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CO-TEACHING: AN INFLUENCE ON TEACHER GROWTH MINDSET AND STUDENT ACADEMIC ACHIEVEMENT

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CO-TEACHING: AN INFLUENCE ON TEACHER GROWTH MINDSET AND STUDENT ACADEMIC ACHIEVEMENT

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ABSTRACT

CO-TEACHING: AN INFLUENCE ON TEACHER GROWTH MINDSET AND STUDENT ACADEMIC ACHEIVEMENT

Lori Goldstein

Co-teaching is an instructional strategy for pairing special education and general education teachers to provide specially designed instruction to students with disabilities in general education settings. Instructional coaching is a professional development model that can provide co-teachers with additional strategies to effectively educate special and general education students in their classes. This type of professional development can also influence co-teacher perceptions and mindsets about co-teaching. This study examined the relationships between co-teacher instructional coaching and co-teacher growth mindsets. This mixed methods study, utilizing an explanatory sequential design, analyzed the relationship between instructional coaching and co-teacher perceptions of growth mindset. Special education and general education co-teachers (grades k – 8) from a suburban school district located in the northeastern United States participated in this study.This study examined the growth mindsets of co-teachers to determine if differences existed between co-teachers who have received instructional coaching and those who have not. This study provides school administrators with information about the mindsets of co-teachers, allowing administrators to consider instructional coaching as a vehicle for

changing teachers' mindsets and for improving the academic achievement of special education students.

DEDICATION

This dissertation is dedicated to my family. To Craig, for always supporting my aspirations and encouraging me to see them through. To Emily, Brian, and Andrew, for being understanding as I completed my educational endeavors. To my parents, who raised me with the importance of education and "that piece of paper."

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CHAPTER 1 INTRODUCTION

The Individuals with Disabilities Education Act of 1994 (IDEA) mandates the education of students with disabilities in the least restrictive environment, with appropriate supports to address the students' individual needs. New York state currently does not meet the criteria for satisfactorily meeting this benchmark, according to the New York State Special Education State Performance Plan/Annual Performance Report (2020). In 2019, 58.22% of K-12 students with disabilities were educated in the general education classroom 80% or more of the school day, which is a decrease from 2018 and 2017 (NYSED, 2020). The continuum of special education services ranges from consultant teacher services (supporting students with disabilities within general education classes) to special classes (students receive primary instruction away from their general education peers) (NYSED, 2008, 2013). Consultant teacher and integrated co-teacher services are service delivery models that support the education of students with disabilities in general education settings with the use of specially designed instruction (NYSED, 2013).

The reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA, 2004) reaffirmed the mandate that students with disabilities be educated in the least restrictive environment. One way this can be accomplished is through consultant teacher and integrated co-teacher models of special education service delivery. In this model, students with disabilities are educated beside their non-disabled peers in general education classroom settings.

The Council for Exceptional Children (CEC) includes the meaningful participation of persons with disabilities in inclusive settings in schools and communities

in its code of ethics (Council for Exceptional Children, 2015). This is aligned with the federal and NYS (New York State) laws requiring committees on special education to consider placement of students with disabilities in the least restrictive environment according to the individual's academic, social, physical and management needs (Office of Special Education and Rehabilitative Services, Department of Education, Part 300; 2018; Part 200- Students with Disabilities, 2016). One way of supporting the inclusion of students with disabilities in typical schools is through the use of co-teaching (Friend, 2019; Hang & Rabren, 2016; Idol, 2006; Walsh, 2012).

Co-teaching is a strategy for pairing special and general education teachers to provide specially designed instruction to students with disabilities in general education settings (Friend, 2019). Such collaboration among professionals is a feature of the provision of special education services to students with disabilities. General education teachers work with varying professionals from other disciplines, including special education teachers, speech/language pathologists, occupational therapists, and school psychologists to support the behavioral, social-emotional, and academic needs of students with disabilities in their classrooms.

A variety of instructional models can be used by co-teachers to provide specially designed instruction to students with disabilities, while addressing the age and grade appropriate learning standards (Friend, 2019). Research indicates that implementation of effective co-teaching requires professional development to aid special and general education teachers with using different co-teaching models while supplying needed specially designed instruction (Nierengarten, 2013).

Supporting co-teaching best practices through professional development promotes positive teacher perceptions of special education students. Additionally, professional development focused on co-teaching has been associated with increased academic achievement, increased social-emotional growth, and reduced behavioral needs of students with disabilities (Narain, et. al., 2012; Pancsofar & Petroff, 2013; Shady, et. al., 2013; Tzivinikou, 2015). Instructional coaching, one form of professional development, allows teachers to discuss, implement, and receive constructive feedback regarding the use of varying co-teaching models, lesson planning and promotes communication between general and special education teachers. These factors are associated with greater teacher self-efficacy, which in turn is associated with greater student achievement and growth (Poglinco &Bach, 2004; Cook, et. al., 2021; Narain, et. al., 2012; Urton, et. al., 2014). This method of professional development allows co-teachers to receive feedback about their use of co-teaching models and instructional strategies to support the social-emotional and academic learning of students (Cook & Friend, 1995).

Teacher mindset is connected to student performance. Studies have shown the relationship between teachers' mindsets and their perceptions of students' intellectual abilities (Waack, 2018, Hattie, 2021, Gutshall, 2013). Teacher practices may be influenced by their ideas about the intellectual ability of their students. Gutshall (2013) used student scenarios to examine the connections between teachers' personal mindsets and their views on student ability. Teachers were asked to complete a brief survey to assess their mindsets. They were then presented with different scenarios about a student who had a learning disability or no learning disability, was struggling with a specific skill, and had positive attributes. The teachers were asked questions related to the

scenario focused on the student's future achievement. The teachers' responses to the scenario questions were highly correlated with their personal mindsets. Teachers who displayed a growth mindset had scenario responses that indicated that the student's ability was capable of growth. Additionally, teacher responses about the scenarios did not appear to be influenced by gender or disability of the student in the scenario, showing that the teacher's personal mindset view was a greater influence on their beliefs about students' ability than any demographic information about the students, such as disability or gender.

The education of special education students in general education settings has been associated with improved student outcomes in academic, social-emotional, and behavioral domains (Bottage, et.al.; Castro, 2007; 2018; Gokbulut, et.al.,2020; Hang & Rabren, 2009; Tremblay, 2013; Walsh, 2012). Additionally, co-teaching has been associated with positive teacher perceptions of efficacy and job satisfaction (Castro, 2007; Dieker, 2001; Idol, 2006; Pancsofar & Petroff, 2013). The need for professional development regarding co-teaching has been identified as a key indicator for the development of collaboration, communication, and planning between teachers (Dieker, 2001; Pancsofar & Petroff, 2013; Scruggs & Mastropieri, 1996; Tzivinkou, 2015).

It is unknown how instructional coaching influences a co-teacher's beliefs about growth mindset and student academic achievement in reading. The current study has added to the body of research about co-teaching by providing information to school administrators as to necessary supports for teachers of special education students in general education settings.

Purpose of the Study

The purpose of this mixed methods study was to investigate the relationships between co-teacher instructional coaching and co-teacher growth mindsets. An explanatory sequential mixed methods design was used. This mixed methods research design allows the researcher to use qualitative data to support and explain the quantitative findings (Creswell & Plano Clark, 2018). During the quantitative phase of the study, the researcher compared the following independent variables: instructional coaching, teacher perceptions of growth mindset, teacher age, years of teaching experience, level taught, and teacher's role (special education or general education). The dependent variables were the teachers' self-assessed scores on the Growth Mindset Scale (Dweck 1999, 2006), student achievement gain scores in reading and mathematics from students in co-taught classes as measured by the i-Ready diagnostics (Curriculum Associates, 2022).

During the study's qualitative phase, a narrative approach helped to explain teacher perceptions of growth mindset as it related to co-teaching and instructional coaching. Following these analyses, an analysis of the two phases of the mixed methods design was completed.

Theoretical and Conceptual Frameworks

Theoretical Framework

Carol Dweck's growth mindset theory (Dweck, 2016; Schunk, 2020) was used to guide this study. Dweck's growth mindset theory involves peoples' beliefs that their abilities and skills can be developed with effort. Goal setting is related to a person's theory of their intellect or ability- as being fixed or being able to grow (Dweck, 2016; Schunk, 2020).

Dweck's theory states people with a growth mindset believe that their intellect and ability is changeable given effort and persistence. Success is measured by continuous learning and development. Challenges are seen as opportunities for stretching oneself and for taking risks. Those with a growth mindset believe that one's basic qualities can be cultivated through effort and help from others (Dweck, 2016).

