorporate student data from non-inclusion classrooms, as well. To obtain the statistically significant sample (Creighton, 2007) of students without disabilities (GENED), two non-inclusion
classrooms were randomly selected from third grade, two non-inclusion classrooms from fourth grade, and four non-inclusion classrooms were randomly selected from fifth grade. This yielded an equal number for grades 3 through 5, half being inclusion general education classrooms and the other half non-inclusion general education classrooms. The total sample was 4 third grade classes, 4 fourth grade classes, and 8 fifth grade classes.

Table 2

<table>
<thead>
<tr>
<th>Class</th>
<th>Co-teacher</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>EXP Avg Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GENED</td>
<td>SWD</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Inclusion</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Non-Inclusion</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

There were 405 students included in the analysis, including 350 students without disabilities (GENED) and 55 students with disabilities (SWD). The non-inclusion classrooms were randomly chosen (Seidman, 2006) by writing each of the respective grade teachers’ names on slips of paper, and the teacher-researcher randomly chose names to match grade level. Once the eight teachers were chosen, they were invited to participate in this study.

A letter of invitation for participation in this portion of the study was given to the teachers. Information about the student academic data collected, confidentiality, anonymity, and who to contact if they had concerns about their participation were included. After full disclosure, staff consenting to participate in this study signed a prepared consent letter (Rose, 2008) indicating their interest and willingness. The eight teachers that were randomly chosen all signed the agreement to allow their assessment data to be used in the study.
Student-level control variables included students identified as being in an inclusion classroom or being in a non-inclusion classroom and disability status. The dependent variables for this study were students’ scores on benchmark math assessments. The teacher-researcher used the recommendations from Goddard, Goddard, and Tschannen-Moran (2007) to determine the validity of the math assessments. “Content validity for scores on the assessment was suggested in two ways: (1) the involvement of expert educators in the development and selection of test items, and (2) the school district from which our sample was drawn followed the state model curriculum for which the mandatory assessment was developed” (Goddard, Goddard, & Tschannen-Moran, 2007, p. 884).

Access to Site

The policy of the school district required that central office approval must be obtained prior to conducting research in a school or classroom. Before conducting research, the teacher-researcher submitted a research proposal to the assistant superintendent of curriculum of the School District. The proposal included a brief summary, background and introduction, methodology, instruments, participants, data collection, data analysis, and time lines. The teacher-researcher met with the district’s assistant superintendent and secured permission to conduct the research study at Southern Elementary School (pseudonym). A letter of approval was received from the school district. Permission from the school district remained on file with the researcher.

Then, an application to the Kennesaw State University Institutional Review Board (IRB) was submitted at Kennesaw State University requesting permission to conduct this study. Permission was granted from the Kennesaw State University IRB. Finally, the
school principal was informed that permission to conduct the study had been granted by
the school district and Kennesaw State University. The initial training was offered by
GLRS.

The teacher-researcher’s twenty-two years of experience in education shaped the
perspective and vision for the study. During that time, the teacher-researcher had gained
valuable insight and understanding into how educators feel regarding the education of
students with and without disabilities. The teacher-researcher had experienced both the
inclusion and exclusion of students with disabilities – first as a general education teacher,
then as a school administrator, and presently as a special education inclusion teacher.
Through these experiences, the teacher-researcher had become familiar with many
educational interventions and strategies general education and special education teachers
utilize in schools. From the beginning of the teacher-researcher’s career in education, she
had believed that all children deserve the right to have an education, that all children can
learn, and all students can achieve high standards.

The teacher-researcher’s experience as an administrator in an elementary school
and co-teacher in the inclusion classroom made way for a desire to study co-teachers
whose students with disabilities were making academic improvements while receiving
special education services in the general education classroom. After recognizing the
importance of effective co-teacher collaboration, specifically co-teaching, and improved
student achievement (Smith & Leonard, 2005), the teacher-researcher designed the study
around this theme, complete with in-depth analysis and findings that the teacher-
researcher believed strengthens the knowledge base of what constitutes best practice in
inclusive elementary classrooms.
Value of Specific Methodology

The research design chosen was a mixed methodology study utilizing both quantitative and qualitative methods. The teacher-researcher chose to use mixed-method research to triangulate (to facilitate validation of data), to clarify and illustrate results from one method with the use of another method, to provide value and detail to the study using specific features of each method and to produce better results in terms of quality and scope (Tashakkori & Creswell, 2007). This research used grounded theory techniques to develop a theory revealed by the data. Creswell (2007) suggested that themes revealed in the interviews, student assessment data, and observations should be examined to develop conclusions grounded in the data.

Co-teacher teams were given three opportunities for face-to-face collaborative meeting times during the school year. For the purpose of this study, data were collected for eight months, from August 2010 to April 2011.

Instrumentation

*Benchmark Math Assessment*

The Southern Elementary School developed assessments and minimum standards of achievement for all grade levels, known as curriculum benchmarking, to determine if students were learning the skills that were taught. The school’s assessment committee identified state performance standards that were required to be taught and mastered to successfully meet standards on the state-mandated achievement tests (Bergan, Bergan, & Burnham, 2009). The math benchmark assessments were correlated with the school’s curriculum alignment and curriculum maps. For the purpose of this study, only math benchmark assessment data were utilized in third, fourth and fifth grades (Bergan,
Bergan, & Burnham, 2009). The math assessments contained 69 questions, which consisted of a variety of mathematical problems, including addition, subtraction, multiplication, division, geometry, measurement, algebra, and problem-solving.

**Co-Teaching Observation Checklist**

The Co-Teaching Observation Checklist (Appendix B) looked for evidence of collaboration (joint ownership of classroom space and responsibilities evident); co-teaching instructional formats; and instructional practices (research-based instruction, differentiation of instruction, consistent appropriate behavior management strategies are used by both teachers).

**Structured Teacher Interviews**

Teacher interviews (Appendix C) served as a way to illustrate the factors which influenced academic achievement. Teacher interview comments were analyzed for patterns and themes. Structured interviews helped to provide insight into teachers’ knowledge and attitudes toward inclusion and collaboration between general education teachers and special education teachers. The teacher-researcher adapted and compiled fourteen open-ended interview questions from interview and survey questions in the research of Murawski and Dieker (2008), Bunker (2008), and Rose (2008).

**Quantitative Methods**

According to Creswell (2007), the goal of quantitative research was to conclude what relationship exists between two factors. Quantitative methods rely on statistical analysis of numbers. Quantitative research can help to determine whether two or more quantifiable factors are related. In this case, it can be used to determine whether co-teachers’ collaboration was related to student achievement and what was the strength of
the relationship are both examples of when to use quantitative research method (Creighton, 2007).

Data Collection

The first question investigated was how does disability status and instructional environment influence the rate of math benchmark progress attainment of third, fourth and fifth grade students?

The benchmark assessments were given three times to assess academic progress in math during the course of one school year. The first benchmark was given in August 2010. The second benchmark was given in November 2010, and the third was given in February 2011.

Students received a score on the benchmark assessment that reflected the student's knowledge of basic skills and the ability of the student to apply those skills. For students with disabilities, administration of the benchmark assessments took place according to the student’s individualized education program (IEP). The assessments were administered either in the inclusion general education classroom, in the special education resource room, or another location in the school building. The procedures and times for administration were the same for all students with and without disabilities included in the study during all three administrations.

The quantitative research data consists of 3 sets of benchmark math scores for third, fourth, and fifth grade. The teacher-researcher chose to disaggregate the data because Creighton (2007) suggested that disaggregating data helps to uncover patterns, trends and other important information. Disaggregating data simply meant looking at test scores by specific subgroups (such as students with disabilities) (Betebenner & Linn,
This data was disaggregated by homeroom, grade level, inclusion and non-inclusion classrooms, and students with and without disabilities. Percentage test scores were examined to show the amount of progress from the first benchmark to the third benchmark (progress attainment). Was there a difference between inclusion classroom progress attainment and non-inclusion progress attainment? Was there a difference in the amount of progress attained by the students without disabilities in the inclusion classroom as compared to the amount of progress attained by students without disabilities in the non-inclusion classroom? Was there a discrepancy when comparing students with disabilities in an inclusion room and students with disabilities in non-inclusion classrooms for math (Cole, Waldron & Majd, 2004)?

There were 405 students included in the analysis, including 350 students without disabilities (GENED-students without diagnosed disabilities) and 55 students with disabilities. There were three sets of data; first, second, and third benchmark scores. Konstantopoulos (2011) recommended, given the structure of the data and the information that was desired from the data, a random effect mixed model should be chosen as the appropriate tool for analysis.

Students with disabilities, served in an inclusion classroom, and had taken all three math benchmark tests in the school, gave the teacher-researcher an intact group of 47 students. The next step was to calculate the students’ mean progress scores. The teacher-researcher found data that represented the mean progress of 187 students who were educated in inclusion settings (students with and without disabilities). The study compared that rate of progress attainment (ROPA) to that of the 210 students without disabilities (GENED) and eight students with disabilities who were educated in non-
inclusion general education classrooms (Cole, Waldron & Majd, 2004). Student 
achievement gains were analyzed in three ways. The first way was to determine whether 
significant differences existed in math scores for inclusion and non-inclusion groups. 
Next, the rate of progress attainment (ROPA) of students with disabilities and the 
students without disabilities was examined over the course of three math benchmark 
assessments. Lastly, the rate of progress attainment (ROPA) of students with disabilities 
was compared to that of students without disabilities (Cole, Waldron & Majd, 2004). 

Analysis identified sample subgroup similarities and differences with respect to 
initial status and rate of change of benchmark scores (progress attainment – growth from 
first benchmark score to third benchmark score). Within group analysis began by plotting 
the least squares trajectories of all students distinguishing between disability status and 
method of instruction received. This was evident in the plots of the OLS trajectories of 
students stratified by disability status and instructional environment. A visual inspection 
of the plots indicated that while the subgroups tend to differ in initial and final status the 
estimated rate of change (progress attainment) was similar for each group. 

All quantitative data analysis procedures were conducted using SAS 9.2 
(Statistical Analysis Software) to perform statistical analysis on quantitative data, to be 
used for complex calculations to analyze numerical data. It was used to describe, 
compare, and/or correlate the relevant variables. SAS 9.2 (2011) was chosen because it 
provided functions of various data analyses (Liu, 2003). 

Qualitative Methods 

The teacher-researcher chose to use qualitative research to gather information and 
aid in the understanding of human behavior and conditions that direct that behavior
Qualitative research was ideal for understanding how participants perceived their roles in collaboration. Since teachers were a vital part of the public school system, the teacher-researcher wanted to study co-teaching arrangements in an inclusive school between general education teachers and special education teachers in inclusion general education elementary classrooms, where all students were successful – both academically and behaviorally (Chapple, 2009).

Observations are a valuable data gathering tool in research, because they occur in real-time and provided a first-hand encounter recording “behavior as it is happening” (Merriam, 1998, p. 88). Georgia Learning Resource System (GLRS) funded a team of two certified special education teachers and one special education administrator as observers. Their training was from the Georgia Department of Education’s Special Education Services and Support. Friend and Cook (2000) developed a checklist that was titled “A Template for Observing the Implementation of Co-Teaching” (p. 48). To administer the observation, GLRS adapted Friend and Cook’s (2000) template to develop a standard checklist, which GLRS had titled “Co-Teaching Observation Checklist” (Appendix B). The observation checklist had been used by GLRS since 2007 to examine the roles and instructional actions of teachers working in co-taught classrooms. The focus of the observation study was to examine and record, through 30 – 45 minute classroom observations, the actions of collaborating teams in co-taught classrooms. This allowed the observers to explore issues around the classroom and space design, and location of inclusion classrooms (Georgia Learning Resources System, 2011). The observation form also included a best practice inventory. The Co-Teaching Observation Checklist looked for evidence of collaboration (joint ownership of classroom space and responsibilities);
lesson presentation, instructional practices and instructional materials; and co-teaching instructional models.

Structured Teacher Interviews (Appendix C) were conducted by the teacher-researcher to ensure that each interview was presented with exactly the same open-ended questions in the same order and that answers were reliably aggregated making comparisons and contrasts with confidence (Seidman, 2006). Structured interviews also helped to provide insight into teachers’ knowledge and attitudes toward inclusion and collaboration between general education teachers and special education teachers. The teacher-researcher adapted and compiled fourteen open-ended interview questions from interview and survey questions in the research of Murawski and Dieker (2008), Bunker (2008), and Rose (2008). The interview questions allowed the participants to discuss the issues encountered implementing interventions and collaboration with other teachers in inclusion classrooms. These questions helped the teacher-researcher to understand the teacher’s attitude toward inclusion, collaboration, and implementation of new interventions in the classroom. The interview questions were designed to investigate the impact of teacher collaboration on improved mathematics skills for all students, describe an effective co-teaching relationship, identify co-teaching strategies used, and identify conditions that contributed to an effective co-teaching partnership. The teacher-researcher conducted the person-to-person structured interviews individually with nine of the eleven co-teachers.

According to Seidman (2006), when interviewing yourself the questions may get jumbled, and answers may not fit the questions because you, as the interviewer, might be thinking about the next question. It would be easy to look ahead and get muddled.
Seidman (2006) also stated that interviewing someone about the work that the two of you do together was not productive because the subject may not feel secure in being open and forth-right. For the validity of the interview data, the teacher-researcher hired an assistant (certified special education teacher - not a participant in the study) to interview the remaining two co-teachers. One of the co-teachers to be interviewed was the teacher-researcher (special education teacher) and the other was the teacher-researcher’s co-teacher teammate. Interviews lasted about ten to fifteen minutes and were scheduled at the convenience of the individual participants.