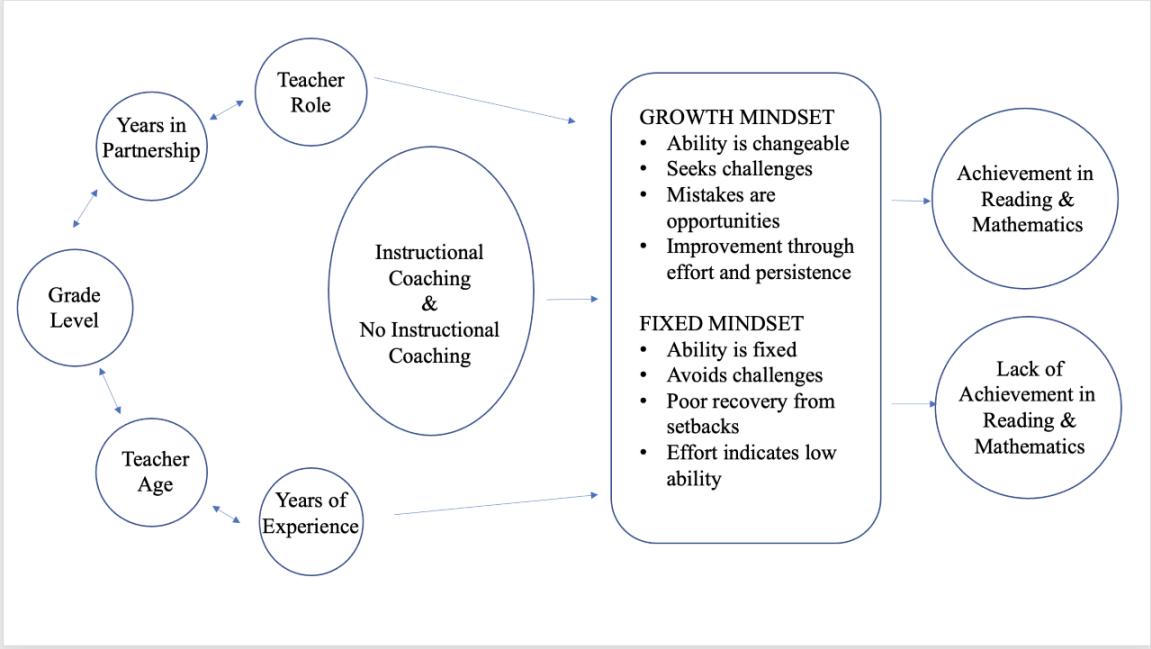
In contrast, Dweck's theory includes the fixed mindset. People with a fixed mindset see setbacks as failures and have a need to continuously prove oneself. Success is measured by proving one is smart or talented. Fear of failure prohibits those with a fixed mindset from taking risks, putting forth effort or seeking help. People with fixed mindsets often underestimate their true abilities. Those with a fixed mindset remain engaged in tasks when they have experienced success at the outset of a task and lose interest in tasks when they feel challenged (Dweck, 2016). In the literature, other researchers have referred to growth mindset as incremental mindset, and fixed mindset as entity mindset (Blackwell, et. al., 2007; Eccles & Wigfield, 2002). For the purpose of this study, the researcher used the terms growth mindset and fixed mindset.

Conceptual Framework

The current study explored the teachers' perceptions of growth mindset comparing the effect instructional coaching has on those beliefs. The connections between teachers' growth mindset were further explored and related to student academic achievement in reading and mathematics. The conceptual framework is illustrated in Figure 1.

Figure 1

Conceptual Framework Illustrating the Relationship of the Variables and Theoretical Concepts



The conceptual framework illustrates the relationship between co-teacher instructional coaching and co-teacher perceptions of growth mindset, and the influence of these variables on student achievement in reading and mathematics. Additional variables of grade level, teacher age, years in co-teaching partnership, years of teaching experience and teacher's role (general education or special education) were examined to determine the relationship of these variables to co-teacher perceptions of growth mindset.

Significance of the Study

The education of special education students in the least restrictive environment is a requirement of federal legislation specified in the IDEIA (2004). This allows special education students to access the general education curriculum and achieve the NYS Learning Standards. The NYS Blueprint for Improved Results for Students with

Disabilities (2018/2019) includes access to the general education curriculum, research-based instructional teaching strategies and supports, and high-quality inclusive programs as part of its guiding principles. One model to address these requirements is the co-teaching of special education and general education teachers.

Although research exists to demonstrate the efficacy of co-teaching regarding improving student academic achievement and social-emotional growth (Walther, 1997; Wischnowski, et. al., 2004), limited research is available to address any possible connection between the growth mindsets of the co-teachers and their students' academic achievement. This study will provide school administrators with information about the mindsets of co-teachers, allowing administrators to consider instructional coaching as a vehicle for changing teachers' mindsets and for improving the academic achievement of special education students.

Connection to Social Justice

In 1975, with the passing of the Education for All Handicapped Persons Act (1975), students with disabilities were entitled to education in the least restrictive environment. In the 45 years since, too many students with disabilities continue to be educated in segregated settings in New York State, with the state being unable to achieve the benchmarks for least restrictive environment set in the State Performance Plan (NYSED, 2020). Co-teaching is a strategy for effectively educating students with disabilities in general education settings, with typically developing peers. Supporting co-teachers through instructional coaching may develop an increased growth mindset among co-teachers, in turn developing academic achievement and social-emotional growth for students with disabilities within the least restrictive environment.

Research Questions

The following research questions guided this study:

Quantitative Research Question 1

How do the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores compare for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8?

Hypotheses

H_0: There will be no significant difference in the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores, and b) mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

H_1: There will be a significant difference in the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

Quantitative Research Question 2

How do teachers' self-assessed growth mindset scores compare between a) teachers' roles (special education, general education) and between b) those teachers who receive co-teaching instructional coaching and those teachers who do not?

Hypotheses

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing a) teachers' roles (special education, general education), and b) teachers' participation in co-teaching instructional coaching (yes, no).

H_1: There will be a significant difference in teachers' self-assessed growth mindset scores when comparing a) teachers' roles (special education, general education), and b) teachers' participation in co-teaching instructional coaching (yes, no).

Quantitative Research Question 3

How do teachers' self-assessed growth mindset scores compare between a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years)?

Hypotheses

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years).

H_1: There will be a significant difference in teachers' self-assessed growth mindset scores when comparing a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years).

Quantitative Research Question 4

How do teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught influence their perceived student growth mindset scores?

Hypotheses

H_0: There will be no significant relationship between teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught and teachers' perceived student growth mindset scores.

H_1: There will be a significant relationship between teachers' numbers of years of co-teaching partnership, years of teaching experience, teachers' age, teachers' role, or grade level taught and teachers' perceived student growth mindset scores.

Quantitative Research Question 5

What is the relationship of teachers' self-assessed growth mindsets scores to their perceived students' growth mindset scores?

Hypotheses

H_0: There will be no significant relationship between teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores.

H_1: There will be a significant relationship between teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores.

Qualitative Central Research Central Question

What beliefs do special education and general education co-teachers have about their professions?

Qualitative Sub Questions

Research Sub Question 1. What beliefs do special education and general education co-teachers have about growth mindset?

Research Sub Question 2. How do special education and general education co-teachers explain the challenges and benefits of their positions?

Research Sub Question 3. How does instructional coaching influence special education and general education co-teachers' beliefs and practices?

Mixed Methods Research Question

To what extent do the qualitative findings in the study confirm the quantitative results?

Definition of Terms

Academic Achievement

Academic achievement is defined as the student's learning of and progress toward the NYS Learning Standards. In the current study, academic achievement will refer to reading and mathematics (NYSED, 2017).

Co-teaching

Co-teaching is defined as a classroom model where a general education teacher and a special education teacher work together to provide instruction to special education and general education students in a shared classroom (Causton & Tracy-Bronston, 2015).

Least Restrictive Environment

A requirement of IDEA, the least restrictive environment means that special education students receive their education as much as possible with general education students. This is decided on an individualized basis by the student's educational team during the development of the student's individualized education plan (IEP). Specially designed instruction and supplementary aids and services are used to ensure that special education students progress in the general education curriculum and progress toward their individualized educational goals identified on their IEPs. Least restrictive environment includes the participation of special education students in extracurricular activities with general education students (IRIS Center, 2019).

Student with a Disability

A student with a disability is defined as a student who has been found by the Committee on Special Education to have a disability and who requires special education services. Students with disabilities have Individualized Education Programs (IEPs) to address their unique educational needs. (Part 200-Students with Disabilities, 2016).

CHAPTER 2 REVIEW OF LITERATURE

The previous chapter introduced this study and its research questions. This study explored the growth or fixed mindsets of co-teachers, the relationship between teacher mindset and student academic achievement in reading and math and the relationship between instructional coaching for teachers and student academic achievement in reading and math. The research sought to understand if the teachers' mindsets are correlated with their students' academic achievement in reading and math.

The current chapter will provide a detailed explanation of Dweck's Growth Mindset theory and a review of related literature. The review of the literature follows the theoretical framework. At the conclusion of chapter two, an explanation of how the current study connects with prior research is provided.

Electronic searches were conducted by the researcher using the EBSCOhost, JSTOR, ProQuest Central, ProQuest Dissertations and Google Scholar databases. Search terms included growth mindset, co-teaching, collaborative teaching, academic achievement and special education students, instructional coaching, teacher perceptions of inclusion, and professional development and instructional coaching. Additionally, the New York State Department of Education (NYSED) website was used to identify state guidance regarding least restrictive environment, special education regulations and co-teaching.

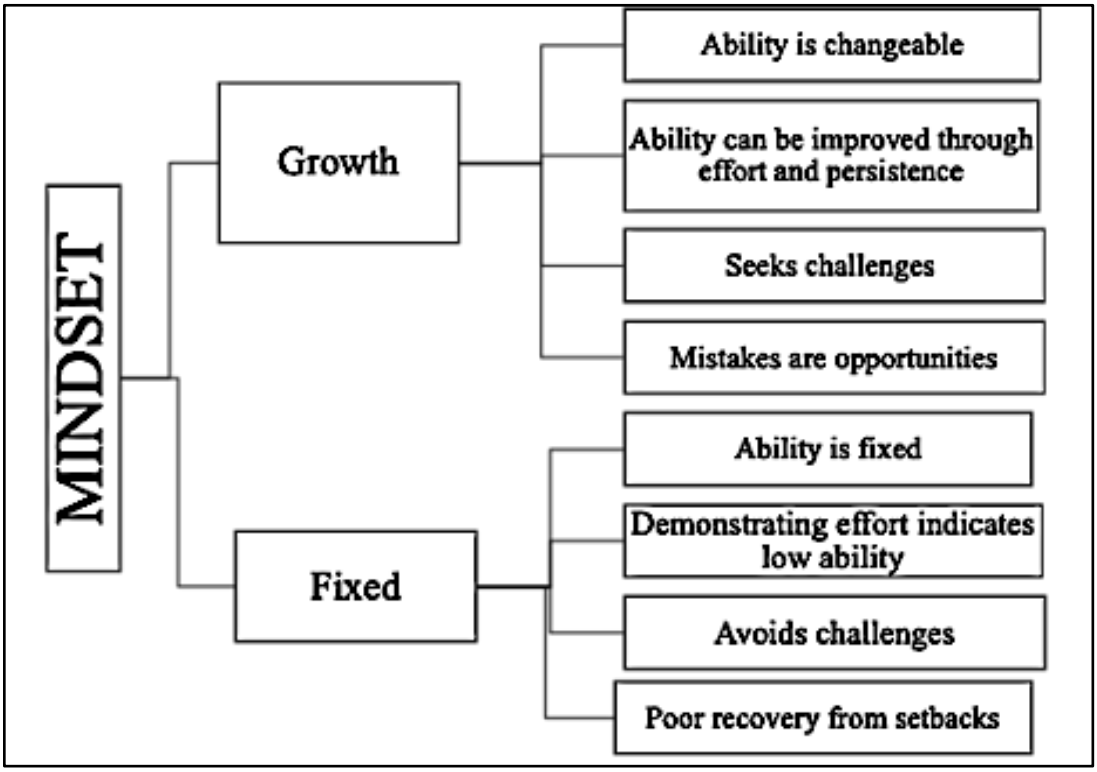
Theoretical Framework

The theoretical framework that guided this study was Dweck's Growth Mindset theory. This theory suggests that different mindsets held by people can influence their responses to challenges and setbacks (Dweck, 1999) as is shown in Figure 2. Some hold

that a person's intelligence, ability, and talent are fixed and unchangeable, which is described by Dweck (1999) as a fixed mindset. Those who subscribe to this mindset believe that intelligence and talent are static, that is, whatever intelligence or talent one is born with, is what they will have. People with this mindset tend to abandon tasks perceived as being too difficult. Those with fixed mindsets tend to show a lower level of task persistence and effort, as they believe their poor performance is due to lack of intelligence or talent. People with fixed mindsets believe the need for effort indicates a lack of ability (Dweck, 2006).

Figure 2

Dweck's Growth Mindset Theory (Dweck, 2006)



In contrast, others hold that a person's intelligence, ability, and talent can change and develop over time, which is described by Dweck (1999) as a growth mindset. Those with this mindset believe that intelligence and talent can be developed through effort,

practice, and skill acquisition. People with this mindset tend to persevere when faced with obstacles and when faced with failure, focus on learning and improvement. Those with a growth mindset strive to improve their knowledge and skills and embrace challenges to increase their abilities. Persons with this mindset seek to learn from others and from feedback (Dweck, 2006).

Dweck developed the Growth Mindset theory through her early work related to the phenomenon of learned helplessness in children (Dweck, 1978; Dweck, 2016). In her book, *Mindset: The New Psychology of Success*, Dweck (2016) describes working with children who were experiencing failure and noticing differences in their responses to failure situations. Some children became defeated and stopped trying to complete the tasks; these were deemed helpless children. Others took pleasure in the challenge of completing the challenging task; these were deemed the mastery-oriented children.

Dweck & Leggett (1988) described a social cognitive model related to motivation and discussed patterns of helpless and mastery-oriented children. Both groups used effective problem-solving strategies, displayed engagement, and verbalized about the tasks. The differences arose when the helpless group experienced failure.

When faced with failure, the helpless group reported negative self-cognition and attributed their failures to personal inadequacies such as limited intelligence, memory, or problem-solving skills. These children did not express any positive thoughts about completing tasks in the future. The helpless children displayed negative affect and complained of boredom, anxiety with their performance, and displayed aversions to the task. More than two thirds of the helpless children attempted to change the rules for completing the tasks, verbalized about things they were good at in other areas and

attempted to bolster their image. These children showed a decrease in performance and their use of effective problem-solving strategies (Dweck & Leggett, 1998).

The mastery-oriented children, when faced with failure, did not seem to think that they were failing. These children viewed problems as challenges to be mastered through effort. They engaged in self-instruction and self-monitoring to remind themselves of different strategies or verbalized self-motivational talk. The mastery-oriented children expressed optimism that they would be able to complete the task successfully. As the tasks became more difficult, the mastery-oriented children maintained or increased their use of problem-solving strategies.

Elliot and Dweck (1988) determined that mastery oriented and helpless children have differing orientation toward goals. The mastery-oriented children held learning goals, that is, they were interested in improving their ability through completion of a task. The helpless children were oriented toward performance goals, that is, they were interested in proving their ability. It is through these early studies that Dweck developed the Growth Mindset theory (Dweck, 1978; Dweck, 2016).

Review of Related Literature

The review of literature is organized with the sections entitled Special Education, Inclusion Efficacy, Co-Teaching, Instructional Coaching, and Attitudes and Beliefs of Co-Teachers. The current study used a mixed methods design therefore the researcher included studies that used quantitative, qualitative, and mixed methods designs.

Special Education

Co-teaching is a method for supporting the instruction of special education students within the least restrictive environment, with access to general education

curriculum. Understanding the history of special education is important for understanding the context of the current study.

The provision of special education services to students with disabilities in the United States has evolved throughout the years, mirroring the trajectory of the civil rights movement for persons of color. The decision of Brown vs. The Board of Education (1954) that segregated public schools denied all students equal opportunities, was seen as applicable to students with disabilities by disability advocacy groups (Salend & Garrick Duhaney, 2011; Yell, Rogers & Lodge Rogers, 1998). Other court decisions supported the education of students with disabilities. In Pennsylvania Association for Retarded Citizens (PARC) vs. Pennsylvania (1971), the supreme court ruled that children aged 3-21 with mental retardation must be provided with a free public education, in programs similar to those for non-disabled children (Yell, Rogers & Lodge Rogers, 1998). In the case of Mills vs. Board of Education (1972), the court ruled that funding difficulties may not cause students with disabilities to be denied access to public education.

The Education for All Handicapped Children Act (1975) provided funding for students with disabilities and included important concepts for the education of such students. These include the right for students with disabilities to have a free, appropriate public education and that students with disabilities must receive special education in least restrictive environment, which "to the greatest extent possible satisfactorily educates disabled children together with children who are not disabled, in the same school the child would attend if the child was not disabled" (Ashbaker, 2011, p. 34.).

Additional court decisions have further defined the concept of least restrictive environment and charge committees on special education with determining the social-

emotional, academic, and behavioral benefits to being educated in more inclusive settings as compared to special education settings (Ashbaker, 2011). Daniel RR vs. State Board of Education (1989) asserts a two-part approach for determining the school district's efforts in educating a student int eh least restrictive environment. These include "whether the education in the regular classroom, with the use of supplementary aids and services, can be achieved satisfactorily for a given child," and "whether the school has mainstreamed the child to the maximum extent possible." Roncker v. Cincinnati asserts that school districts should determine if the services that make a segregated setting superior can be provided in a non-segregated setting. Additionally, Roncker provided three factors for determining if a mainstream setting is appropriate. These are the benefit the student with a disability may receive from a general education setting, if the benefits outweigh the benefits of a segregated setting and if the child with a disability would disrupt the general education setting (Cornell Law School Legal Information Institute, 2020).

NYSED provides a continuum of special education placements for students with disabilities. The continuum ranges from general education classes to home and hospital instruction and is summarized in Table 1. According to NYSED, the least restrictive environment is "the extent special education services are provided to a student in a setting with the student's nondisabled peers and as close to the student's home as possible" (NYSED, 2013, p.3). Consultant teacher services are designed to support students in the general education class settings. Integrated co-teaching services are "the provision of specially designed instruction and academic instruction provided to a group of students with disabilities and nondisabled students" (NYSED, 2013, p.11). These services include a general education teacher and a special education teacher providing instruction to a

class including students with disabilities and nondisabled students to address the learning needs of all the students. (NYSED, 2008).

Table 1

NYSED Continuum of Special Education Services (NYSED, 2013)

Special Education Service	Description
Consultant Teacher	Special education teacher provides specially designed instruction for special education student(s) in the general education class. This assists the special education student with benefiting from general education class instruction.
Resource Room	Special education program for a special education student who requires supplementary instruction in a small group setting.
Related Services	Services to assist a student with benefiting from special education or accessing the general education curriculum.
Integrated Co-teaching	Students are grouped together based on similar learning needs to receive specially designed instruction in a general education class. The general education teacher and special education teacher share responsibility for the planning and delivery of instruction for all students.
Special Class	Students are grouped, based on similar needs, to receive specially designed instruction in a self-contained setting. The class is composed of special education students, separated from general education peers.

Teacher Mindset

There is a connection between teachers' mindset and their implicit beliefs about student intelligence and achievement (Hattie, 2021, Gutshall, 2013). Hattie (2021), in his meta-analysis of factors related to student achievement, listed teacher estimates of achievement as having a high potential for accelerating student academic achievement (*Cohen's d* = 1.46). Teachers' beliefs about their students can influence the achievement of their students.