*Data Collection*

In the development of the Co-Teaching Observation Checklist, the GLRS team used past research (Friend & Cook, 2007) to select quality indicators for the checklist that focused on co-teaching techniques, which proved to have an effect on improving student academic performance. These included co-teaching models; lesson presentation, instruction, instructional materials; and classroom structure. The observation team used the quality indicators to decide whether effective co-teaching practices were in place. While the checklist utilized does not include behavior counts, the measure was scored as evident (E) or not evident (NE). This measure promoted consistency in observation protocol. There were a total of three co-teaching observations in the 2010-2011 school year.

Table 3 contained data collection tools used to obtain qualitative data. Qualitative data analysis helped to uncover themes. Themes came from reviewing the literature and from the characteristics of the phenomena being studied. They also came from professional definitions, and from researchers’ values, theoretical orientation, and
personal experience with the subject matter (Creswell, 2007). The techniques the teacher-researcher used for discovering themes were based on: (1) an analysis of words; (2) a watchful evaluation of the literature; and (3) an intentional analysis of language structures.

Table 3
*Data Collection Tools: Qualitative Data*

<table>
<thead>
<tr>
<th>Title of Tool</th>
<th>Purpose</th>
<th>Timeline</th>
<th>Method data collected/utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-Teaching Observation Checklist</td>
<td>The checklist used indicators to decide whether effective co-teaching practices were in place.</td>
<td>January 2011</td>
<td>Analyzed level of co-teacher collaboration on the lesson that was taught and the activity within the classroom</td>
</tr>
<tr>
<td>Teacher Structured Interviews</td>
<td>Served as a way to gather qualitative data as a triangulation source.</td>
<td>March 2011</td>
<td>Co-teachers interviewed and comments analyzed for patterns/trends.</td>
</tr>
</tbody>
</table>

Interview data were gathered using a digital audio recorder. The interviews were transcribed to allow the teacher-researcher an opportunity to organize the data in a manner that was functional (Merriam, 1998). The interviews were transcribed verbatim using a personal computer and word processor. The data was then exported in NVivo9 (2010) computer database to facilitate analysis of data. The teacher-researcher’s aim was to find a computer program that helped with the organization and offer flexibility that would complement the analysis methods within grounded theory. The teacher-researcher chose NVivo 9 (2010) because it helped to organize the data, made qualitative data analysis faster, kept files electronically available, and provided a structure/framework.

The transcriptions were reviewed to identify categories of responses. “Using the qualitative study research questions and theoretical framework as guides, the research
data were examined for common patterns and themes” (Mickelson, 2008, p. 51). Ryan and Bernard (2003) recognized that identifying themes in qualitative research was a step in analyzing culture (p. 86), while Strauss and Corbin (1990) linked the themes of qualitative data with “conceptual labels placed in discrete happenings, events, and other instances of phenomena” (p. 61). Identifying themes in the qualitative data can be difficult because they are abstract.

Sorting the information into different themes required several process techniques for the researcher to use when analyzing data. When the information was processed in the qualitative case study, the teacher-researcher used the techniques of cutting and sorting word lists and key words in context (Ryan & Bernard, 2003). The teacher-researcher compiled detailed information by highlighting, cutting, sorting, pasting, and saving relevant text relevant to the theme (Seidman, 2006). Word associations required an examination of the text looking for word patterns of usage. With a qualitative analysis of the text, a summary of extracted findings was written based on the common themes (Betebenner & Linn, 2009).

Below are listed the questions that were studied using this qualitative data.

2. How do co-teachers describe the effect collaboration had on student achievement in math?

3. What factors do co-teachers report facilitate collaboration with colleagues?

4. What factors do co-teachers report hinder collaboration with colleagues?

5. What factors do co-teachers report facilitate change in student achievement?

6. What factors do co-teachers report hinder change in student achievement?
Validity of Interpretation

The teacher-researcher’s background may have had an effect on personal biases in relation to this research. Mehra (2002) said that the researcher cannot keep his feelings out of the research because once he starts the research, the research changes him.

The teacher-researcher took these steps to ensure that the research study would not be biased. The teacher-researcher interviewed co-teachers regarding teaching strategies and classroom management skills. During the data collection for this study, the teacher-researcher focused on the set of questions and observation criteria to maintain focus on the study. The teacher-researcher made it clear to the participants that the rationale for the study was not to evaluate the teachers. It was to conduct research.

Qualitative researchers view reliability and validity differently than quantitative researchers (Creswell, 2007). Schwandt (2007) said, “Trustworthiness was defined as that quality of an investigation (and its findings) that made it noteworthy to audiences” (p. 299). Mehra (2002) asserted that being able to trust research was important, especially in the field of education where practitioners are involved in people’s lives.

In this research study, the teacher-researcher established trustworthiness and credibility by using the basic strategies described by Gay, Mills, and Airasian (2006). The teacher-researcher used several methods of data collection; observation, benchmark assessments, interviews, and triangulation. An audit trail was established (Creswell, 2007; Gay et al, 2006; Mehra, 2002) to maintain accurate records of the observation, benchmark assessments, and interviews. Field notes with reflections were developed to further maintain accurate data. The teacher-researcher explained her qualifications to the
participants at the beginning of the data collection. She also clarified her assumptions with the participants during the course of the data collection.

Limitations and Delimitations

The following should be considered when reading this study. First, this study only had a limited scope, because the teacher-researcher examined the collaboration in one elementary school. The influence of the teacher-researcher’s presence on the co-teachers’ actions and the interactions between teachers and students was not known. The statements made by co-teachers during the interviews may not be conclusive because there was no absolute method to determine truthfulness. Observations and interviews discussed are only a portion of the facts. Other methods of data collection or analysis may prove different perspectives on the facts.

This study was focused on how student achievement was affected by collaboration. The teacher-researcher left out students’ opinions, current school goals and values, and specific teaching techniques. To achieve collaboration that directly affected student achievement, the co-teacher became the prime source for information. Student achievement was a direct result of co-teacher commitment and was the focus for gathering research (Mehra, 2002).

Ethical Considerations

This mixed-methods study follows the guidelines of the Institutional Review Board (IRB) of Kennesaw State University. The researcher received a letter of support and consent to proceed with the study and collect data from the school district and the principal of Southern Elementary School. Each participant completed and signed a consent form that included the right to participate, the purpose of the study, procedure of
the study, and a right to ask for a copy of the results. The participant consent form can be found in Appendix A (Kennesaw State University, 2010).

Participating teachers were assigned two-letter codes, and all reports, documents and quotations used in this study used the assigned codes to ensure confidentiality (Bunker, 2008). Only the teacher-researcher had access to the list of assigned subject codes. The teacher-researcher assigned the school a pseudonym used in the reports and any other documents that were or will be created from this study, such as articles or presentations.

No identifiable information for students was included. All achievement data were disaggregated and reported by group, with no personally identifiable information. Group achievement data were considered public information (McClure, 2008). Several pieces of data collected as part of this study were considered public information as long as they were used at school. This included school and state databases for student achievement assessments. For this research project, all documents specific to school demographics, teacher interviews, co-teaching observation checklist, and math benchmark student data were treated confidentially and in an anonymous manner.

This study was completed under the assumption that participants were open and honest concerning their answers, and there were not under any outside influence affecting their responses. Each co-teacher participant was interviewed. The student achievement data was collected from the school district. No student data were used for this study other than three benchmark score results. All precautions were taken according to the guidelines of the IRB from Kennesaw State University to protect these students.
CHAPTER FOUR

FINDINGS

Data Description

The math benchmark assessment measured student progress attainment in grades 3, 4, and 5 using three sets of data; first administration (August 2010), second administration (November 2010), and third administration (February 2011). The Co-Teaching Observation Checklist (Appendix B) used lesson presentation, instruction and instructional materials, and classroom structure as quality indicators. The checklist analyzed the level of co-teacher collaboration on the lesson that was taught and the activity within the classroom. Teacher Structured Interviews (Appendix C) served to gather qualitative data as a triangulation source. Co-teachers were interviewed, and comments analyzed for patterns/trends.

The purpose of this chapter was to report the findings of this study. Results break down each of the six research questions using triangulated evidence (assessment data, interview responses and observation checklist). A discussion can be found in chapter five.

Research Question One

*How does disability status and instructional environment influence the rate of math benchmark progress attainment of third, fourth, and fifth grade students?*
The purpose of this analysis was to determine what effect inclusion had on progress attainment of math benchmark assessment scores for students with and without disabilities and how does that compare to non-inclusion (instructional environment) students with and without disabilities’ progress attainment on benchmark assessment scores (Lee & Herner-Patnode, 2009). There were 405 students included in the analysis, including 350 students without disabilities (GENED) and 55 students with disabilities (SWD) (see Table 4 for a breakdown of the student population by disability status).

Table 4

<table>
<thead>
<tr>
<th>Grade</th>
<th>Students without Disabilities (GENED)</th>
<th>Students with Disabilities (SWD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inclusion</td>
<td>Non-Inclusion</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>43</td>
</tr>
<tr>
<td>4</td>
<td>45</td>
<td>56</td>
</tr>
<tr>
<td>5</td>
<td>71</td>
<td>111</td>
</tr>
<tr>
<td>Totals</td>
<td>140</td>
<td>210</td>
</tr>
</tbody>
</table>

Further explorations of class performance were completed to determine whether there was a difference between students without disabilities in an inclusion classroom and students without disabilities in a general education classroom. Would students without disabilities in inclusion classrooms be helped or hindered by placement in an inclusion classroom?

An investigation was made into the nature of the relationship between math benchmark scores and time (1st-August, 2nd-November, and 3rd-February). The assumption verified that benchmark scores increased linearly with time. The rate of
progress attainment on benchmark assessments was linear. (See Figure 1 for a sample of empirical growth plots). This was a random sample of 20 students (with and without disabilities) and their benchmark scores with three plots each that represent the three administrations of the benchmark assessment. There was no apparent deviation. The plots were not perfectly in a straight line, but there were no curved lines. For the most part, the plot lines looked quite linear.

Figure 1. Sample of empirical growth plots (20 students with and without disabilities’ probes).

Plots of the linear least squares progression of benchmark scores were produced and separated by grade level. See figure 2 for plots of linear least squares progression.
The investigation of the linear least squares progression indicated that the estimated rate of progress attainment (ROPA) was likely not the same for each grade level. It also indicates that there was little within-grade variation in individual estimated rate of change.

Figure 2. Plots of linear least squares progression.

In order to investigate the effects of student disability status (Nstatus) and instructional environment (Nclass) on students’ individual rates of progress attainment, a mixed effects linear model was fit to the benchmark data for each grade level allowing
for random variation in individual students’ rates of progress attainment (ROPA) and first benchmark scores.

Third Grade

An analysis of the third grade benchmark data began by investigating possible differences in first benchmark scores associated with disability status and instructional environment. The estimated third grade first benchmark score (intercept) was .29, SE = .05, and p<.001. This meant that the reader would expect that third grade 1st benchmark score average to be around 29%. It was determined that disability status (Nstatus) did not significantly impact the estimated first benchmark scores, estimated effect = .034, SE = .047, and p = .466. This meant that the effect of disability status could have caused an estimated increase of 3 percentage points to the 1st benchmark score (not significant). It was also determined that instructional environment (Nclass) did not have a significant impact on first benchmark scores, estimated effect = -.011, SE = .036, and p = .751. This meant that the effect of the instructional environment could have caused an estimated decrease of 1 percentage point to the 1st benchmark score (not significant). The third grade students had the same expected first benchmark scores regardless of disability status or instructional environment.

Next, the teacher-researcher estimated the effects of disability status and instructional environment on students’ rate of progress attainment (ROPA). It was determined that the estimated third grade rate of progress attainment (Test) was .11, SE = .019, and p<.001. This meant that third grade would have a rate of progress attainment of 11 percentage points per test administration. In other words, the reader would have expected them to progress 11 points from benchmark one to two and then 11 points from
two to three. It was determined that disability status did not significantly impact the estimated rate of progress attainment (Nstatus*test), estimated effect = .02, SE = .018, p = .222. This meant that the effect of disability status could have caused an estimated increase of 2 percentage points in progress attainment (not significant). Similarly, it was determined that instructional environment did not have a significant effect on the expected ROPA (Nclass*test), estimated effect = .02, SE = .013, p = .100. This meant that the effect of the instructional environment could have caused an estimated increase of 2 percentage points in progress attainment (not significant). Table 5 displayed third grade fixed effect estimates. Figure 3 explained third grade estimated growth progression.

Table 5
Third Grade Fixed Effect Estimates

| Effect         | Estimate | Standard Error | DF | t Value | Pr > |t| |
|----------------|----------|----------------|----|---------|--------|
| Intercept      | 0.29     | 0.05           | 77 | 5.82    | <.0001 |
| Nstatus        | 0.034    | 0.047          | 70 | 0.73    | 0.466  |
| Nclass         | -0.011   | 0.036          | 70 | -0.32   | 0.751  |
| Test           | 0.11     | 0.019          | 77 | 5.64    | <.0001 |
| Nstatus*test   | 0.02     | 0.018          | 70 | 1.23    | 0.222  |
| Nclass*test    | 0.02     | 0.013          | 70 | 1.67    | 0.100  |

For third grade, the mean rate of progress attainment (progress made from benchmark one to benchmark three - ROPA) for students with disabilities (SWD) in inclusion classrooms was 26%. Students with disabilities in non-inclusion classrooms had a mean progress attainment of 5%. Students without disabilities (GENED) in inclusion classrooms had a mean progress attainment of 29%. GENED students in non-inclusion classrooms had a mean progress attainment of 24%.
Fourth Grade

Analysis of fourth grade benchmark data began by investigating the effects of disability status on instructional environment. The estimated fourth grade first benchmark score (intercept) was .20, SE = .060, and p<.001. This meant that the reader would expect that fourth grade 1st benchmark score average to be around 20%. It was determined that disability status did have a significant effect on expected first benchmark scores (Nstatus), estimated effect = .18, SE = .055, and p = .002. This indicated that the expected first benchmark scores differed for students with disabilities and students without disabilities. The expected first benchmark score (intercept) of a student without disabilities was 38%, and the expected first benchmark score of students with a disability was 20%. The effect of the instructional environment (Nclass) on first benchmark was insignificant, estimated effect = .05, SE = .035, and p = .187. This meant that the effect of
the instructional environment could have caused an estimated decrease of 5 percentage point (not significant).

Next, the teacher-researcher estimated the expected ROPA. The expected ROPA (Test) for fourth grade students was .08, SE = .024, and p = .0025. This meant that fourth grade would have a rate of progress attainment of 8 percentage points per test administration. In other words, the reader would have expected fourth grade to progress 8 points from benchmark one to two and then 8 points from two to three. It was determined that the rate of progress attainment (ROPA) was not affected by disability status or instructional environment. The estimated effect of disability status (Nstatus*test) on ROPA was .003, SE = .023, and p = .879. This meant that the effect of disability status could have caused an estimated increase of .3 percentage points in progress attainment (not significant). Similarly, it was determined that instructional environment did not have a significant effect on the expected ROPA (Nclass*test), estimated effect = .008, SE = .014, and p = .572. This meant that the effect of the instructional environment could have caused an estimated increase of .8 percentage points in progress attainment (not significant). Table 6 exhibited fourth grade fixed effect estimates. Figure 4 displayed fourth grade estimated growth progression.

For fourth grade, the mean progress attainment (progress made from benchmark one to benchmark three) for students with disabilities (SWD) in inclusion classrooms was 16%. Students with disabilities in non-inclusion classrooms had a mean progress attainment of 6%. Students without disabilities (GENED) in inclusion classrooms had a mean progress attainment of 16%. GENED students in non-inclusion classrooms had a
mean progress attainment of 15%. Figure 4 showed 4th grade estimated growth progression.

Table 6

*Fourth Grade Fixed Effect Estimates*

<table>
<thead>
<tr>
<th>Effect</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>DF</th>
<th>t Value</th>
<th>Pr &gt;</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.20</td>
<td>0.060</td>
<td>105</td>
<td>3.42</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Nstatus</td>
<td>0.18</td>
<td>0.055</td>
<td>95</td>
<td>3.24</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Nclass</td>
<td>0.05</td>
<td>0.035</td>
<td>95</td>
<td>1.33</td>
<td>0.187</td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>0.08</td>
<td>0.024</td>
<td>104</td>
<td>3.10</td>
<td>0.0025</td>
<td></td>
</tr>
<tr>
<td>Nstatus*test</td>
<td>0.003</td>
<td>0.023</td>
<td>95</td>
<td>0.15</td>
<td>0.879</td>
<td></td>
</tr>
<tr>
<td>Nclass*test</td>
<td>0.008</td>
<td>0.014</td>
<td>95</td>
<td>0.57</td>
<td>0.572</td>
<td></td>
</tr>
</tbody>
</table>

4th Grade Change Trajectories

*Figure 4.* Fourth grade change trajectories (estimated growth progressions).

Fifth Grade

Analysis of the fifth grade benchmark data began by estimating the expected first benchmark scores of fifth grade students. The estimated fifth grade first benchmark score
(intercept) was .12, SE = .038, and p = .002. This meant the reader would expect that fifth grade 1st benchmark score average to be around 12%. It was determined that disability status (Nstatus) had a significant effect on the first benchmark score of fifth grade students, estimated effect = .14, SE = .037, and p<.001. This meant that the effect of disability status could have caused an estimated increase of 14 percentage points to the 1st benchmark score (significant).

The instructional environment (Nclass) had a significant effect on first benchmark scores as well, estimated effect = .08, SE = .024, and p = .01. This meant that the effect of the instructional environment could have caused an estimated increase of 8 percentage points to the 1st benchmark score (significant). This indicated that students with a disability in a non-inclusion environment would be expected to have a first benchmark score (Intercept) of 12%. Students in a non-inclusion environment would be expected to have a first benchmark score (Intercept) of 26%. Students in an inclusion environment were expected to have a first benchmark score that was 8 points higher than students of similar disability status.

Next, the teacher-researcher estimated the expected ROPA. The expected rate of progress attainment (Test) for fifth grade students was .13, SE = .015, and p<.001. This meant that fifth grade would have a rate of progress attainment of 13 percentage points per test administration. In other words, the reader would have expected them to progress 13 points from benchmark one to two and then 13 points from benchmark two to benchmark three. The estimated effect of disability status (Nstatus*test) on ROPA was .02, SE = .015, and p = .284. This meant that the effect of disability status could have caused an estimated increase of 2 percentage points in progress attainment (not
significant). It was determined that instructional environment did not have a significant effect on the expected ROPA (Nclass*test), estimated effect = -0.011, SE = 0.010, and p = .261. This meant that the effect of the instructional environment could have caused an estimated decrease of 1 percentage points in progress attainment (not significant). Table 7 displayed fifth grade fixed effect estimates. Figure 5 illustrated fifth grade estimated growth progression. It was determined that the rate of progress attainment (ROPA) was not affected by disability status or instructional environment.

Table 7

<table>
<thead>
<tr>
<th>Effect</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>DF</th>
<th>t Value</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.12</td>
<td>0.038</td>
<td>205</td>
<td>3.16</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nstatus</td>
<td>0.14</td>
<td>0.065</td>
<td>165</td>
<td>3.82</td>
<td>&lt;.0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nclass</td>
<td>0.08</td>
<td>0.024</td>
<td>165</td>
<td>3.28</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td>0.13</td>
<td>0.015</td>
<td>200</td>
<td>8.57</td>
<td>&lt;.0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nstatus*test</td>
<td>0.02</td>
<td>0.015</td>
<td>165</td>
<td>1.07</td>
<td>0.284</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nclass*test</td>
<td>-0.01</td>
<td>0.010</td>
<td>165</td>
<td>-1.13</td>
<td>0.261</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For fifth grade, the mean progress attainment (progress made from benchmark one to benchmark three) for students with disabilities (SWD) in inclusion classrooms was 20%. Students with disabilities in non-inclusion classrooms had a mean progress attainment of 21%. Students without disabilities (GENED) in inclusion classrooms had a mean progress attainment of 23%. GENED students in non-inclusion classrooms had a mean progress attainment of 29%. See figure 5 for the plot of estimated growth progression by grade level.
In conclusion, it was determined that disability status and instructional environment did not have an effect on third grade first benchmark scores. In fourth grade, it was determined that students’ expected first benchmark scores did vary depending on disability status. In the fifth grade, students’ expected first benchmark scores were affected by both disability status and instructional environment. However, at no grade level was the expected rate of progress attainment affected by disability status or instructional environment.

Comparisons of rate of progress attainment (ROPA) for students with and without disabilities are included below. The mean scores for rate of progress attainment (ROPA) sorted by grade level, disability status, and environment are listed in Table 8. Results indicated that students without disabilities (GENED) in inclusion classrooms progressed as well as or above the mean of students without disabilities (GENED) within the non-
inclusion classroom in third grade, fourth grade and fifth grade. Results also indicated that students with disabilities (SWD) in inclusion classrooms progressed more than students with disabilities (SWD) in non-inclusion classrooms. In third grade, the difference was 21%; fourth grade, the difference was 10%; and in fifth grade, the difference was 9%.

Table 8

<table>
<thead>
<tr>
<th>Grade</th>
<th>Disability Status</th>
<th>Inclusion</th>
<th>Non-Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third</td>
<td>SWD</td>
<td>0.26</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>GENED</td>
<td>0.29</td>
<td>0.24</td>
</tr>
<tr>
<td>Fourth</td>
<td>SWD</td>
<td>0.16</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>GENED</td>
<td>0.16</td>
<td>0.15</td>
</tr>
<tr>
<td>Fifth</td>
<td>SWD</td>
<td>0.2</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>GENED</td>
<td>0.23</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Having investigated the effect of disability status and instructional environment on the rate of progress attainment attention was turned to the effect of grade level on average progress attainment. Knowing that there was not a significant difference in the rate of progress attainment for each grade, a new model was fitted to account for the average rate of progress attainment arranged by grade, ignoring disability status. It was determined that the there was a significant difference in the rates of progress attainment stratifying by grade, $F_{2,356} = 35.93, p < .0001$. For a graphical representation of estimated benchmark scores by grade, see Figure 6, which indicated that there was a significant difference in the estimated, average rate of progress attainment in at least two of the grade levels.
Having investigated the graphs of estimated benchmark scores of each grade level it was apparent that an effects contrast of fourth grade progress attainment should be made against the average of third and fifth grade progress attainment. The contrast fourth grade progress attainment vs. average of third and fifth grade progress attainment was statistically significant, $F_{1,356} = 31.8, p < .0001$, indicating that the average, fourth grade progress attainment was, in fact, lower than the average of third and fifth grade progress attainment. It should also be noted that while the effect of grade on the final benchmark score was significant at the $\alpha = .05$ level, $F_{2,356} = 16.03, p < .0001$ which indicated that at least two grade levels differ significantly in estimated average 3rd benchmark score. The largest difference was between fourth and fifth grade 3rd benchmark scores, amounting to an expected difference of nearly .07 points in the

*Figure 6. Estimated benchmark scores by grade level.*
estimated final benchmark scores of the two groups. See table 9, fixed effect estimates for differences in estimated 3rd benchmark scores and rates of progress attainment. The differences can likely be attributed to the expected difference in progress attainment.

Table 9  
Fixed Effects Estimates and Contrast Table

<table>
<thead>
<tr>
<th>Effect</th>
<th>Num DF</th>
<th>Den DF</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test_3</td>
<td>1</td>
<td>387</td>
<td>1296.53</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>group</td>
<td>3</td>
<td>356</td>
<td>26.97</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Grade</td>
<td>2</td>
<td>356</td>
<td>16.03</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Test_3*Grade</td>
<td>2</td>
<td>356</td>
<td>36.93</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

| Effect       | group       | Grade | Estimate | Standard Error | DF | t Value | Pr > |t| |
|--------------|-------------|-------|----------|----------------|----|---------|-------|---|
| Intercept    |             |       | 0.5969   | 0.04099        | 390| 14.56   | <.0001|
| Test_3       |             |       | 0.1430   | 0.004423       | 387| 32.33   | <.0001|
| group        | GENED Inclusion |   | 0.1547   | 0.04176        | 356| 3.70    | 0.0002|
| group        | GENED Noninclusion | | 0.05614 | 0.04136        | 356| 2.32    | 0.0207|
| group        | SWD Inclusion   |   | -0.01093 | 0.04391        | 356| -0.25   | 0.8036|
| group        | SWD Noninclusion | | 0        |                | 356|        |       |
| Grade        | 3            |       | 0.03284  | 0.01702        | 356| 1.93    | 0.0544|
| Grade        | 4            |       | -0.06999 | 0.01539        | 356| -4.49   | <.0001|
| Grade        | 5            |       | 0        |                | 356|        |       |
| Test_3*Grade | 3            |       | -0.00634 | 0.008191      | 356| -0.77   | 0.4391|
| Test_3*Grade | 4            |       | -0.06032 | 0.007326      | 356| -3.23   | <.0001|
| Test_3*Grade | 5            |       | 0        |                | 356|        |       |

<table>
<thead>
<tr>
<th>Label</th>
<th>Num DF</th>
<th>Den DF</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Grade Progress attainment vs. Average of 3rd and 5th</td>
<td>1</td>
<td>356</td>
<td>31.80</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>
Research Question Two

*How do co-teachers describe the effect collaboration had on student achievement in math?*

To answer research questions two, three, and four, the teacher-researcher reviewed the co-teaching checklist and comments made during the interview process. The descriptions reported in response to question two are trends identified by the researcher from these artifacts that are broad in nature. Questions three and four were answered using comments made about the specific factors facilitating or hindering collaboration and student achievement. Co-teachers were assigned random codes, composed of random two-letter combinations. These are not teacher initials. The two-letter codes (co-teacher pseudonyms) are shown in ellipses after each comment.

Teacher structured interviews and observations helped to answer question number two. The vast majority of teachers were enthusiastic in their support of collaboration time during the co-teacher structured interviews. For the most part, co-teachers voiced passion about their team efforts and results, and benefits for students.

Co-teachers reported collaboration promoted professionalism in a way they had not typically experienced. “It is great being able to have someone to bounce ideas off of. I believe that provided me more variety in the lessons. I think collaboration makes you a better teacher” (AS). The co-teachers reported on the frequent discussions about philosophy concerning particular subject areas and how they benefited from those discussions. “We really talk about teaching kids and how kids learn, making a difference between teaching kids and teaching a curriculum” (TY). “We bounce around all those
philosophies. We looked at our deficits in math and math instruction and what research says and how it fits with the new adoption.” (KY).

Most of the teams had been in place prior to the beginning of the collaboration initiative. Others recognized having a designated structure of collaboration made it easier to collaborate. “Having the time and structure to collaborate leads you on a worthy path” (AB). Co-teachers reported their previous experiences as a team and “an established, working relationship” (SL) seemed to make the process this year much easier. “This gave us a focus on what we needed to do and what we needed to add or change to our instruction. For us, since we collaborated so much already, we had a history of being able to sit down and get right to work” (PR).