Gutshall (2013) examined teachers' mindsets and the relationship between these mindsets and the perceived ability of students. Teachers ($N = 238$) from a large school district in the southeastern United States volunteered to participate in this study. The participants were female ($N = 157$), with 21 choosing to not indicate their gender, represented all grades from pre-kindergarten to grade 12. Thirty-one teachers were special education teachers, 175 were general education teachers and 32 did not specify the type of teachers they were. All participants took a three-item mindset survey at the outset of the study. The participants were then randomly assigned to one of four groups, with each group receiving a different scenario related to hypothetical students who were struggling in different subject areas. The scenarios included positive attributes of the students, the student's gender and if the student had a learning disability.

Results indicated that significantly more teachers identified as having a growth mindset (70.9%) than fixed mindset (29.1%; $F = 379.117$, $p = .000$). Further chi-square analysis indicated that teacher gender, experience level, grade level and special education/general education status did not appear to impact teacher mindset. Further analysis indicated that there was a significant relationship between the teachers' overall

mindset and the teachers' perception of the students in the scenarios (r = .471, n = 238, p < .01). There were no statistically significant findings observed between male students with learning disabilities and males who did not have learning disabilities scenarios $x^2(1, n = 101) = .09$, $p = .76$). Similarly, no statistically significant findings were noted between females with learning disabilities and females who did not have learning disabilities scenarios ($x^2(1, n = 97) = .86$, $p = .35$). The author noted that although not statistically significant, the data trended toward teachers being more likely to indicate a growth mindset for females and males with learning disabilities.

The results of this study indicated that the teachers' growth mindsets were correlated with their perceptions of the students in the scenarios and that teacher mindsets were stable when compared to student gender and disability status. The findings suggest that most teachers in this study held a growth mindset, and this was not influenced by situational factors such as student gender or disability status.

A teacher's mindset can affect student learning. In his meta-analysis of influences on student achievement, Hattie (2021) noted that teacher estimates of achievement had a relatively high positive effect on student achievement (*Cohen's d* = 1.46). In terms of his ranking of influences related to student achievement, teacher estimates of achievement ranked third out of 252 influences, indicating that the teacher's perception of the student's ability is a strong influence on student achievement (Waack, 2018). This relates to the current study as it demonstrates the teachers estimate of achievement, or mindset related to their student can be a powerful influence on student achievement.

One way that teachers may demonstrate their mindsets is through the feedback that teachers give to students. Growth mindset-oriented feedback from teachers has been

associated with positive student achievement (Gutshall, 2013; Rattan, et. al., 2012; Schmidt, et. al., 2015; Smith, et. al., 2018; Kamins & Dweck, 1999). This suggests that the mindset-oriented feedback given by a teacher, such as praise related to the learning process versus praise related to the summative product, can influence the students' perceptions of themselves as learners (Pretzlik, et. al., 2003; Kamins & Dweck, 1999; Cimpian, et. al., 2007) and the students' development of personal growth mindsets (MacDonnell Mesler, et. al., 2021; Schmidt, et. al., 2015).

Kamins and Dweck (1999) examined children's responses to feedback regarding their process (completing a task) and feedback regarding their personal traits. Kindergarten children ($N = 67$) from public schools in a northeastern United States city participated in this study. The participants were presented with one of four scenarios using a student doll and a teacher doll involving different types of feedback. Following this, the participants were asked to rate their products, rate their feelings, complete a self-assessment, and respond to questions to assess their persistence.

A multivariate analysis of variance (MANOVA) was used to analyze the data and was statistically significant $F\ (10, 116) = 4.22$, $p < .001$. This indicated that the person-oriented feedback groups displayed statistically significant different ratings and responses than the process-oriented feedback groups. Further, the person-oriented feedback group displayed statistically significant lower self-assessments ($M = 1.36$, $SD = 1.1$) than the process-oriented feedback group ($M = 2.23$, $SD = 1.0$), $t(40) = -3.09$, $p < .01$). This suggests that children viewed their performance less positively after person-oriented feedback when compared with children who received process-oriented feedback. Differences in child persistence were also identified, as the person-oriented feedback

group (M = 0.50, SD = 0.71) indicated statistically significant lower persistence than the group the received process-oriented feedback (M = 1.38, SD = 0.79), $t(40)$ =. -3.77, $p <$ .001).

The results of this portion of the study suggest that the type of feedback that is given to a student can influence their ability to persist through challenges and their self-assessments. This relates to the current study as the type of feedback offered to a student may be influenced by the teachers' personal mindset. That is, a teacher who has a growth mindset may be more apt to provide process-oriented feedback to their students compared to a teacher who did not hold this mindset.

Co-teaching

Co-teaching is an instructional method involving special education and general education teachers sharing a classroom and teaching the special education and general education students in the class together. This method supports the education of special education students in the least restrictive environment.

Different models of co-teaching have been identified in the literature (Cook & Friend, 1995) and are summarized in Table 2. Each of the models includes a special education teacher and general education teacher working together in the same classroom, with special and general education students mixed within the class groupings. Table 2 identifies the models by Cook & Friend (1995): one teach, one observe, station teaching, parallel teaching, alternative teaching, teaming, and one teach, one assist.

The one teach, one observe approach allows one teacher to be leading the class while the other observes and collects data about the students. Teachers should rotate the

role of data collector and lead instructor, and this approach should be used frequently for short durations (Friend, 2019; Causton & Tracy-Bronson, 2015).

Station teaching involves splitting the class into three heterogenous groups, one group working with each teacher and the third group working independently. Each teacher teaches a different concept, and the groups rotate to each station. This approach should be used frequently (Friend, 2019; Causton & Tracy-Bronson, 2015).

With parallel teaching, the class is split into two groups, one with each teacher. The teachers have the same lesson objectives but may provide instruction using different strategies and the groups do not switch. Parallel teaching allows teachers to provide small group instruction with a smaller student to teacher ratio and this approach should be used frequently (Friend, 2019; Causton & Tracy-Bronson, 2015).

Alternative teaching allows teachers to work with a small group to provide pre-teaching of selected concepts, enrichment for those who have mastered the content or remediation and extra practice for a specific skill. The groupings should vary, and both teachers should work with the small group. This approach should be used infrequently (Friend, 2019; Causton & Tracy-Bronson, 2015).

Teaming allows both teachers to teach the class simultaneously, with both teachers contributing to the instruction interchangeably. This approach is often used by teachers who have strong and familiar co-teaching relationships. This approach should be used infrequently as it relies on whole group instruction (Friend, 2019; Causton & Tracy-Bronson, 2015).

Table 2

Co-teaching Models (Friend, 2019, Causton & Tracy-Bronson, 2015)

Co-Teaching Model	Description
One Teach, One Assist	One teacher instructs the whole class, the other provides prompting, individualized assistance, or redirection.
One Teach, One Observe	One teacher instructs the whole class, the other collects data, or observations regarding student performance.
Station Teaching	Class is divided into three (or more) heterogenous groups; each teacher has a group, teaching a different lesson; the class rotates through all of the stations.
Team Teaching	The teachers provide instruction together, in an interdependent fashion during whole class instruction.
Alternative Teaching	One teacher works with most of the class while the other provides pre-teaching, re-teaching, or enrichment.
Parallel Teaching	The class is divided into two heterogeneous groups, each teacher addresses the same goal, but using different instructional strategies.

The one teach, one assist method should be used infrequently, as it involves one teacher rotating about the classroom providing individualized support, redirection or prompting individual students (Friend, 2019; Causton & Tracy-Bronson, 2015). Friend (2019) notes that this method is the least effective co-teaching model, but it is the most used.

Researchers have identified strategies for successful implementation of co-teaching (Brendle, et. al, 2017; Dieker, 2010). Brendle, et. al. (2017) investigated the knowledge, perception, and implementation of co-teaching with their qualitative, descriptive case study. Two pairs of co-teachers' experiences were examined using interviews, completion of a rating scale and classroom observations as the data sources. The participants were two fourth grade teachers (one special education and one general education) in a math class and two fifth grade teachers (one special education and one general education) in a reading class from a grade four and grade five mid-sized elementary school. The teachers voluntarily participated in the study.

The fourth-grade team's general education teacher had been teaching at the school for twelve years, co-teaching for five years and co-teaching with this general education teacher for one year. The team's special education teacher has been teaching at the school for eight years. There were three special education and eighteen general education students in the class.

The fifth-grade team's general education teacher had been teaching at the school for thirteen years and had some co-teaching experience. The special education teacher had five years of experience and the team had taught together for one year. There were six special education and sixteen general education students in the class.

The researchers used a qualitative rating scale with 47 questions, a semi-structured interview with 23 questions and a classroom observation to gather their data. Following the classroom observation, an open-ended interview was conducted to provide further clarification regarding the previous interview and the classroom observation. Interviews were transcribed and coded using NVivo software, and NVivo software was

used for coding all the collected data. Trustworthiness of the data was established through triangulation of data collection methods and by using established data collection and analysis methods. Transferability was established through the descriptions of the participants and of the school setting. Dependability was established using a rating scale and interview questions piloted by a previous researcher.

The results of the study indicated that although the teacher had some co-teaching experience, they did not have knowledge of different co-teaching models and strategies. The fourth-grade team used the parallel teaching approach when observed by the researchers and the fifth-grade team used the one teach, one-assist approach when observed by the researcher. The interview and rating scale responses of both teams of teachers indicated a lack of knowledge about co-teaching approaches and did not consider them when completing their lesson planning. The teachers did, however, report that they modified their lesson plans to meet the students' needs. The teachers reported good working relationships with their co-teachers and reported learning from one another.

In terms of successful implementation, the study results suggest greater administrative support is needed. Themes regarding implementation of co-teaching reflect the need for co-teacher training and scheduled time for co-teacher collaboration. The study participants indicated that although time was provided for co-planning, the teachers did not receive administrative guidance with planning and executing co-teaching models. Teachers in the study expressed a need for training in co-teaching strategies. Additionally, the teachers in the study reported the desire to work with the same co-teacher for multiple years to develop a professional relationship.

Tzivinikou (2015) also looked at the implementation of co-teaching in elementary classrooms in Greece. Thirty teachers, fifteen special education and fifteen general education, completed self-evaluation rubrics before and after participating in a co-teaching training program. The rubric included nine elements related to the co-teaching experience, including administrative support, collaborative planning, collaborative presenting/teaching, common or different approaches and teaching methods, different approaches for special education students, responsibility for special education students, collaboration on evaluation of all students, collaborative evaluation of instructional procedures, and personal conflicts and interpersonal relationships. The teacher teams participated in a five-month co-teaching training program following their completion of the first rubric.

The researcher used paired t-tests to compare the pre-training rubric responses to the post-training rubric responses. In all nine areas of the rubric, statistically significant differences were noted between the pre-training rubric responses and the post-training rubric responses. Administrative support, $t(14) = -11, 297$, $p<.001$; collaborative planning, $t(14) = -31, 000$, $p< .001$; collaborative presenting/teaching, $t(14) = -10, 693$, $p < .001$; common or different approaches and teaching methods, $t(14) = -14, 00$, $p< .001$; different approached for special education students, $t(14) = -21, 166$, $p<.001$; collaboration on evaluation of all students, $t(14) = -9, 025$, $p<.001$; collaborative evaluation of instructional procedures, $t(14) = -14, 789$, $p<.001$ and personal conflicts and interpersonal relationships $t(14) = -7, 432$, $p<.001$ were all improved due to the participants' participation in the co-teaching training.

The researcher notes that the small sample size and the nature of self-assessments may limit the ability of these results to be generalized to other settings. However, this research supports professional development as a tool for implementing co-teaching and supporting teachers with different co-teaching models.

The research by Brendle, et. al. (2017) and Tzivinikou (2015) relates to the current study as they demonstrate the professional development needs of special education and general education co-teachers and the current study includes instructional coaching for co-teachers as a variable.

Co-teaching Experiences - Effects on Academic Achievement

Further research has been conducted examining the perspectives of co-teachers about co-teaching and student academic and behavioral progress. Walther-Thomas (1997) investigated the beliefs and challenges teachers participating in co-teaching over a three-year period. This qualitative study used classroom, semi-structured interviews, and school generated documents as data sources.

Twenty-three school-based teams representing eighteen elementary and seven middle schools from eight Virginia school districts participated in this study. The teams included school administrators, general education teachers and special education teachers. The teachers each had at least twelve to eighteen months of co-teaching experience and were involved in at least one hour of co-teaching per day at the outset of the study. In terms of students, the authors note that there was a wide variety of student disability and level of functioning represented in the classes included in the study.

Classroom observations of 45 to 90 minutes occurred at least one time per year by trained observers. The observers mostly worked in pairs and used running notes to record

the co-teachers' use of instructional strategies, and co-teaching procedures. Notes were compared between observers to gauge their accuracy and completeness. At the conclusion of each observation, the observer asked the teachers clarifying questions about the observation to ensure accuracy.

Semi structured interviews were conducted with the co-teachers each year to gain information about the teachers' co-teaching process, including planning, staff development, changes in students' performance. The participants were asked about challenges and benefits that they were experiencing as co-teachers. The interviewers took handwritten notes, and the interviews were audio recorded.

School generated documents were collected when they were mentioned in interviews and/or during observations. These included lesson planning sheets, professional development materials and data collection sheets.

The researcher coded and analyzed the data using color coded index cards, which were sorted by category and subcategory. The participants had the opportunity to review and comment on the data.

Results of the study indicated that benefits for special education students, general education students and participants were noted. The benefits for special education students were positive feelings about themselves as learners, improved academic performance, improved social skills and stronger peer relationships. Teachers noted that special education students developed better attitudes about themselves and displayed increased motivation in class. Academically, teachers indicated that some of the special education students learned skills at a higher level than the general education students. Middle school students, however, displayed lower grades in their co-taught classes,

which the teachers attributed to greater rigor and grading criteria. Regarding social skills, the observers and teachers noted that some of the students displayed greater inappropriate behavior in segregated settings them when in the co-taught classes. Within the co-taught classes, the special education students developed positive friendships, which extended outside of the class and school environment and to recess, playdates, and parties.

Benefits for general education students were noted as well. These were improved academic achievement, more time and attention from the teacher, increased emphasis on cognitive strategies and study skills, increased social skills and improved classroom communities. Teachers noted that lower achieving general education students displayed greater improvement in the co-taught classes. It was noted by the observers that often the students that needed the most teacher support were general education students. Increased teacher time and attention were noted in the co-taught classrooms, as the additional teacher reduces the student/teacher ratio in the class, allowing greater opportunities for reteaching, individualized attention, progress monitoring, guided practice, and enrichment.

The instruction of study skills and cognitive strategies used in co-taught classrooms allowed general education students to benefit from different cognitive strategies and study skills. These included strategies like mnemonic devices, paraphrasing, notebook organization and time management techniques. Social skills of general education students were also improved in co-taught classes, as the teachers reported fewer fights, better social problem solving and more cooperation during group assignments. Additionally, the teachers reported the development of positive classroom communities in co-taught classes. Peer tutoring and cooperative learning were examples

of strategies used in co-taught classrooms that supported a positive classroom community.

Teachers reported benefits related to professional satisfaction, professional growth, and personal support. Teachers reported elevated levels of professional satisfaction as they realized the academic and social progress of their students. Also, teachers reported that working with another teacher was an opportunity for ongoing professional growth and personal support.

Problems identified during the study were related to teacher planning time, student scheduling, caseloads, administrative support, and staff development. Teachers reported difficulty with finding time during the school day for planning with their co-teacher. Student scheduling was identified as important for achieving balanced, heterogeneous classes, which often required more hands- on scheduling, rather than computer-based scheduling. Special education teacher caseloads were identified as another problem. Teachers felt that caseloads were often too large to allow for adequate support for special education students.

Administrative support was identified as a problem as well. The success of some of the co-teaching classes seemed related to the support received from the building principal and district level administrators. In school districts where district level administration provided guidance documents, staff development and specialist support, co-teaching and inclusive practices were more evident. Staff development was noted as a need by the participants in the study. Teachers felt that additional staff development opportunities would help them continue to improve their co-teaching skills.

This study is related to the current study as it seeks to investigate the mindsets of co-teachers in elementary and middle school settings. It will be interesting to compare the mindsets of the co-teachers in the current study to those discussed in this research.

Hang & Rabren (2009) identified teachers' and students' perspectives on co-teaching and its efficacy. This mixed methods study involved teacher observations, surveys and analysis of student records and took place in a southeastern U. S. public school district. Participants ($N = 45$) included 31 general education and 14 special education teachers of first grade through tenth grade. All participating teachers co-taught core academic subjects (math, science, social studies, and English/language arts) and the special education teachers co-taught with more than one general education teacher. Students ($N = 58$) were also included in this study. The participating students were identified as having learning disabilities and were enrolled in at least one co-taught class in a core academic subject.

Rabren's (2009) Teacher's Perspective Survey was administered to the participating teachers and focused on components of co-teaching, teachers' roles and responsibilities, teachers' expectations, and planning schedule. The Student's Perspective Survey (Rabren, 2009) was administered to the participating students and focused on components of differences between resource classrooms and co-taught classrooms, students' expectations, challenges, and advantages/disadvantages of co-teaching.

Survey data were analyzed using a one-way ANOVA and results indicated that there were statistically significant differences in the perspectives of general education teachers, special education teachers and students regarding support for students with disabilities, $F(2, 91) = 3.40$, $p = .04$. No statistically significant differences were noted in

the other portions of the survey. Further analysis of responses to the Teacher's Perspective Survey indicated that 100% of the teachers felt that they needed a weekly common planning period ($n = 45$, $\mu = 3.53$) and a comprehensive planning period ($n = 45$, $\mu = 3.70$). General education teachers believed that they were primarily responsible for monitoring students' behaviors (90%, $n = 28$, $\mu = 3.57$) while 93% of special education teachers believed they were primarily responsible for monitoring students' behavior ($n = 13$, $\mu = 3.36$).

Observations of teachers by trained observers were also conducted. The researchers used an observation form to collect data during the observations. This form looked at three components of co-teaching, teaching roles, student group distribution and teachers' location. Results of the observations indicated that the teachers were implementing co-teaching practices in their classrooms.

The researchers also gathered quantitative data regarding the students' absences, SAT scores and discipline referrals. These data were compared using a pre-post repeated design to assess these metrics prior to and following one year of co-teaching using paired samples and one-sample t-tests. Statistically significant differences were noted in the reading and math SAT scores of students with disabilities in co-taught classes, as compared to the prior year when they were not in co-taught classes (reading: $t = 2.96$, $p<.01$; math: $t = 6.97$, $p< .001$).

Regarding student absences and discipline referrals, statistically significant differences were noted in the co-teaching year as compared to the non-co-teaching year prior (absences: $t = 2.602$, $p < .05$; discipline referrals: $t = 2.715$, $p< .001$). This indicates

that the number of discipline referrals and student absences increased during the co-teaching year as compared to the prior year.

The authors note that during the study, the teachers and students reported positive perspectives of co-teaching. Although not statistically significant, both groups of teachers reported perceptions that students' academic performance improved while in the co-taught class. General and special education teachers also indicated that co-teaching was positive related to student behaviors, although the increase in discipline referrals contradicts these perceptions.