Even when teams already considered themselves collaborative, this framework promoted deeper levels of collaboration. Co-teachers identified this process as different from grade level meetings. “In those meetings, we are not helping or necessarily working together to get better at something” (TV). The collaboration time “helped us address work on them” (GB). “This helped us look at specific areas to address in terms of student learning. We collaborate so much in the daily work” (DQ). “If you’re already collaborating, it helps you go deeper and have an area of focus” (RG). “We were able to work on some things that we would not have been able to develop without the collaboration (time)” (GB).

Co-teachers also looked at collaboration from a practical view. Several teams reported they adopted the opinion “two heads are better than one” (UZ) when it came to implementing complex teaching tasks. When co-teachers had questions, developing a team approach provided strength in numbers.
Co-teachers viewed individual willingness or ‘being open’ as an important element in a successful collaboration (RG). When asked about individual traits that could contribute to collaboration, co-teachers reported their team mates as ‘willing’. This included “a willingness to say you’re better at this than me or I’m better at this than you are” (AS). When asked about the importance of skill in the collaborative process, one co-teacher reported initiative and engagement was more powerful than skill. “It’s really having a desire to work in a team. It’s really more a willingness to be involved, to share your ‘world’ or not. It’s more of an enthusiasm to work together. Some people don’t want to work in a team.” (GB). One co-teacher summarized part of the dialogue. “It would be so stifling if someone wasn’t able to take someone else’s ideas and see value in it. You have to be open. Teachers are pretty used to being in control of the world in their classroom.” (DQ). All but one co-teacher commented on the importance of willingness or openness.

Research Question Three

*What factors do co-teachers report facilitate collaboration with colleagues?*

Co-teacher comments about the factors facilitating collaboration with colleagues were consistent with the components of collaboration described in the literature and reported in chapter two. The framework of six key components of successful collaboration (Bunker, 2008; Rose, 2008) organizes the results.

*Culture and climate.* Co-teachers discussed sharing a vision, not only for the school, but specifically for the team and the classroom. For them, “a clear vision of where you want to go as a team” (KY) was important. “That’s something we always talk about. Starting with the end in mind is the most effective way, especially when you are dealing
with student achievement. You know where you want to be at the end” (TY).

Almost all co-teachers used the word “personality” when talking about aspects that contributed to collaboration. “If a team works well together, it’s much more valuable than if a team has issues, like personality. Underlying forces of the team are important. It is a total waste of time because you end up not accomplishing anything” (KY). A co-teacher said it was the character of people and how they fit that allowed for success and progress. “It’s our personalities. We have worked together before so this year was easier, but some people might have a team where the personalities don’t fit as well as ours. We’re pretty easy going and we’re all here to do a job. That helps with a focus because we are not distracted by all the pettiness that can occur” (AS). Another co-teacher commented on the individuals’ willingness to be engaged as critical, which could be related to their personality. “It’s part getting along–part of your personality. Being easy-going made it easier” (PR).

Several co-teachers elaborated on the topic of trust among their team members. Co-teachers said being able to trust their co-teacher was instrumental. “We felt we were able to play off each other's strengths when deciding how to approach a task” (KY). Co-teachers being able to discuss the issues helped them see each other’s areas of strengths and needs. The levels of trust established also helped team members accept and respect the differences between them. When asked about what part of the collaborative process works for their specific team, teachers replied, “It’s a matter of trust” (TY). “I would think it was accepting people’s differences and respect of your colleagues” (TV). “For me, it would be the whole-school system, communication and trust” (RG). “Respecting differences and sharing values was the most important part” (GB).
Many co-teachers described the nature of working relationships of the team, and the ways that they depend on each another. Co-teachers described their work as effective when each person on the team was willing to cooperate and participate, filled by a sense of give and take and fairness in decisions made by the team. “I think one reason it works for us was that we are so different. I like how we share and we give to the conversation about what we are doing. It’s okay if someone doesn’t agree” (TV). “We are all very different, but we come together very well” (RG).

Co-teachers reported that the collaboration was a logical step for them because of the established, working relationship. “It wasn’t adding anything to our plates because the relationship was already there. It wasn’t, like, how are we going to do this, or what is it going to look like because the relationship was already there. We were already teaming so closely together when you presented the project that it was just a natural extension for us” (RG). The co-teachers indicated that each person was an essential part of the team, and each played a valued role.

Clear goals. Throughout the observation review and the interviews, co-teachers referenced two types of goals. These were goals for the collaborative team and goals for students. “We needed clear goals for ourselves as well as for the kids. So there was sharing between us to know what we needed to focus on and then have time to discuss. We spent the beginning of each time we met to collaborate really focusing on what we needed specifically to accomplish, what we needed in math that we were going to cover” (UZ).

Co-teachers reported clarity about what was to be accomplished. “You have to know where you want the students to be. You have to have goals to collaborate
“If you didn’t know what you were doing ahead of time, what you were going to focus on for teaching, you might waste half the time floundering. Some direction is important” (UZ). “Agreement on what to collaborate on is critical” (SL). “We set goals at the end of team meeting for our next session. We decided to change some things right before more than one of the meetings. But we had enough flexibility to allow change” (PR).

The willingness to consider the needs of each other was the guarantee of an effective team. “Prior to meetings, we made agreements on what we as a team were going to collaborate on” (AB). “We talked about what was most important, and what we as a team needed to do” (KY).

Setting clear short-term goals that are based on specific data, saved time and planning. Co-teachers reported that instead of one teacher working independently, a team undertaking planning tasks resulted in strategies and lessons the team could implement separately in the classroom. “We shared a lot every day, work on the units—it was successful” (AS). “We really liked it when we shared a lot of jobs so we didn’t have to duplicate” (BL). Co-teachers also appreciated planning around long-term units. “We spent a lot of time talking about that. What worked for us was we could play off each other and what we had already done and talk about where we are going next” (AS).

Attention to results. The comments of teachers demonstrated the importance of student results in the collaborative process. What students learned was a strong motivating factor for sustained collaboration. One co-teacher summarized this point with “It was just better collaboration. All of that just leads to higher student achievement” (KY).
Co-teachers reported it would be difficult to continue the collaborative process if the teachers did not believe in the process. “It gets results with kids. I have been with teams where it was hard to collaborate, but if you are led that way; it is in the best interest of kids” (RG).

Co-teachers reported many ways that they determined student progress. Formative assessments were frequently described, developed or refined during collaborative team meetings. A co-teacher described a process of using assessments to inform instruction. “It’s a model we used for other areas. It worked again” (UZ). “We identified their area of weakness and set up three groups that ran for 2 intensive weeks on their specific instructional needs. We looked at how student problem solving looked kid by kid” (GB).

“We saw movement. Then at our next collaboration we assessed and looked at how the students did in the intensive instruction” (UZ). “I’d say, in 95% of the kids there was upward movement and it showed in their problem solving” (GB).

Co-teachers reported this process was of benefit to students at all levels of achievement. Co-teachers gained knowledge of where students were in the process of learning the intended curriculum through formative assessments. With this information, co-teachers were able to organize instruction in a targeted way. “We were able to sit down side by side. That was a real positive use of our time. We took the math problem-solving and calculation work our kids did and we were able to score them together” (RG). “That helped all students grow, no matter where the student started. We focused and followed that same process every time” (AS). “We just looked at one thing and where each kid was, and focused on that. That really worked for us–and to do it with another person benefits our kids” (SL). “We wanted to make sure we agreed on the scoring and
what the next step would be to increase our kids’ math skills. We looked at student math problem solving and calculation as part of our collaboration; we scored our work separately, met, and then looked at the student work together. Can we go farther? Is the next step reasonable” (DQ)?

Time and structures. Every co-teacher reported time to collaborate was a critical factor. “Time was the biggest factor” (DP). “This was giving us time to work together without having to take time after school. When teachers are asked what they need, it’s time to be working together and money” (KY). “Time was critical” (AB). Although time needed was a common theme, co-teachers reported being flexible with the time they had was preferable. There was no consensus around when to schedule collaboration.

Some co-teachers found scheduling collaboration during the school day was important. “During the school day, it was fresh and we got a lot done” (AB). “After school, it’s harder to be pushed that way. You’re just tired” (UZ). “After school we find ourselves tired and it would be really hard to really get focused and accomplish something” (KY). “After school it was much easier to be inconsistent. We might be prone to skip it this week because we’re too busy” (GB). “After school, someone had a conflicting meeting” (PR). “After school at 3 o’clock, it was hard to have a focus” (UZ).

Other co-teachers reported it was difficult to meet during the school day for a variety of other reasons. “Time was a resource. This gave us a focus on what we needed to do and what we needed to add or change in the way of instruction. It helps you go deeper and address an area of focus” (DQ). Specifically, without time deliberately designated for collaboration, co-teachers reported the proficiency of work would be different.
Co-teachers communicated the time spent with their teams, in some ways, increased their efficiencies. The increased sharing of resources and ideas helped co-teachers complete some specific tasks more efficiently. This identified specific contributions each member could make to the process. Efficiency, however, was not always increased as a result of a collaborative process. On the contrary, in several cases, co-teacher teams reported collaboration took more time.

Teams appreciated having the flexibility in deciding topics critical for them to address. Flexibility allowed individual teams to determine how to allocate time and resources. “If we were told what we had to do, that might be different. I felt we had a choice about what we shared. I just like having the choice and ability to decide what we are going to work on” (AB). Co-teachers reported they determined the areas to address by assessing the needs of their students. The teams relied on the framework of collaboration. Teams requested a level of predictability and consistency. Co-teachers requested development of an annual schedule so that the collaborative system was embedded in the school practice. “Designated planning time should be a minimum number of hours every month. Have planning days scheduled for a year to be able to plan ahead would be most beneficial” (TY). Some co-teachers reported they would use as much collaborative time as they were given, that no amount of time would be considered too much.

Co-teachers also talked about the structure they set up for their own teams. “Having the time and structure to collaborate could only head you in a good direction” (AB). “We are very focused, we know the time restraints we each have, we are respectful of that, and that format works for us” (UZ). “We have agendas set up before and our curriculum handbook to write items down between meetings” (TV).
Deprivatization. When co-teachers were able to discuss the act of teaching and learning, they were able to reveal some of the struggle. Within the context of the collaborative process, co-teachers shared what worked for them in specific instructional units, as well as what did not. “Teaching can be very private, so ‘teams’ work at reducing that sense of privacy. We talk about what has worked well for us, what hasn’t worked well for us, what our kids caught on to and what they didn’t catch on to” (KY).

Co-teachers identified the nature of this communication reduced the feelings of isolation often intrinsic in the teaching profession. One co-teacher recalled feeling extremely lonely at points in her career, and through the established collaborative process, was able to share and receive ideas that helped instruction, resulting in becoming a better teacher. “Collaboration makes you a better teacher. You talk about things.” (UZ). “I remember being by myself and it was very lonely. You’re with your own ideas all day and in a little bubble. You have to see the good, the benefits of collaboration” (DQ).

Teams reported about discovery in specific curricular areas. “We discovered we were each using (materials and curriculum) in a different manner. We spent time figuring out what to change and align between us so kids would benefit” (TV). Co-teachers reported collaboration provided opportunities for discovery. “When teams reduce privacy, well, that’s really collaboration that leads to better collaboration and higher student achievement” (KY). “It just becomes an issue of time and so this gave us a nice way to not be private. That privacy issue, I don’t think anybody means to be private” (UZ).

Co-teachers discussed the importance of engaging in a give and take. “Being part of a team, it’s different, you give” (UZ). “Teams share ideas and take ideas” (TV). This
gave them opportunities to tap the strengths of colleagues, their team and other teams, and learn from them. There were times when disclosure led to active seeking for information. The teams were then able to go to other teams when one teacher saw another teacher’s student achievement results, the response was, “What’s going on in their classroom that’s not happening in my classroom? We have to find out exactly what they are doing” (UZ).

Co-teachers reported an increased sense of accountability inherent in the collaborative process. “We made the commitment to do something specific. Then, we came back and talked about how it went” (SL). Co-teachers commented about how they pushed each other by sharing new ideas and how that process motivated them to keep the team current through effective practices, research, and practicing skills of analysis. “When we get to work, we have a good way of getting our work done. We socialize, too, but we are focused on our work, and how to do a better job teaching. We do what we’re supposed to do.” (KY). “When you are expected to have a product or something you’re accountable for, it pushes you” (PR). “When we have time to talk about best practice and how that fits in with our philosophies about teaching, we can push each other a little to focus on the pieces that make a difference for our kids” (AB).

Staff new to the profession reported simply being present and listening was a significant source of learning. “I’ve taken a lot of ideas this year. I know some people feel they don’t have so much to give yet, but that will come” (GB). Another new teacher remarked, “Sometimes, I feel it benefited me just to sit and listen. For me as a new teacher it was really beneficial to just listen and take the time to think about what my co-teacher has said” (BL).
Reflective dialogue. Dialogue and discussion between team members were valuable reminders for teachers to reflect on their own instructional practices for the purpose of getting feedback. The dialogue process provided opportunities for deep discussion by team members that led to changes made in teaching procedures, strategies and practices. This conversation led to increased coordination and aligned practices among team members. One co-teacher commented,

I might be able to say ‘that’s a bomb’; I won’t do that again. I think it’s necessary to reflect. Some might do it individually. But when you work with someone, we can give each other advice – things to think and reflect about. We could do it on our own, but why would you want to? (DQ)

Almost all co-teacher teams included reflection on the differentiation of instructional strategies and curriculum as meaningful dialogue. Co-teachers talked about the number of students in class needing additional and targeted instruction beyond the group instruction provided. Dialogue to discuss specific students, their needs, and methods for co-teachers to accommodate their learning was high priority. Co-teacher teams reviewed student work as a method to reflect about the learning taking place on an individual student basis. Discussions frequently centered on why students were doing well, or why they were not doing well. “We talked about why reducing fractions was such a hard concept for some of our kids, and what we needed to do to bring some of our kids up and how to extend our high kids even further” (KY).

Research Question Four

What factors do co-teachers report hinder collaboration with colleagues?

While comments of co-teachers about factors reported to hinder collaboration
with colleagues fell in some of the same categories as comments reported to facilitate collaboration, there were differences. There were fewer comments about factors hindering collaboration than factors facilitating collaboration. Most of the hindrances reported fell under the time and structures component.

Consistent with reporting of results for all questions, a report by a single team was not considered a theme. If themes were identified and reported by more than one co-teacher, those descriptions followed.

Culture and climate. While few co-teachers reported working relationship strains, many predicted collaborative work would be difficult if personal or philosophical conflicts existed. “If you had people that didn’t get along, didn’t want to share, didn’t want to communicate, it could be a long school year. I could see how it could be negative if you have trouble getting along. We didn’t have that problem” (AB).

Personal conflicts were labeled “personality issues” and comments about those revolved around an individual’s willingness to participate, willingness to give and take, and decisions viewed as beneficial for the team rather than the individual. In describing an experience with another team, a teacher reported, “There has to be chemistry, or at least a willingness to participate. One person can make a difference on your team…and (change) the whole experience. If there wasn’t a good fit with the team, the team suffered” (UZ). Another teacher speculated, “If members of the team can’t get along because of one person, it affects the team’s ability to function well” (PR).

Co-teachers described philosophical conflicts as the basis for the personal conflicts or personality issues. Co-teachers reported this conflict rooted in a belief system different from the other member of the team, and in some cases, differences in teaching
style. “It was hard to work together. I’ve had partners who I didn’t collaborate much with because we had such completely different styles” (DQ).

*Time and structures.* Almost all co-teachers noted concerns and complaints about the paperwork, interviews, and time away from their classes, which went along with the collaborative initiative. Co-teachers reported the group meetings with GLRS hindered the collaborative process. “We weren’t as collaborative as we could have been if we had an earlier start to the year” (TY). “If we had our initial meeting in the summer, before school started, we wouldn’t have wasted so much time getting to know the expectations of the teams” (KY). Concerns included the difficulty of fitting lesson plans into a specific format and the amount of time and effort needed to complete the task. Comments included (a) the lesson plan wouldn’t fit on Google Docs; (b) the templates hindered the process; (c) the format was confusing; (d) Gmail account didn’t always work; and (e) keep it easy.

Finding adequate meeting space was a hindrance. Adequate space away from students, especially for two teachers and materials needed for collaboration was difficult to find. Co-teachers also reported frequent interruptions from other staff, and when visible, interruptions from parents or students. Many of the co-teachers said inadequate time was a critical hindrance to the collaborative process. Co-teachers simply expressed an interest in having more time. In addition to the total number of hours, co-teachers stressed the importance of blocks of time. Collaboration was less productive when there were interruptions, even if they were anticipated.

*Reflective Dialogue.* Even when co-teachers fully supported and participated in a collaborative model, they reported deep levels of collaboration could be viewed as adding
to the teacher workload. In some situations, tasks could be shared, and co-teachers considered this a benefit. Sometimes reflection causes an increase in workload. “In some ways it adds to our workload, especially once you started to work on problems and solutions. It takes time to sit down and feed off each other” (AS). Communication between team members increased, consensus gained, and work generated in implementing newly developed plans. In several instances, co-teachers reported the collaborative process resulted in the team generating new ideas or approaches, resulting in changes in teaching practice, or development of new materials. Additionally, deep reflection and dialogue resulted in the need for more reflection.

Research Question 5

What factors do co-teachers report facilitate change in student achievement?

Co-teachers reported collaborative practices influenced student achievement. Co-teachers reported student achievement to be one of the primary reasons they decided to engage in the collaborative initiative. Co-teachers recognized two specific practices they believed to facilitate change in student achievement. They were (a) alignment of instruction, and (b) differentiation of instruction. As in prior reports in this chapter, a report by a single co-teacher was not considered a trend and was not included. The reported issues were from co-teachers’ engaged in this study. No analysis of correlations was conducted between co-teacher comments and increases in student achievement.

Alignment of Instruction. Co-teachers reported collaboration resulted in more effective instructional practices, and as a result, student achievement increased. During the interviews, co-teachers described various instructional approaches and practices. Co-teachers identified a need for things to be similar to support student learning, to support
communication with students and parents, and to support clarity between team members. A co-teacher’s comment about a team’s experience summarizes this. “We figured out we needed to coordinate. We used the same terminology and approach with kids, and they got it. It helped the kids to hear us saying the same things over and over again” (RG).

Co-teachers’ comments were consistent concerning the efforts needed to align instructional strategies. Significant changes were often necessary, and co-teachers reported this to be successful when their focus was student benefit. “We were each using an approach in a different manner and we focused on what we did the same, and what we did differently. We talked about change” (KY). “It didn’t matter which were our favorites. We spent time figuring out what to change between us so students would benefit. Some strategies fit better than others” (UZ). Teams reported teachers did not rely on their past successes or experiences as reasons to resist change. Strategies they personally found successful or which they were comfortable were not sufficient reasons to change.

Co-teachers noted they trusted colleagues’ judgment on strategies. “A strategy that has been very effective is for us is for one of us to try something first and then we’ll set down and work out the kinks” (AS). Several co-teachers noted the benefits of planning as a team and creating curriculum maps on a calendar. This clarified what was to be taught and when it was to be taught. It contained expectations co-teachers had of each other, and kept the team on track instructionally.

Co-teachers said their collaborative time was often spent reflecting, advising each other, and coming to agreement on common practices. “Collaboration seemed to be a system for that. We talked about things to try differently” (UZ). This gave co-teachers
opportunities to discuss instructional strategies that were effective as well as strategies that were not effective. “We share a lot about what went well, what didn’t go well” (PR). They recognized it was helpful to have a structure to accomplish this.

Co-teachers also reported an intensity of instructional strategies as a result of the collaborative process. Co-teachers learned new strategies, combined or modified familiar strategies, and created new strategies. “The focus was on what we needed to do and what we needed to add or change” (TV). “She had new ideas and I had some ideas” (AS). One example cited by several teams of co-teachers related to scoring student problem-solving samples. Student samples were scored collectively by co-teachers during collaborative time. Co-teachers reported seeing a broad range of problem-solving samples helped broaden teacher views of what students were capable of. The process of combined scoring included discussions about the rationale for specific judgments leading to agreement about scores. Teachers reported this strategy standardized their scoring, led to agreements about next instructional steps, and as a result, aligned their practices. “We talk about where kids were not doing as well and then the different skills they needed and focused on that together for a while to help them in those areas” (SL).

Co-teachers reported that using data was critical to the alignment of instructional strategies. “We’re getting data on kids, and combining that knowledge with what kids need at the end point, and using that as the basis for what we’re creating for kids’ learning” (AB). Data were collected in a variety of ways, including teacher developed assessments and student work samples. Data derived from common assessment practices became the basis of communication among teachers, as well as students. Using common
data to set specific instructional goals helped co-teachers maintain a collective focus of instruction.

*Differentiation of Instruction.* The biggest impact had been related to changes co-teachers made in instruction. Co-teachers felt this was a positive impact. They reported that groups of students who were not making adequate progress were a challenge, as well as the accelerated students. They looked for strategies to increase achievement for all students.

Co-teachers cited differentiation of instruction as a vital factor when discussing strategies to increase overall student achievement. Within this collaborative system, co-teachers prioritized addressing the needs of all students. Co-teachers frequently worked to collectively group and regroup students for the purpose of providing additional or diverse instruction. To accomplish this differentiation, the co-teachers assessed students, formed groups in the classroom depending on instructional needs of students, reassessed to measure progress, followed by regrouping. Co-teachers listed the time and structure provided for collaboration as essential in developing and delivering differentiated instruction.

Even with that, co-teachers said, they recognized the challenges of differentiated instruction and reported, “We looked at how student work looked, kid by kid. We identified their area of weakness. And as a team we need to be able to do more of that” (AB). “The needs of our kids are really different” (KY). This collaborative process also provided resources for co-teachers to coordinate with support services within the school, to get additional strategies, and to review progress. “Through collaboration, we were able
to identify and plan interventions for some of our students” (TV). “It was through dialogue that we can figure those things out” (PR).

Research Question 6

*What factors do co-teachers report hinder change in student achievement?*

There was an absence of any thematic co-teacher report about hindrances to student achievement. Co-teachers’ comments did not reveal any themes perceived to hinder a change in student achievement. Only one individual comment could be coded under this question.

Co-Teaching Observation Checklist

The Co-Teaching Observation Checklist (Appendix B) detected evidence of collaboration (joint ownership of classroom space and responsibilities evident); co-teaching instructional formats; instructional practices (research-based instruction, differentiation of instruction, consistent appropriate behavior management strategies used by both teachers). Within this analysis, co-teaching and co-taught were synonymous to collaboration and inclusion.

Participant observation was the third method of data collection. The Georgia Learning Resources System (GLRS) observation team conducted three observations in 6 co-taught classrooms at Southern Elementary School. Each of the observation periods lasted from 30 – 45 minutes depending on the organization of the class and the lesson taught. Observations occurred when both general and special education teachers were teaching a heterogeneous inclusion group of students in a single classroom. The teacher-researcher established that the first observation would be preliminary. Three of the classrooms were unavailable on the day of the third observation. It was decided that the
second observation (January 2011) results would be analyzed because all of the classrooms were observed and the checklists were completed for each.

GLRS’ team was trained through the Georgia Department of Education in order to be able to conduct the co-teaching observations. The team consisted of two certified special education teachers and one special education administrator as observers. The instrument used to conduct the observations was an observation protocol titled NW GLRS Co-Teaching Observation Checklist (Appendix B). The observation checklist had been used by GLRS since 2007 to examine the roles and instructional actions of teachers working in co-taught classrooms. The focus of the observation study was to examine and record, through 30 – 45 minute classroom observations, the actions of collaborating teams in co-taught classrooms. This allowed the observers to explore issues around the classroom and space design, and location of inclusion classrooms (Georgia Learning Resources System, 2011). The observation form also included a best practice inventory. The Co-Teaching Observation Checklist looked for evidence of collaboration (joint ownership of classroom space and responsibilities); lesson presentation, instructional practices and instructional materials; and co-teaching instructional models.

This checklist rated the level of co-teacher collaboration on the lesson that was taught and the activity within the classroom. Levels included evident (E), not evident (NE) and not applicable (NA). There was also space for the researcher to write comments about the observed lesson. Not evident (NE) or not applicable (NA) was rated if the collaborating co-teachers did not attempt to meet the quality indicator or if the classroom situation did not meet the quality indicator. For example, educators provided feedback to students to guide their learning. If both educators did not provide feedback, they would
be rated not applicable (NA). If only one of the educators provided feedback, they would be rated not evident (NE). If both educators provided feedback, they would be rated evident (E).

Data collected over the course of this study were analyzed in several different ways in order to understand how co-teaching occurred in the inclusion general education classrooms at Southern Elementary School. Structured interviews and classroom observations were first analyzed separately. Interviews were analyzed using statements and codes to understand the themes of co-teaching in the classroom. Classroom observations were analyzed to investigate the elements of co-teaching in the classroom. From within the Co-Teaching Observation Checklist, three themes emerged. The Theme Analysis of Co-Teaching Observation Checklist can be found in Appendix D.

**Theme 1. The Basics: The Roles for Each Co-teacher.** The first theme focused on each part that the co-teacher played in the classroom. The observers scanned for different types of collaboration in the classroom (Friend & Cook, 2010). This theme led the observation team to focus not only on the target of the lesson but the actual teaching of the lesson, along with the relationships that the co-teachers had with the students.

After analyzing the classroom observations separately, results showed that both co-teachers were present, engaged, and their voices were heard in the teaching process in five of six classes observed. Both adults interjected ideas for clarification, were actively involved in lesson presentation/assessment and moved around the room in five of six classes observed. Rituals and routines were in place in each of the six classes observed.

**Theme 2. Strategies to Promote Success.** The second theme focused on how strategies were incorporated into a lesson through collaborative planning. The observers
surveyed for direct evidence of modifications incorporated into the lesson (Betebenner & Linn, 2009).

The attention to how strategies were incorporated into a lesson characterizes the second theme. The observation team recognized that for co-teaching to be successful, evidence of co-planning needed to be easily seen through the strategies and modifications integrated throughout the lesson (Betebenner & Linn, 2009).

Teacher use of facilitated smooth transitions and inclusive language was observed in each of the six classes. Evidence and research-based instruction was utilized in five of the classes. A variety of instructional materials were used to engage learners in five of six classes. Both co-teachers provided feedback in five of six classes. Behavioral expectations and rules were posted in five of six classes. The Georgia Performance Standards (GPS) were posted and used by co-teachers and students in four of the six classes. Lessons were differentiated, graphic organizers were used, and technology was integrated in four of six classes observed.

Theme 3. Evidence of Success. This theme focused on successes of all students. The observers investigated for signs of assessment, such as, progress monitoring and individual conferencing. Reflective questions made it clear that assessment must be an ongoing and visible part of each lesson.

Learning expectations were defined, students were engaged, and students were participating in each of the six classes observed. Lessons were presented in a variety of ways and co-teachers utilized nonverbal communication in four of the six classes.