This research is related to the current study as it seeks to examine the relationship between the mindsets of co-teachers and their students' academic achievement.

Professional Development for Co-teachers

Professional development has been an influence on co-teachers' attitudes and beliefs about co-teaching. Pancsofar and Petroff (2013) investigated the relationship between pre-service and in-service professional development on co-teaching and teacher confidence, interest, and attitudes toward co-teaching. Teachers ($N = 129$) from five school districts in a mid-Atlantic state participated in this study. Most teachers in this study had 10 or more years of experience and a master's degree ($N = 72$), 27% of the participants were special education teachers ($N = 34$), and 58% of the participants ($N = 74$) were currently engaged in co-teaching. The participants ranged in certifications including elementary, middle school, kindergarten through grade 12 content areas, special education, and special content areas, such as music and physical education.

The teachers completed demographic survey items from Pancsofar and Petroff's (2013) Co-teaching Experiences and Attitudes Survey and Rabren's (2009) Teacher's

Perspectives Survey. Multiple regression analyses were conducted to determine associations between pre-service and in-service training and teacher outcomes of teacher confidence regarding co-teaching, interest in co-teaching and attitudes regarding co-teaching. Regarding teacher confidence about co-teaching, teachers who were currently co-teaching reported statistically significantly higher levels of confidence ($\beta = .34$, $p = .005$). When the researchers added the professional development variables to the model, it accounted for an additional 16% of the variance in teacher confidence ($\Delta R^2F = 12.87$, $p < .0001$). Preservice ($\beta = .19$, $p = .046$) and in-service ($\beta = .35$, $p = .0003$) training was significantly associated with teacher confidence. The final regression model accounted for 30% of the variance in teacher confidence in co-teaching ($F = 10.48$, $p < .0001$).

Teachers who were currently co-teaching reported significantly higher levels of interest in co-teaching ($\beta = .23$, $p = .01$). The addition of the professional development variables significantly impacted the model ($\Delta R^2F = 4.19$, $p = .02$), accounting for an additional 5% of the variance in teacher interest. Inservice training was significantly associated with teacher interest ($\beta = .29$, $p = .006$) as teachers who reported more frequent professional development opportunities reported higher levels of interest in co-teaching. The final regression model accounted for 14% of the variance in teacher interest in co-teaching ($F = 4.48$, $p = .001$).

Teachers who were currently co-teaching reported significantly more positive attitudes toward co-teaching ($\beta = .36$, $p = .0005$). The addition of professional development variables significantly impacted the model ($\Delta R^2F = 6.43$, $p = .002$), which accounted for 8% of the variance in teacher attitudes. In-service training was significantly associated with teacher attitudes ($\beta = .34$, $p = .001$), with teachers who had more frequent

opportunities to participate in professional development showing more positive attitudes toward co-teaching. The final regression model accounted for 19% of the variance in teacher attitudes toward in co-teaching ($F = 6.00$, $p = .0001$).

The results of this study suggest that professional development for co-teachers is significantly associated with teacher confidence about co-teaching, teacher interest in co-teaching, and teacher attitudes toward co-teaching as opposed to teachers who reported less frequent professional development regarding co-teaching. The authors suggest that professional development about co-teaching may benefit general education and special education teachers' willingness and confidence with participating in co-teaching.

The findings of Pancsofar and Petroff (2013) relate to the current study, which investigated the mindsets of co-teachers, some of whom have received professional development related to co-teaching.

Narian, et. al. (2012) used participatory action research to investigate a professional development model that utilized embedded instructional coaching to support co-teachers with the inclusion of students with emotional disturbances. The researchers used a qualitative, participatory method of research to determine the conditions needed within professional development to sustain a transformation of practices in a Midwestern U. S. urban school district. The researcher collected detailed field notes, interviewed teachers who participated in the professional development, conducted in-depth interviews with the instructional coaches and school district superintendent, professional development materials, case review notes, and data on student achievement and classroom referrals. Data were analyzed using an inductive coding and categorizing approach and member checking was used concurrent with data collections and analysis.

During the study, five to seven teachers were selected by the building principal to receive instructional coaching. The instructional coaching provided the teachers with strategies to address classroom concerns and needs. Additionally, group professional development was provided for the identified teachers. This professional development provided teachers with strategies and information that teachers could readily implement in their classrooms. The program also provided case reviews of particular students to build the capacity of the school district staff to support the needs of each particular student.

The authors discuss the outcomes of this professional development model from the perspectives of the participants. The instructional coaches indicated that shifting their mindset from one of helping students to supporting teachers was challenging. Maintaining an empathetic stance toward teachers and validating their concerns, allowed the instructional coaches to develop relationships with the teachers and provide them with professional support. The coaches used modelling of teaching methods and student interactions as strategies to develop needed skills in the teachers. The coaches worked with teachers to encourage them to develop solutions to the problems identified by the teachers.

Teachers reported that the instructional coaches had provided emotional support and the opportunity for problem solving solutions to issues in the classroom. Teachers felt that this was a more positive approach than the expert-student approach to coaching. Teachers reported shifts in their beliefs about students. In turn, the professional development allowed teachers to engage with students differently, which improved

student engagement in academics, positive social interactions with adults and peers and increased tolerance to frustration.

This research relates to the current study as some of the co-teachers who will participate in the study have received instructional coaching regarding co-teaching methods. It will support the work by Narian et. al. (2012) by examining the mindsets of co-teachers and their relationship to instructional coaching.

Conclusion

Gutshall (2013) examined teachers' mindsets and the relationship between their mindsets and the perceived ability of students. The current study extended Gutshall's work by investigating the relationship between teachers' personal perceptions of growth mindset and their perceptions of their students' growth mindsets. The research by Tzivinikou (2015) and Narian et. al. (2012) investigated co-teachers' experiences and their improved perceptions of co-teaching following professional development about co-teaching. The current study supported Tzivinikou et al.'s study by providing further research related to instructional coaching and co-teachers' mindsets. Pancsofar and Petroff (2013) examined the effects of professional development on teacher attitudes about co-teaching. The current study extends this work with the use of a mixed methods approach to support quantitative data about teacher attitudes and mindsets with actual teacher experiences in a co-teaching situation.

The following chapter explains the methods and procedures used to implement this research.

CHAPTER 3 METHODOLOGY

The current research examined the relationship between Growth Mindset theory and instructional coaching in co-teachers. Further, the researcher explored the relationship between co-teachers receiving instructional coaching and the academic achievement of their students in reading and mathematics. This chapter will provide detailed information about the mixed methods research design, data analysis, sample and population, instruments, data collection and research ethics of this study.

Mixed methods research incorporates quantitative and qualitative approaches to enhance the depth of understanding (Creswell & Creswell, 2018, Creswell & Plano Clark, 2018). With this approach, the researcher collects and analyzes qualitative and quantitative data related to the research questions and integrates the results of each form of data. This allows the researcher to use multiple data sources to understand and provide evidence for a research question (Creswell & Plano Clark, 2018).

A mixed methods approach can be used when the quantitative data collected may not portray a complete picture of the research problem. Qualitative evidence is then used to support or clarify the quantitative results. This additional information can assist with developing deeper understanding of the quantitative data (Creswell & Plano Clark, 2018). This study used an explanatory mixed methods approach, with a quantitative phase followed by a qualitative phase. This allowed the researcher to connect, explain and deepen the quantitative results with the qualitative evidence (Creswell & Creswell, 2018).

Methods and Procedures

The following research questions guided this study:

Quantitative Research Question 1

How do the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8, compare?

Hypotheses

H_0: There will be no significant difference in the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

H_1: There will be a significant difference in the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

Quantitative Research Question 2

How do teachers' self-assessed growth mindset scores compare between a) teachers' roles (special education, general education) and between b) those teachers who receive co-teaching instructional coaching and those teachers who do not?

Hypotheses

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing a) teachers' roles (special education, general education), and b) teachers' participation in co-teaching instructional coaching (yes, no).

H_1: There will be a significant difference in teachers' self-assessed growth mindset scores when comparing a) teachers' roles (special education, general education), and b) teachers' participation in co-teaching instructional coaching (yes, no).

Quantitative Research Question 3

How do teachers' self-assessed growth mindset scores compare between a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years)?

Hypotheses

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years).

H_1: There will be a significant difference in teachers' self-assessed growth mindset scores when comparing a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years).

Quantitative Research Question 4

How do teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught influence their self-assessed growth mindset scores?

Hypotheses

H_0: There will be no significant relationship between teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught and teachers' self-assessed growth mindset scores.

H_1: There will be a significant relationship between teachers' numbers of years of co-teaching partnership, years of teaching experience, teachers' age, teachers' role, or grade level taught and teachers' self-assessed growth mindset scores.

Quantitative Research Question 5

What is the relationship of teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores?

Hypotheses

H_0: There will be no significant relationship between teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores.

H_1: There will be a significant relationship between teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores.

Qualitative Central Research Question

What beliefs do special education and general education co-teachers have about their positions?

Qualitative Sub Questions

Research Sub Question 1. What beliefs do special education and general education co-teachers have about growth mindset?

Research Sub Question 2. How do special education and general education co-teachers explain the challenges and benefits of their positions?

Research Sub Question 3. How does instructional coaching influence special education and general education co-teachers' beliefs and practices?

Mixed Methods Research Question

To what extent do the qualitative findings in the study confirm the quantitative results?

Research Design and Data Analysis

This explanatory sequential mixed methods research study investigated the relationships between co-teacher instructional coaching and co-teacher growth mindsets, and student scores in reading and mathematics achievement. During the first phase of the study, quantitative data was collected via teacher surveys. During the second phase of the study, semi-structured interviews were conducted to further explore the findings in phase one of the study (Creswell & Plano Clark, 2018). A mixed methods approach was selected to provide a detailed and in depth understanding of special education and general education co-teachers' perceptions of growth mindset and how these relate to instructional coaching and student achievement in reading and mathematics.

The explanatory sequential research model uses qualitative data to confirm quantitative results. This research method allows the researcher to explore qualitative findings and provide additional insights and depth to the quantitative results using the qualitative data (Creswell & Plano Clark, 2018).

Reliability and Validity of the Quantitative Phase of the Research Design.

There are known threats to a non-experimental design, such as internal, external, and statistical conclusion threats. A possible threat to the internal validity of this study is regression threat. This may occur when the changes being studied occur in a group that displayed low achievement prior to the intervention (Fraenkel, et. al., 2019). This study examined iReady gain scores of students with disabilities who had lower achievement on

reading and mathematics than their general education counterparts. To minimize this threat, the researcher used the iReady gain scores, which measures student growth rather than achievement.

Another threat to the internal validity of this study may be data collector characteristics. This occurs when the researcher's characteristics affect the data that is obtained (Fraenkel, et.). al., 2019). This researcher is an administrator in the school district where this study was conducted, and this may have influenced the participants' responses to the Growth Mindset Survey. This was addressed by ensuring the anonymity of the participants when the survey was completed.

A possible threat to the external validity of this study is the interaction between selection and treatment. This occurs when the participants of the study may not be representative of the populations (Creswell & Creswell, 2018). This may have been a threat as this was a small sample and those who participated in instructional coaching did so on a voluntary basis. This limited the ability of the findings to be generalized only to special education and general education co-teachers in other locations where instructional coaching was offered as professional development.

A possible threat to the statistical conclusion validity is low statistical power. The statistical power of an analysis is related to the sample size, effect size and level of significance (Fraenkel, et. al., 2019). This study has a small sample size, so this may have impacted the conclusions of the results. However, adequate data analysis took place in the study, including careful attention to the assumption tests for each type of inferential analysis.

Quantitative Phase

In this study, the participants were grouped by coaching participation (received instructional coaching or did not receive instructional coaching) and the groups were compared on three sets of dependent variables (students' growth in reading achievement, students' growth in math achievement and teachers' perceptions of growth mindset or no growth mindset). This quantitative phase of the study is non-experimental, as the independent variables are not being actively manipulated by the researcher. The groups were compared based on an intervention that had already taken place (Creswell & Guetterman, 2019). Also, there was no random assignment of the co-teaching partners.

Research Question 1 examined how student iReady reading achievement gain scores and mathematics achievement gain scores compared between types of students (special education, general education) in co-teaching classrooms. An independent samples *t* test was conducted to determine if there was a significant difference between the two types of students on their iReady reading gain scores. The rationale for choosing the independent samples *t* test is that it is a statistical analysis to test for significant differences between the means of the two groups. The independent variable for the *t* tests is the type of student with two groups (special education, general education). The dependent variable for the first *t* test is iReady reading gain scores. The dependent variable for the second *t* test is iReady mathematics gain scores. An alpha level of .05 was chosen to test for significance in each analysis.

Six assumption tests were run for the independent samples *t* test. The assumption tests were:

1. The dependent variable (iReady reading and mathematics gain scores) should be a continuous variable.
2. The independent variable (groups) should consist of only two categorical, independent groups.
3. There should be independence of observations, which means that there must be different participants in each group with no participant being in more than one group.
4. There should be no significant outliers.
5. The dependent variable should be approximately normally distributed for each category of the independent variable.
6. There needs to be homogeneity of variances (Levene's test).

Research Question 2 examined how teachers' self-assessed growth mindset scores compared between teachers' roles (special education, general education) and those teachers who received co-teaching instructional coaching and those teachers who did not. A two-way between subjects analysis of variance (ANOVA) test was conducted to determine if there was a significant difference in the teachers' self-assessed growth mindset scores when comparing teachers' roles (special education, general education) and those teachers who received co-teaching instructional coaching and those teachers who did not on the teachers' self-assessed growth mindset scores. The rationale for choosing the two-way between subjects ANOVA is that it is a statistical analysis to test the mean differences between groups that have been split on two independent variables and to determine if there is an interaction between the two independent variables. The two independent variables were the teachers' roles (special education, general education)

and teachers who received co-teaching instructional coaching and those who did not. The dependent variable is the teachers' self-assessed growth mindset scores. An alpha level of .05 was chosen to test for significance in each analysis.

Six assumption tests were run for the two-way between subjects ANOVA. The assumption tests were:

1. The dependent variable (teachers' growth mindset scores) should be a continuous variable.
2. The independent variable (groups) should consist of only two categorical, independent groups.
3. There should be independence of observations, which means that there must be different participants in each group with no participant being in more than one group.
4. There should be no significant outliers.
5. The dependent variable should be approximately normally distributed for each category of the independent variable.
6. There needs to be homogeneity of variances (Levene's test).

Research Question 3 examined how teachers' self-assessed growth mindset scores compared by teachers' grade level taught (kindergarten – grade 2, grades 3-5, grades 6-8) and teachers' years of experience (1-5 years, 6-10 years, 11+ years). A two-way between subjects analysis of variance (ANOVA) test was conducted to determine if there was a significant difference between grade levels taught by teachers and teachers' years of teaching experience on the teachers' self-assessed growth mindset scores. The rationale for choosing the two-way between subjects ANOVA is that it is a statistical analysis to

test the mean differences between groups that have been split on two independent variables and determine if there is an interaction between the two independent variables. The two independent variables were the teachers' grade level taught with three groups (kindergarten – grade 2, grades 3-5, grades 6-8) and the teachers' years of teaching experience with three groups (1-5 years, 6-10 years, 11+ years). The dependent variable was the teachers' self-assessed growth mindset scores. An alpha level of .05 was chosen to test for significance in each analysis.

Six assumption tests were run for the two-way between subjects ANOVA. The assumption tests were:

1. The dependent variable (teachers' growth mindset scores) should be a continuous variable.
2. The independent variables (groups) should consist of two or more categorical, independent groups.
3. There should be independence of observations, which means that there must be different participants in each group with no participant being in more than one group.
4. There should be no significant outliers.
5. The dependent variable should be approximately normally distributed for each category of the independent variables.
6. There needs to be homogeneity of variances (Levene's test).

Research question 4 asks how teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught influence their perceptions of growth mindset. A multiple linear regression analysis was chosen to test for the relationships

between the variables. The rationale for choosing a multiple linear regression is to predict the value of a variable based on the value of two or more other variables. The independent variables are the teachers' numbers of years of teaching experience, teachers' age, teachers' role, and grade level taught. Teachers' role and grade level taught were dummy coded for this analysis. The dependent variable was the teachers' self-assessed growth mindset scores. An alpha level of .05 was used to test for significance.

There were six assumption tests conducted to determine if the data were appropriate to use with a multiple linear regression. The six assumption tests were:

1. The relationship between the continuous independent variables and the dependent variable must be linear.
2. There is no multicollinearity in the data.
3. The values of the residuals are independent.
4. The variance of the residuals is constant.
5. The values of the residuals are normally distributed.
6. There are no influential cases (outliers) biasing the regression model.

Research Question 5 investigates the relationship of teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores. A simple linear regression was used to predict if teachers' self-assessed growth mindset scores have a relationship with their perceived students' growth mindset scores. The rationale for choosing a simple linear regression is to predict the value of a variable based on the value of one other variable. The independent variable was the teachers' self-assessed growth mindset scores. The dependent variable was the teachers' perceived students' growth mindset scores. An alpha level of .05 was used to test for significance.

Six assumption tests were conducted to determine if the data were appropriate to use with a simple linear regression. The six assumption tests are:

1. The relationship between the independent variable and the dependent variable must be linear.
2. There is no multicollinearity in the data.
3. The values of the residuals are independent.
4. The variance of the residuals is constant.
5. The values of the residuals are normally distributed.
6. There are no influential cases (outliers) biasing the regression model.

The Sample and Population

Setting

The study was conducted in a suburban school district outside of a large metropolitan area in the northeastern part of the United States. In the 2020-2021 school year, there were 7,148 students enrolled in the school district, with 57% identified as economically disadvantaged (n = 4,085), 15% identified as English language learners (n = 1, 071) and 16% identified as students with disabilities (n = 1, 157) (NYSED, 2020). In terms of ethnicity, 2% of the students identify as Asian, Native Hawaiian/Other Pacific Islander (n = 173), 5% of the students identify as Back or African American (n = 356), 3% identify as Multiracial (n = 226), 43% identify as White (n = 3,086) and 46% identify as Hispanic or Latino (n = 3,298) (NYSED, 2020).

Sample

The researcher used purposive sampling. Purposive sampling is used when the researcher recruits participants who have experienced the concept being studied

(Creswell & Plano Clark, 2018). The researcher recruited special education and general education teachers who belonged to a special education/general education co-teaching pair during the 2021-2022 school year. Purposive sampling allows the researcher to gather information about specific situations that others may not have experienced. This type of sampling is more efficient than random sampling, as randomly selected participants may not be knowledgeable about the selected topic (Tongco, 2007). Use of this type of sampling limits the ability of the findings to be generalized to other populations (Fraenkel, et. al., 2019).