Co-teachers at Southern Elementary School needed to be able to examine the effectiveness of their practice. The Co-teaching Observation Checklist (Appendix B) was
used to examine the effectiveness of co-teaching classrooms and helped co-teachers focus on areas that need improvement. The checklist allowed the co-teachers to focus on specific aspects of the co-teaching relationship that were developing, as well as, aspects that may need improvement. The checklist also helped co-teachers note the progress that they made as they developed their collaborative partnerships. By examining the observation results, co-teachers identified areas of strength and weakness in their co-teaching relationships. Co-teachers used the results to set specific goals for improvement, which seemed to help them proceed more quickly through the developmental process.
CHAPTER FIVE
DISCUSSIONS, CONCLUSIONS, AND IMPLICATIONS

This chapter reviewed the principal methods of the study, restated the research problem, and summarized the results. The remaining section of this chapter was a discussion of the results and offers recommendations.

Review of the Methodology

The research design chosen was a mixed methodology study utilizing both quantitative and qualitative methods. The teacher-researcher chose to use mixed-method research to triangulate (to facilitate validation of data), to clarify and illustrate results from one method with the use of another method, to provide value and detail to the study finding features of each method, and to produce better results in terms of quality and scope (Tashakkori & Creswell, 2007).

There were 405 students included in the analysis, including 350 students without disabilities and 55 students with disabilities. Benchmark math data was used from the following eligibility categories of students with disabilities: Autism, Emotional and Behavioral Disorder, Other Health Impairment, Significant Developmental Delay, Specific Learning Disability, and Speech-Language Impairment. The number of students in each category was not listed here because there were students who qualify for services under multiple categories. The quantitative data was used to determine the relationship between instructional environment and progress attainment on benchmark assessment
scores of students with and without learning disabilities. There were three sets of data, first, second, and third benchmark scores for a given assessment.

This research used grounded theory techniques to develop a theory revealed by the data (Creswell, 2007). Themes were revealed in the interviews. Student assessment data and observations were examined to develop conclusions grounded in the data. This study was conducted in an elementary school and focused on current, co-teaching partnerships between general education teachers and special education teachers who co-teach in an inclusion classroom. Data were collected during the 2010-2011 school year. Structured, individual interviews were audiotaped with each co-teacher participant. Classroom observations of the co-teacher teams as they co-taught in the general education classroom took place during the course of the study. The research investigated what effect co-teacher collaboration had on rates of progress attainment (ROPA). It also investigated the effects of co-teaching on the academic progress of students in a math inclusion classroom and students who were not in an inclusion math class.

Statement of the Problem

Many schools have implemented collaboration of services to maintain effective instruction in inclusive classrooms. The services have been implemented to provide support for the increasing numbers of students with disabilities (Miskavitch, 2006). The collaboration of teachers usually consists of one general education teacher coupled with one special education teacher in an inclusive classroom of students with and without disabilities. This study undertook a review of the literature in the hopes of providing clarification and further description of co-teacher collaboration. Bunker (2008) and Rose
(2008) developed six specific components that were identified in a review of the literature on collaboration. These included:

- School Climate and Culture
- Clear Goals
- Attention to Results
- Time and Structures
- Deprivatization and
- Reflective Dialogue

The research on the frameworks of co-teacher collaboration often fails to demonstrate a relationship between a specific system of co-teacher collaboration and academic achievement. Few reports of collaborative models feature results which include quantitative or measurable data with a focus on increased academic achievement and/or factors attributed to facilitate or hinder the collaborative efforts of co-teachers on their instruction.

This study was conducted at a large, suburban, grade 3-5 elementary school in the Southeast part of the United States. Southern Elementary School’s continuing demographic changes in student population and anticipated changes in the state standards started conversations about the need for changes in teaching approaches to continue to meet the needs of students with disabilities. Southern Elementary School’s targeted learning gains were not achieved in math (47% of students with disabilities met or exceeded state performance standards). Co-teacher collaboration was implemented to address the math deficits for students with disabilities. This research project studied relationships between co-teacher collaboration and student achievement. It also reported
on the factors co-teachers reported to facilitate and hinder the collaborative process and student achievement.

Discussion of Findings

Research Question One

*How does disability status and instructional environment influence the rate of math benchmark progress attainment of third, fourth, and fifth grade students?*

Co-teaching strategies were implemented in many of the inclusion math classrooms in an attempt to improve the achievement of students. Math achievement continued to be a concern at Southern Elementary School. The purpose of this study and the research question was designed to investigate, determine, and examine if co-teaching had an impact on students with and without disabilities’ achievement on periodic benchmark assessments (Chapple, 2009). This mixed methods design used test data from a convenience sample of 405 students and eleven co-teachers. The students were divided into two instructional environments (inclusion and non-inclusion). The teachers’ perception and implementation of the co-teaching model, within the inclusive classroom, were documented through interviews using a structured interview guide.

Students’ achievement was measured based on math scores on a benchmark assessment given at the beginning, middle and end of the year. The model was fit and it was concluded that there was not a significant difference in progress attainment from one group to the next (Cody, McFarland, Moore & Preston, 2010). An effects contrast was performed yielding the rate of progress attainment of non-inclusion students without disabilities versus the rate of progress attainment of inclusion students with disabilities.
indicating that there was not a significant difference in the rate of progress attainment between the two groups.

Results indicated that students without disabilities (GENED) in inclusion classrooms progressed as well as or above the mean of students without disabilities (GENED) within the non-inclusion classroom in third grade, fourth grade and fifth grade. Results also indicated that students with disabilities (SWD) in inclusion classrooms progressed more than students with disabilities (SWD) in non-inclusion classrooms. In third grade, the difference was 21%. In fourth grade, the difference was 10%. In fifth grade, the difference was 9%.

Would students with disabilities and students without disabilities in inclusion classrooms be helped or hindered by being placed in an inclusion classroom? In this research, the results indicated that students with disabilities and students without disabilities were both facilitated, on an average, within inclusion classrooms.

Research Question Two

*How do co-teachers describe the effect collaboration had on student achievement in math?*

When citing instructional techniques, a majority of co-teachers found cooperative learning and the use of small groups to be the most effective. Co-teachers noted they learned from each other. General education teachers reported they learned about modifications, adaptations, and accommodations. Special education teachers noted they learned about the content (curriculum and standards). Co-teachers said they were able to accomplish the learning which provided greater opportunities for reduced student-teacher ratio, and it gave the students without disabilities an opportunity to gain an
understanding of learning difficulties many students with disabilities have (DeSimone & Parmar, 2006). Co-teachers interviewed in this study indicated they believed co-teaching really added to the academic development of all their students. This finding was consistent with the findings of the research of Goddard, Goddard, and Tschannen-Moran (2007). The co-teachers interviewed, commented that in the classroom, improved academic outcomes, were based on test scores, work samples, and grades in a grade book. Those sources of data were not used in this study.

Research Questions Three, Four, Five and Six

Facilitating or hindering factors of collaboration and/or student achievement.

Majority of the co-teachers spoke positively about both, their experiences with collaboration, and the results of the initiative. Co-teachers reported the time and structure of collaboration gave them structured time to develop ideas and to address issues. Co-teachers noted the two key elements of collaboration related to student achievement were a willingness to work together, and a prior working relationship. Co-teacher remarks about the factors that facilitated collaboration with co-teachers were consistent with the elements of collaboration described in the literature (Montiel-Overall, 2005; Rose, 2008; Williams, Prestage, & Bedward, 2001). Factors included themes of trust and relationships, predictable time and expectations, differentiation of instruction, use of formative assessment and clear alignment of practices, understanding the goals and direction for collaboration, increased accountability, and increased communication.

Nearly all factors reported to hinder collaboration were about Time and Structure. Co-teachers struggled with the paperwork demands of Georgia Learning Resources System (GLRS), specifically the lesson plan form. All of the participants requested a
revision of the lesson plan format. It was later decided that the form used by Southern Elementary School was an acceptable format.

New ideas produced new work. Co-teachers reported an increase in communication and compromise, which could be considered a benefit and a cost because both take time to nurture. Time was very valuable in a teacher’s day. Training (time out of class) was also considered a cost. The process of reflective dialogue and deprivatization seemed to add to the workload.

Several co-teachers noted that collaborative work would be difficult if there were personality issues present. Most people do not like confrontation (Leonard & Leonard, 2003). Co-teachers reported student achievement to be the primary factor to participate in the collaborative process. Two trends identified by co-teachers to facilitate changes in student achievement were the differentiation of instruction for students and the alignment of instruction between co-teachers. There were no themes identified to hinder a change in student achievement.

Discussion of Co-teacher Interviews

Through structured interviews, almost all co-teachers expressed need for time and an organized process to collaborate. There were some limitations noted, but co-teachers had solutions to these obstacles. They expressed the desire to continue collaboration, even expand it to other classes. Co-teachers found it important to meet and talk, because these activities promote a sense of satisfaction, increased teacher retention, obligation to the profession, and it was beneficial to the school culture (Leonard & Leonard, 2003; Schmoker, 2004; Talbert & McLaughlin, 2002; MacNeil, Prater & Busch, 2009).
The design of this study was to report student achievement of students with and without disabilities using benchmark assessments to assess progress in math. Progress was attained regardless of starting achievement levels of students assigned to classes.

The six components identified in the literature (Bunker, 2008; Rose, 2008) were used by the teacher-researcher as critical factors for successful collaboration. Interview responses confirmed reliability between the co-teachers about the definition of the components. Some co-teachers emphasized time and structure, while others emphasized deprivatization, and some co-teachers emphasized goals.

It was difficult for the teacher-researcher to differentiate responses concerning clear goals and attention to results because, naturally, they were related. When co-teachers talked about reflective dialogue about practice, they almost always included deprivatization. Clear goals were related to time and structure. Deprivatization and school culture/climate were related. The research questions were separated by factors related to student achievement and factors of collaboration with colleagues (Brownell, Adams, Sindelar, Waldron, & Vanhover, 2006). Some responses could be coded in both.

As an example, (RG) commented:

After lengthy discussion, we figured out what we needed to do to coordinate this activity. We took that idea about small math problem solving groups from the GLRS workshop we went to. ‘Take five’ was born. The students enjoyed working together. The activity would start with one of us saying ‘Take five’. The kids caught on by hearing it over and over again. By using the same terminology and approach with students in math and they got it.
This comment was coded under factors facilitating student achievement (Clear Goals) and factors facilitating collaboration (Reflective Dialogue about Practice). In fact, since the co-teachers believed collaboration was set in place to improve student achievement, there was, generally, no distinction between questions about collaboration and student achievement. No comments were found that developed a theme for factors hindering student achievement. This could be because the co-teachers knew the ultimate goal of the collaboration initiative was to improve student achievement.

The history between co-teachers and an attitude of willingness to engage in the collaborative process were not coded in the six components. Because they were mentioned by the co-teachers, they warrant further discussion. Several co-teachers individually used the term “willingness.” When asked to expand on this, co-teachers said there was a difference between the desire to participate in the process and the willingness to participate. One co-teacher said, “It is easy. You just have to be willing” (GB).

According to co-teachers, it was not required to believe it was best practice or that it was a promising idea. In view of these co-teachers, all it takes was a willingness to engage. This minimal level of commitment was a surprise to the teacher-researcher. Because it was characterized this way by several co-teachers, further inquiry may be warranted.

Another factor reported was teachers’ prior working relationship. Supovitz (2002) questioned the impact of existing cultures of collaboration. In a 4-year study, he wondered whether existing cultures of collaboration in some schools made a difference over schools that did not have a culture of collaboration. In the structured interviews, co-teachers said their history with their co-teachers was a positive impact. Teacher comments about their co-teaching team mates, about individual strengths, and about how
prior working relationships suggested a positive history of working together served to facilitate collaboration.

The working relationships were noted as being effective because they were comfortable. According to Kruse (1999), the three levels of teacher discourse are cooperation, collegiality, and collaboration. If these terms were analyzed, they may offer a closer view of teacher interaction. It would be interesting to ask co-teachers about their discourse to understand their level and depth of interaction. Answers to those questions could further explain the differences in student achievement results.

Limitations of Findings

The following limitations of this study may require extra questioning in the interpretation of the results and restrict the generalization of the findings. The first limitation was that the population sample (N = 11) was small. Each of the co-teachers was interviewed. The responses were based on seven co-teaching teams. The school had another form of collaboration occurring in the building that was not taken into account in these findings. The school had professional learning communities designated by grade level for math and literacy.

A second limitation that may have biased the findings: the statements made by co-teachers during the interviews may not be conclusive because there was no absolute method to determine truthfulness (McClure, 2008). The co-teachers may have wanted to be positive for fear that the teacher-researcher may share any negative comments with the administrators of the building.

A third limitation that may have hindered the results would be the positive responses from the participants and how they felt it was a great methodology for
achieving student gains in the classroom. The teachers and the teacher-researcher realize the importance of collaboration. It may have been hard to be completely objective during the interviews.

The benchmark assessments were based on the Georgia Performance Standards. Another limitation may have been teaching abilities of the co-teachers. The study did not take into account how well teachers presented the standards. It was assumed that they all taught to the pinnacle of their teaching ability. A fifth limitation was co-teaching pairing. According to Gray (2009), and Villa, Thousand and Nevin (2004), co-teaching instructors should be matched on a shared belief system. At Southern Elementary School, co-teachers were selected by administrators based on the teacher’s willingness to co-teach rather than based on a shared belief system. The teacher-researcher fears this may have limited the student achievement if either of the participants in a co-teaching team did not have an enthusiasm for the co-teaching practice.

Researcher Comments

*Teacher-Researcher Status*

As a special education co-teacher at Southern Elementary School, the teacher-researcher was considered a colleague to the study participants. Most participants in the study were veteran teachers of the school so struggles, successes, and the team dynamics were well known to the teacher-researcher.

- Co-teachers/participants worked hard to make the project successful. They knew lesson plans would be analyzed to review results for the study, and they labored over them sometimes taking more time than was warranted. Co-teachers were hesitant to suggest changes in accountability requirements, at first, so they waited
until the end of the project. That was when they reported how long the process took and how hard it was to meet this requirement. One co-teacher reported how much that level of meticulousness interrupted the time and focus for engaging in actual work.

- The teacher-researcher’s familiarity with the participants provided background for the structured interviews. Specific questions were developed to deepen understanding of what was reported.
- Efforts were made by this teacher-researcher to review lesson plans, observation checklists results, and comments with impartiality, but prior knowledge and opinions could have influenced the perspective.
- Because these were ongoing relationships, it was possible the researcher-colleague relationships could have caused some participants from freely opening up.

_Perceptions of the Collaborator_

This teacher-researcher decided to become a part of the development and participation of collaborative teams in order to personally experience the facilitating and hindering factors related to collaboration. The teacher-researcher situated herself as a learner/participant in order to experience the full demand of the collaborative process, with the belief that this would add perspective and reliability to the study. First-hand experience provided a depth of understanding. The teacher-researcher was mindful of the possible complications and benefits of working and researching work could bring, but the experiences of collaboration at the participation level would sharpen the focus.
The factors that facilitated the collaborative process for this teacher-researcher could be characterized by the six components described in the literature in Chapter 2. The personal insights of this teacher-researcher as a co-teacher were discussed guided by the framework of the six components.

*Culture and Climate*

Strong school cultures have more motivated teachers. Highly motivated teachers have greater success in terms of student performance and student outcomes (Friend & Cook, 2010). Co-teachers reported collective vision, a willingness to share, compromise, respect for differences, a common focus, shared values, and trust as factors that facilitate collaboration. Hindrances were described when personality conflicts between team members were present. The teacher-researcher found those factors dominant in personal experiences as a member of a co-teaching team.

Initially, the teacher-researchers’ willingness to begin this project was based on vision of benefits for students with disabilities being educated in the general education classrooms. The teacher-researcher saw a similarity in beliefs and passion for working as a collaborative team. Shared collaborative practices and accountability procedures were identified quickly. Keiffer-Barone and Ware (2002) reported that when teaming was successful, co-teachers increasingly report a positive work environment, a sense of shared mission, and a stronger investment in both the decision making of the school and the sense of shared responsibility.

Tradition, culture and climate were extremely strong forces at Southern Elementary School. The teachers were proud of working at the school. The students were steeped in the tradition. This school system had one primary school, one elementary, one
middle school, and one high school. The students move together from one building to the other fashioning a sense of belonging. The co-teachers’ vision for the initiative was not just to show progress of students with disabilities in Southern Elementary School but “to be a part of something that improves the school for now and for the future” (RG).

Clear Goals

In Chapter Three, clear goals were defined as “goals, based on specific academic strengths and needs of the student population are specific, measurable, and focused on student achievement.

The key goal of the teacher-researcher was to experience the collaborative process. The secondary goal was the development of the research project. The primary goal for co-teachers was to increase student achievement. Collaboration was the process chosen to attain the desired result. Co-teachers noted two types of goals included in their collaborative work, goals for the collaborative process and academic goals for students. Most teams took more time and effort working and refining goals for collaboration (the process) rather than for student achievement goals (the results). They were concerned that their goals would not be specific, measurable, attainable, relevant and timely. Co-teachers were worried that they would not be able to come to a consensus on the goals for collaboration. The goals for students were not as detailed or plentiful.

Most co-teachers’ focused goal was the process, and not the results. O’Neill (2000) wrote about this, saying teams needed to differentiate between goals that focus on process versus those that are results oriented. Process goals focused on implementing a program or curriculum. Result goals provided feedback on how students are learning.
Goals that focused on process do not directly impact instruction; as a result, student learning was not impacted. This may be what happened in this study.

One reason for co-teachers’ stronger focus on the process rather than the result may be that the structure of collaboration was new, and co-teacher teams were apprehensive about “messing up”. Experience with the collaborative process may make a difference in the ways goals are set.

**Attention to Results**

This study defined Attention to Results, in Chapter Three, as co-teaching teams, composed of teams of teachers that base their success on the academic gains of their students. Teams of teachers create student goals and are measured on a scheduled basis. The design of this study based success on the progress attainment of students with disabilities.

Schmoker (2004) said that, for best results, collaborative teams engage in continuous, collective analysis of student assessments in order to improve and adjust instruction. The relationship between student-based performance goals and assessment appears strong. J. O’Neill (2000) said setting goals that were directly connected to student achievement helped teachers to analyze student needs, to focus their instruction and to communicate results.

**Time and Structures**

In Chapter Three, Time and Structure were defined as time scheduled for teachers to meet in collaborative co-teacher teams. Teams recorded the amount of time they spent according to the shared definition of collaboration that had been established and the collaborative agreements made.
Consistent with co-teacher statements, time was an essential and critical element in the success of collaboration. Most co-teachers reported that they needed more time to collaborate. If time was limited, co-teachers will discuss procedural and managerial issues (Khorsheed, 2007). The amount of time allocated for each collaborative meeting was limited to two hours, which co-teachers reported as brief. Not having ample time may have partially accounted for why co-teachers worked so much on the process of collaboration rather than student results.

The teacher-researcher could have used additional scheduled time. The task of organizing, planning, gathering materials, discussing, and inferring was an on-going process for co-teachers, and the work was never truly done. It was critical to have a large enough block of time to become immersed and productive. Juggling calendars and finding large blocks of time was frequently a challenge. Compromise and focus on the goals eased the difficult tasks.

Informal structures were developed to maintain communication between the teacher-researcher and her co-teacher team mate. These included frequent and consistent communication in the form of phone calls and email. This intentional communication offered encouragement and support as well as increased accountability and attention to results.

**Deprivatization**

In Chapter Three, deprivatization was defined as collaborative teams of co-teachers shared instructional practices and discussed results of formative and summative assessments. Then, the co-teachers celebrated successes and discussed room for improvement.
The teacher-researcher’s perceptions confirmed co-teacher insights about deprivatization. When team members talked, much of the struggle was revealed. For this teacher-researcher, the act of deprivatization reduced feelings of isolation which so often characterizes the experiences of special education teachers. When engaged in a project under a collaborative model, deprivatization, or revelation of both struggle and success seemed to be easier. Supovitz (2002) reported on co-teacher teams who deprivatized their practice offset seclusion and provided concrete means for conversation. One co-teacher commented the framework of collaboration provided a “nice way not to be private” (KY). This teacher-researcher found significance in those conclusions. When co-teachers were expected to collaborate, accompanied by a structure for collaboration, the floodgates were frequently released.

Co-teachers reported a sense of increased accountability was essential in the collaborative process. They said that when a co-teacher knew they were going to report to their team-mate, they worked hard to be ready. When co-teachers were assigned a specific task, they worked to do a high quality job.

*Reflective Dialogue About Practice*

In Chapter Three, Reflective Dialogue about Practice was defined as teams of co-teachers discussing, questioning, congratulating and critiquing professional practice with their co-teaching team.

Co-teachers reported an advantage of reflective practice was learning from each other. “It was great having someone to play off of” (UZ). They also noted that getting advice including differentiation of instruction for students. The co-teachers’ generation of
new ideas, or modification of strategies, provided a foundation for further reflection and inquiry.

Co-teachers also reported reflective dialogue that was strained and unproductive. The teacher-researcher experienced that at the beginning of the project. Her co-teacher had never co-taught with a special education teacher. She had never taught students with disabilities before. The dialogue, at the beginning, was mostly the teacher-researcher educating the co-teacher about special education, modifications, the law and the individualized education program (IEP) for 14 students. Reflective practice in that instance was used multiple times a day.

Teacher-Researcher Reflections

When the dissertation process began, the teacher-researcher just wanted to know if collaboration was working for her students. The school system was given a wonderful opportunity to receive some professional development and support to improve the co-teaching that was going on at Southern Elementary School. In the summer of 2010, the teacher-researcher contacted Georgia Learning Resource System (GLRS) to get an advanced agenda for the Co-Teacher Academy. Unfortunately, that information was delayed so the teacher-researcher had to rely on the school system’s special education director to contact the GLRS. The intention was for the co-teachers to meet during the summer and plan for the school year. The teacher-researcher was especially excited about this since she had never worked with her future co-teacher.

The date for the first meeting kept being postponed and/or changed. The co-teachers did not have a preliminary (before school) meeting to get to know each other so that made the first of the year very stressful. The co-teachers did not have any time set
aside to find out about each other. Learning about what were their strengths and weaknesses, likes and dislikes, pet peeves, etc… was an ongoing process.

Teachers learned from social interaction with co-teachers as they expect their students to learn from their peers. The teacher-researcher asserted that co-teachers must have time to learn about each other, about their lives outside of school as well as in school. Co-teachers’ beliefs, values, and ideals are woven into their current teaching practice. Co-teachers need to be able to trust one another. They need to be able to rely on their co-teacher to be a continuation of them, when they are in or out of the classroom.

In the interviews, the co-teachers were especially complimentary of each other. The teacher-researcher was fortunate to have participants so willing to give their time and share their experiences and reflections. Each co-teacher was enthusiastic to contribute to this study.

Thinking about the process of this study, the teacher-researcher identified sections that may need to be refined for future researchers who might want to conduct a similar study. The pace and commitment of collecting, coding and analyzing data can easily become overwhelming. The teacher-researcher was forced to adjust the pace of data collection and analysis due to health issues. It was suggested to adjust the pace of data collection and analysis giving ample time in case of unforeseen predicaments. Next, schedule all aspects of the research to eliminate any misconceptions on timelines.

Throughout the research process, the teacher-researcher gathered a great deal of valuable information about collaboration and co-teaching. The teacher-researcher discovered through her direct participation that personal desire to change the way instruction was delivered was crucial in order for co-teaching to be successful and to have
an impact on students. Co-teaching was a self-less practice with enormous potential for promoting academic achievement for all levels of learners.

Implications for Future Practice in Local Context

*Development of Co-teacher Collaboration Teams*

Below are suggested actions to organize collaboration practice at Southern Elementary School.

- Schedule adequate time for collaboration
- Work to continually align systems throughout the school to support collaboration that results in increased student achievement.
- Work to align school improvement goals with the work of co-teacher collaboration.
- Create teams of co-teachers carefully and thoughtfully.

*Implementation of Co-teacher Collaboration Teams*

Below are listed suggested actions to implement collaborative teams.

- Provide a simple framework to structure collaboration of co-teacher teams.
- Be clear about school-wide expectations.
- Provide trainings on the process of collaboration, development of collaborative skills
- Provide opportunities for co-teachers to develop and deepen working relationships with team members.
- Provide frequent and consistent training for teams about how to question each other, how to deprivatize, and how to reflect together.
- Provide frequent and consistent training on formative assessment aligned with state standards and use of data in decision making.
- Develop simple systems of accountability, mechanisms for feedback to teams about the collaborative process and student achievement.
- Provide continuous follow up support and training.

Fundamental characteristics of effective collaborators should be considered when assigning co-teacher team assignments. Walther-Thomas, Korinek, McLaughlin and Williams (2000) said, “Co-teaching should not be used for teacher remediation. To be successful both partners must possess well-honed professional skills and positive attitudes about co-teaching” (p. 187).

According to Villa and Thousand (1996), co-teachers must have shared beliefs concerning the inclusion of students with disabilities. They must be able to share responsibilities for planning, teaching, and evaluating classroom instruction. Effective co-teachers must share classroom status, power, and authority. Co-teachers must possess complementary professional skills. Interviewee (TY) commented, “I am learning so much from her. She brings so much. She has so much experience with special education and modifications. I did not have that training in my college courses”. Successful collaborators must be willing to share resources and other symbols of professional status. Correspondence from the principal and staff should clearly communicate that both the general and special educators are actively involved in classroom teaching and learning (Sharpe, 2001).
Implications for Future Research

The following recommendations propose possible improvements in practice and areas for further research. First, the co-teachers should be permitted to have adequate planning time for co-teaching practices. There is an urgent need for school districts to understand the value of collaborative planning and the benefits that it had in the classroom, for all participants in the educational setting. Further research is needed to validate the usefulness of scheduled collaborative planning time.

Further research is needed to study the effectiveness of collaborative teaching in accelerating the academic development of all students (with and without disabilities) in the general education classroom. Based on observations, interviews and student achievement data, results of this study indicated that collaborative teaching appeared to be effective in the classroom. The research was not based on comparative measures of students’ test scores or report card grades taken before and after the inclusion experience.

Further investigations should involve student perceptions of collaborative teaching. All of the special education and general education teachers involved in this study stated that they believed their students were receptive to collaborative teaching. The co-teachers referred to observations of student behavior that they interpreted as being receptive. How do the children perceive collaborative practice of teaching?

Future research should study co-teachers’ interactions and interpersonal reactions. What do they learn from each other? How do they handle conflict? What forms of communication are most effective and efficient? Further research is needed to determine the interaction between and the effects of the various factors (environment and teacher) and progress attainment for students with and without disabilities.
A study of a collaborative process and whether there was a relationship to student achievement over several years would be interesting. This study followed eleven co-teachers for one year. After a full year together, would they consider staying with that particular co-teacher to further improve their effectiveness with students? What strategies would they incorporate that they may not have known to do the first time around? Would special education teachers, in particular, prefer to change not only co-teachers, but the subject matter?

Since a school making adequate yearly progress (AYP) had been a factor in many collaboration initiatives, it would be thought-provoking to examine the impact accountability pressures might have on collaborative teams (Hebert, 1998).
References


Appendix A

Co-Teaching Participant
CONSENT FORM
Co-Teaching Participant CONSENT FORM

As a doctoral candidate at Kennesaw State University in Kennesaw, Georgia, I am conducting a study to investigate the relationship between teacher collaboration in professional learning communities and student achievement in math. The purpose of this letter is to invite you to participate in the study which also involves agreeing that the data you collect as part of our school improvement plan can be included in this study. Although the work of the school improvement plan is an expected part of your work at school, inclusion of the data you generate in this study is purely voluntary on your part. Please consider this an invitation to have your data included.

The following information is provided to assist you in deciding whether or not you wish the data you generate in the school improvement plan to be included in a study. You are free to decide to have your data included or not included. You are also free to withdraw at any time without affecting your relationship with this administrator, this school, or the school district.

This study is an attempt to document whether there is a relationship between teacher collaboration and increased student achievement, and also to identify contextual factors that served to facilitate or hinder the collaborative processes and increases in student achievement. Little has been documented in the professional literature about the possible relationship between the time spent in effective collaboration, the quality of the collaboration, and student achievement. This study will investigate the relationship between teacher collaboration in professional learning teams and student achievement. The research questions will be:

1. How do teachers describe collaboration affecting student achievement?
2. What factors do teachers report to facilitate collaboration with colleagues?
3. What factors do teachers report to hinder collaboration with colleagues?
4. What factors do teachers report to facilitate a change in student achievement?
5. What factors do teachers report to hinder a change in student achievement?
6. Will there be a relationship between teacher perception of collaboration and student achievement?

As part of the school improvement plan for the school led by our administration and Northwest Georgia GLRS, teachers will work in teams to develop assessments, identify needs revealed by assessments, and group students for instruction based on student needs. Teacher teams will also convene to report successes, and collaborate on needs. All teacher teams will engage in this project. It is expected that this researcher will collect data starting in August, 2010 and end in March, 2011.

The portion of the project you are being asked to volunteer as a participant involves the researcher’s use of the data you generate from this project in a dissertation study. Teacher collaboration rating scales will be completed during collaborative team meetings, collaboration meeting notes will be completed and used as an agenda, memo and reflection, audiotaped semi-structured interviews will be conducted at the end of the project, and teacher participants will complete a teacher survey as a post assessment. A
co-teaching observation checklist will be administered by The Georgia Learning Resources System (GLRS). GLRS is a statewide network of resource centers offering services to parents and educators of students with disabilities. Information generated by teachers who grant permission will be used in the data analysis. Information generated will not be used in any teacher evaluation process. The expected benefit associated with your participation is the professional knowledge gained about teacher collaboration teams and correlative student achievement gains. This could add to the field of knowledge about effective professional teaching and teaming practices.

There are no penalties for deciding not to participate in the study. No portions will be used in any staff evaluation. The researcher will maintain complete confidentiality of all data used in the study. When anything is written based on the information or data you provide, it will be coded to ensure anonymity. All personally identifiable information, including the name of our school and our school district will be assigned a pseudonym.

When this study is later submitted for publication, an acknowledgement will be made to teacher participants in the study, but anonymity will be honored in these documents. Please do not hesitate to ask questions about use of your data in the study before participating in the study or anytime during the study.

If you agree to volunteer to have your data used, please read and sign.

I, ________________________________, consent to participate in the research project entitled “Using Professional Learning Communities to Contribute to Successful Collaboration of General and Special Educators” which is being conducted by Ketrina Jordan, Cartersville, GA 30120, (770)382-0363. I understand that this participation is voluntary; I can withdraw consent at any time without penalty.

The following points have been explained to me:

1. The reason for the research, and the procedures of the research. Participation entails no risks.

2. The results of this participation will be anonymous and will not be released in any individually identifiable form without the prior consent of the participant unless required by law.

3. This study includes an online survey. Survey software has been programmed not to collect Internet protocol addresses that may reveal your computer’s identity to the researcher.

_____________________________________________  ________________________
Signature of Participant                          Date

_____________________________________________  ________________________
Signature of Investigator                          Date
PLEASE SIGN BOTH COPIES, KEEP ONE AND RETURN THE OTHER TO THE INVESTIGATOR

Questions about the Study: If you have any questions about the study, you may contact Ketrina Jordan at telephone number 770-382-0363.

Research at Kennesaw State University that involves human participants is carried out under the oversight of an Institutional Review Board. Questions or problems regarding these activities should be addressed to the Institutional Review Board, Kennesaw State University, 1000 Chastain Road, #0112, Kennesaw, GA 30144-5591, (678) 797-2268.
Appendix B

Co-Teaching Observation Checklist
### NW GLRS

**Co-Teaching Observation Checklist**

| General Education Teacher: ________________ | Grade Level: ____________________________ |
| Special Education Teacher: ________________ | Date of Observation: ______________________ |
| Observer: _________________________________ | Position: ________________________________ |
| School: _________________________________ | Subject Observed: ________________________ |
| Start Time: ______________________________ | End Time: ________________________________ |
| Part of Lesson Observed: Beginning _______ Middle _______ End _______ Unsure _______ |

**Rating Scale:**  
- **E** = Evident  
- **NE** = Not evident  
- **NA** = Not applicable

#### Co-Teaching Models

<table>
<thead>
<tr>
<th><strong>Co-Teaching Models</strong></th>
<th><strong>E</strong></th>
<th><strong>NE</strong></th>
<th><strong>Comment(s)</strong></th>
</tr>
</thead>
</table>
| *Appropriate co-teaching models are used effectively.*  
Circle any/all models observed:  
One Teach / One Observe  
Team Teaching  
Parallel Teaching  
Supportive Instruction (Use of Paraprofessional)  
No Evidence of Co-Teaching |

#### Lesson presentation, instruction and instructional materials

<table>
<thead>
<tr>
<th><strong>Lesson presentation, instruction and instructional materials</strong></th>
<th><strong>E</strong></th>
<th><strong>NE</strong></th>
<th><strong>Comment(s)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>GPS/EQs are posted and are used by the teacher within the lesson framework.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>GPS/EQs are posted and are used by the students within the lesson framework.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Both teachers are present for and engaged in the lesson.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evidenced-based instructional strategies are used in the classroom.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning expectations, directions, and procedures are clearly defined for students.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research-based instructional strategies are utilized in the classroom.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lessons are differentiated in content, process, product, and/or learning environment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphic organizers/study/note taking guides appropriate to lesson and content are used.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology is integrated and age appropriate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students are engaged in respectful work (challenging, meaningful, engaging, and appropriate for facilitating learning acquisition.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students are participating in lesson activities by both answering and asking questions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both teachers’ voices are heard in the teaching/learning process.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction looks significantly different with two adults present in the classroom.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lessons are presented in a variety of ways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both adults interject ideas for clarification of lesson content.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A variety of instructional materials appropriate to learner’s age/grade are used to engage and motivate learners.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both teachers provide feedback to students to guide their learning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers facilitate smooth transitions from activity to activity within and between lessons.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A variety of grouping patterns are used. Circle any/all that apply:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pairs</td>
<td>Small Groups</td>
<td>Hetro/Homogeneous</td>
<td>Whole Class</td>
</tr>
<tr>
<td>Learning Styles</td>
<td>Multi-levels</td>
<td>Independent Learning</td>
<td></td>
</tr>
</tbody>
</table>

### Classroom Structure

<table>
<thead>
<tr>
<th>E</th>
<th>NE</th>
<th>Comment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Behavioral expectations are posted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Rules are posted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both teachers are actively involved in the lesson presentation and assessment process.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both adults move around the classroom assisting and monitoring all students learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rituals and routines are in place and adhered to by students.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inclusive language is used by both teachers in class (us, our, we).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers utilize nonverbal communication during lesson activities to effectively manage classroom behavior and direct instruction.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**E = Evident**  **NE = Not evident in this observation**

### Additional Comments

---

*Use by Permission Only*
Appendix C

Structured Teacher Interview
Structured Teacher Interview

Goals of this interview:

- To discover what you deem is important to the collaborative process,
- To discover how the collaborative process has contributed to your instruction,
- To discover how the collaborative process has contributed to student achievement.

1. Would you describe your co-teaching experience as a positive one?

   YES… Would you describe the positive aspects for me?
   
   NO… Would you describe the negative aspects for me?

2. Have you or your teaching partner ever disagreed about an important aspect of co-teaching?

   YES… What was the disagreement?

   Were you able to resolve the disagreement?

   If yes … how was it resolved?

   NO… Go to Question 3.

3. Have you used any new instructional techniques, management strategies, or curriculum adaptations in your co-teaching?

   YES … Would you describe these techniques?

   … Which of these do you consider to be the most effective? Why?

   … Which of these do you consider to be the least effective? Why?

   NO … then Would you describe the teaching methods you currently use?

   ….Which of these do you consider to be the most effective? Why?

   …. Which of these do you find least effective? Why?

Adapted from survey and interview questions in the research of Bunker (2008), Murawski and Dieker (2008), and Rose (2008).
4. Specific to your team, what part of the collaborative process works for you?

5. Do you feel as though collaboration adds to your classroom instruction?
   
   YES … Would you describe the contributions?
   
   NO … Would you describe the contributions?

6. Do you think the collaborative teaching strategies that you are using are effective in educating students without disabilities in your classroom?
   
   YES … Why are they effective?
   
   No … Why are they not effective?

7. Do you think the collaborative teaching strategies that you are using are effective in educating students with disabilities in your classroom?
   
   YES … Why are they effective?
   
   No … Why are they not effective?

8. Has the collaborative teaching experience contributed to your professional knowledge and skill?
   
   YES … Would you describe the contributions?
   
   NO … Would you describe the contributions?

9. To what extent do you think that being in an inclusion classroom contributes to the academic development of students with disabilities?
   
   In what ways does it contribute?

10. Are you satisfied with the level of support provided by the school to facilitate your collaborative teaching?
   
   YES … go to question 11.
   
   NO … What types of support do you think the school should provide?
11. Are you satisfied with your current collaborative teaching assignment?

   **YES**... Would you describe the most satisfying aspects?

   **NO**... What changes or improvements would you recommend?

12. Are the students in your inclusion classroom generally receptive to collaborative teaching?

   **YES**... How do you determine this?

   **No** ... How do you determine this?

13. How do you feel about your performance this year as a collaborative team?

14. What recommendations do you have for:

   Your team for next year –

   The processes/procedures for next year –
Appendix D

Theme Analysis of Co-Teaching Observation Checklist
Theme Analysis of Co-Teaching Observation Checklist

### Theme 1: Meaning Roles For Each Teacher

<table>
<thead>
<tr>
<th>Evident</th>
<th>Not Evident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both teachers are present &amp; engaged in the lesson</td>
<td>5</td>
</tr>
<tr>
<td>Both teachers’ voices heard in the teaching/learning process</td>
<td>5</td>
</tr>
<tr>
<td>Instruction looks different with 2 adults in classroom</td>
<td>1</td>
</tr>
<tr>
<td>Both adults interject ideas for clarification</td>
<td>5</td>
</tr>
<tr>
<td>Both teachers actively involved lesson lesson/assessment</td>
<td>5</td>
</tr>
<tr>
<td>Both adults move around the classroom</td>
<td>5</td>
</tr>
<tr>
<td>Rituals and routines are in place</td>
<td>6</td>
</tr>
</tbody>
</table>

### Theme 2: Strategies to Promote Success For All Students

<table>
<thead>
<tr>
<th>Evident</th>
<th>Not Evident</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS are posted/used by teacher within lesson framework</td>
<td>4</td>
</tr>
<tr>
<td>GPS are posted/used by student within lesson framework</td>
<td>4</td>
</tr>
<tr>
<td>Evidence-based instructional strategies used in classroom</td>
<td>5</td>
</tr>
<tr>
<td>Research-based instruction strategies utilized in classroom</td>
<td>5</td>
</tr>
<tr>
<td>Lessons are differentiated in content, process, product</td>
<td>4</td>
</tr>
<tr>
<td>Graphic organizers, etc…..</td>
<td>4</td>
</tr>
<tr>
<td>Technology is integrated and age appropriate</td>
<td>4</td>
</tr>
<tr>
<td>A variety of instructional materials are used to engage</td>
<td>5</td>
</tr>
<tr>
<td>Both teachers provide feedback to students</td>
<td>5</td>
</tr>
<tr>
<td>Teachers facilitate smooth transitions</td>
<td>6</td>
</tr>
<tr>
<td>Behavioral expectations are posted</td>
<td>5</td>
</tr>
<tr>
<td>Rules are posted</td>
<td>5</td>
</tr>
<tr>
<td>Inclusive language is used</td>
<td>6</td>
</tr>
</tbody>
</table>

### Theme 3: Evidence of Success

<table>
<thead>
<tr>
<th>Evident</th>
<th>Not Evident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning expectations are defined</td>
<td>6</td>
</tr>
<tr>
<td>Students are engaged</td>
<td>6</td>
</tr>
<tr>
<td>Students are participating</td>
<td>6</td>
</tr>
<tr>
<td>Lessons presented in a variety of ways</td>
<td>4</td>
</tr>
<tr>
<td>Teachers utilize nonverbal communication</td>
<td>4</td>
</tr>
</tbody>
</table>