Kindergarten through grade 8 general education teachers (n = 54) and special education teachers (n = 27) who worked as co-teachers (n = 90) in integrated co-teaching classes (n = 54) from three of the district's elementary schools and three of the district's middle schools were recruited to complete the survey. Of these, 23 special education teachers and 25 general education teachers agreed to participate in the study. Demographic characteristics of the participants are detailed in Table 3. One participant declined to answer items related to demographic information. Of these co-teachers, 28 participated in voluntary instructional coaching provided by *Consulting That Makes a Difference (CDMI).*

Population

The results of this study may be generalized to a suburban school district of comparable size and demographic make-up. The teachers in this study represent the target population of co-teachers in public schools in New York state, as they are matched with regional demographics for a suburban school district.

Table 3

Demographic Characteristics of Study Participants

	n	%
Participation in coaching		
yes	28	57.1
no	20	40.8
Role of teacher		
Special education	23	46.9
General education	25	51.0
Years of co-teaching partnership		
1-3	25	51.0
4-6	10	20.4
6+	13	26.5
Grade level		
K-2	9	18.4
3-5	10	20.4
6-8	29	59.2
Years of teaching		
1-5	6	12.2
6-10	5	10.2
11+	37	75.5
Teacher Age		
20-30 years	6	12.2
31-40 years	13	26.5
41+ years	29	59.2

Instruments

Demographic information was collected from the survey participants. This included additional multiple-choice questions asking if the co-teacher participated in instructional coaching, the number of years that the co-teachers had been co-teaching together and the teacher's role in the co-teaching partnership (general education teacher or special education teacher). Co-teachers' ages, grade-level taught, and years of teaching experiences were also included in the survey.

Growth Mindset Scale Reliability and Validity

The Growth Mindset Scale (GMS) (Dweck, 1999, 2006) was used to assess the growth mindsets of the co-teachers. Responses to the GMS were collected via Microsoft Forms, then analyzed to determine the participants' Growth Mindset Scores. The GMS includes four statements about the ability to change one's intelligence with effort. Study participants rated their agreement with each statement on a Likert-type scale with (1) strongly agree to (5) strongly disagree. The scale was then scored by determining the mean score of each participants' responses. The GMS was administered via Microsoft Forms during the district's professional development period.

The Growth Mindset Scale (GMS) (Dweck, 1999, 2006) is a four-item survey that presents statements about the ability of people to change their intelligence and respondents rate their agreement with the statements based on a 5-point Likert-type scale ranging from (1) strongly agree to (5) strongly disagree. Reliability refers to scores of an instrument being consistent following multiple administrations (Creswell & Creswell, 2018). Analysis by Mikiff, et. al. (2018) used item response theory analysis to determine the reliability of the GMS. High marginal reliability was noted (*0.90*) and Cronbach's alpha was $\alpha = 0.89$.

Validity refers to the evidence that the researcher uses to determine their inferences (Fraenkel, et. al., 2018). That is, the tests and/or data measure what they are assumed to measure (Creswell & Guetterman, 2019). The responses to the GMS were used to determine the growth mindsets of the co-teachers (Dweck, 1999, 2006).

i-Ready Reliability and Validity

The National Center on Intensive Intervention (n.d.) reports that the i-Ready Diagnostic-Reading provides two types of reliability; marginal reliability estimates and standard error of measurement. Marginal reliability estimates are described as the proportion of the variance in the total observed score due to true score. The marginal reliability increases as the standard error decreases. Test-retest reliability was obtained between scores of two diagnostic tests and correlations were calculated. Marginal reliability and test-retest reliability were determined for each grade level, kindergarten through grade 8. The median coefficient for marginal reliability fell between *0.91* and *0.97* for grades kindergarten through eight. The median coefficient for test-retest reliability fell between *0.79* and *0.86* for grades kindergarten through eight. According to NYSED, i-Ready meets minimum criteria for reliability with student test scores coefficient alphas $\alpha > 0.75$. The i-Ready diagnostic is used by the school district three times per year to assess students' progress in reading.

i-Ready is a commercial product created by Curriculum Associates used by the school district to monitor student academic progress. This is a computer-based assessment tool administered to all students in the school district three times per school year. According to NYSED (2015), i-Ready is aligned to NYS learning standards for reading. Results of the i-Ready diagnostic assessment in reading and mathematics, administered in Fall 2021 and Spring 2022, were used to determine academic growth of students in the special education/general education co-taught classes.

Intervention

Prior to this research, some special education and general education co-teachers voluntarily participated in instructional coaching provided by CDMI. The instructional coaching took place during the 2021-2022 school year, from October through June. The instructional coaches conducted monthly forty-minute observations of the co-teachers in class and then met with them monthly for forty minutes to offer feedback and suggestions regarding best practices for co-teaching. This cycle of observation and feedback was confidential, meaning that CDMI provided general information to the school administrators about the topics addressed during instructional coaching sessions, but information regarding any specific co-teaching pairs was not shared outside of the coaching relationship. The instructional coaching took place during the 2021-2022 school year, from October through June.

Procedures for Collecting Data

Quantitative Phase

The researcher began data collection following IRB approval being granted by St. John's University. A meeting was held with the superintendent of schools during which the researcher explained this research study, provided information regarding informed consent, and gained permission from the school district to complete the study and to access the data. The informed consent letter was signed by the superintendent of schools (see Appendix D). The researcher obtained permission from the Assistant Superintendent for Special Education and Pupil Services to share the study's survey with the teachers during the professional development period. Copies of the signed consent form from the

superintendent were given to the building principals and the researcher met with the building principals to review the study and the informed consent.

The Fall and Spring i-Ready reading and mathematics gain scores for each student in the co-taught classes were extracted to Microsoft Excel without student identifying information.

The GMS was administered to the co-teachers via Microsoft Forms during a professional development period. GMS responses were sent to the researcher without identifying the participants as no email addresses were collected. The researcher imported the data from Microsoft Excel to SPSS 27.0 for analysis.

Research Ethics

Participation in the growth mindset portion of this research study was voluntary. During a professional development period, the researcher explained the research questions, the voluntary nature of participation and the efforts that will be taken to ensure the confidentiality and anonymity of the participants, the schools, and the school district. Informed consent was provided to all GMS respondents in the introduction to the survey, which included the informed consent information, along with a statement explaining that completion of the survey will serve as the participant's consent.

Written permission to use the archival i-Ready data was obtained from the superintendent of the school district. This data is archived, so informed consent from the students' parents and/or guardians was not required.

The informed consent portion of the survey explained that there were no known risks of harm for participating in the study, other than those of daily life. However, the benefits to participating in the study were that the results of this study will better inform

educators and school leaders of the advantages of encouraging a growth mindset of both teachers and students, and of providing co-teachers with instructional coaching to support the academic growth of all students, both in special education and general education. Participants were also informed that they may withdraw from taking the survey at any time or may refuse to answer a question without penalty.

All data were kept secure and triple-locked for storage. All data were kept on a password protected and locked laptop, which was stored in a locked cabinet in a locked office.

Qualitative Phase

Qualitative Central Research Question

What beliefs do special education and general education co-teachers have about their positions?

Qualitative Sub Questions

Research Sub Question 1. What beliefs do special education and general education co-teachers have about growth mindset?

Research Sub Question 2. How do special education and general education co-teachers explain the challenges and benefits of their positions?

Research Sub Question 3. How does instructional coaching influence special education and general education co-teachers' beliefs and practices?

The qualitative research question asks about the beliefs that special education and general education co-teachers have about their profession. Sub-questions asked the special education and general education co-teachers their beliefs about growth mindset, about challenges and benefits of their positions and about the influence that instructional

coaching has on their teaching practices. These questions elicited descriptive data for the study. Statements from the teachers were color coded according to anticipated themes and subthemes. These themes were: Instruction (co-teaching models, academics), Growth (academic, social), and Partnership (collaboration, friendship). After the initial coding process, additional themes(subthemes) were identified. These were: Growth (teacher growth), Social-emotional (student needs, teacher resilience, coaching feedback) and Structural Needs (physical setup, planning time, class makeup).

Setting

The study was conducted in a suburban school district outside of a large metropolitan area in the northeastern part of the United States. In the 2020-2021 school year, there were 7,148 students enrolled in the school district, with 57% identified as economically disadvantaged (n = 4,085), 15% identified as English language learners (n = 1, 071) and 16% identified as students with disabilities (n = 1, 157) (NYSED, 2020). In terms of ethnicity, 2% of the students identify as Asian, Native Hawaiian/Other Pacific Islander (n = 173), 5% of the students identify as Back or African American (n = 356), 3% identify as Multiracial (n = 226), 43% identify as White (n = 3,086) and 46% identify as Hispanic or Latino (n = 3,298) (NYSED, 2020).

Participants

For the qualitative phase of the study, teacher volunteers were recruited to participate in interviews. The final item on the survey asked for contact information for co-teachers who were willing to participate in semi-structured interviews. Volunteers were asked to provide their email contact information to schedule the interviews. Interview participants (n = 6) consisted of special education teacher and general

education teachers who were co-teaching pairs (n = 3). The pairs were selected to represent different grade levels, (grade 7, grade 5, kindergarten) in order to hear experiences of teacher pairs from different grade levels.

Data Collection Procedures

Semi-structured interviews were conducted with three teacher teams, each consisting of one special education teacher and one general education teacher (n = 6) to determine teachers' perceptions of growth mindset related to instructional coaching. The interviews allowed the researcher to collect rich descriptions of teacher experiences to further explain the quantitative survey results.

An interview protocol containing four questions was used to collect the data (see Appendix C). Interviewees were given the option of virtual interviews or in-person interviews. Virtual interviews were conducted via Webex, a secure virtual platform. In-person interviews were conducted following applicable COVID-19 protocols including mask-wearing and maintenance of a six-foot distance between the interviewees and the interviewer.

Interviews were audio recorded and transcribed using pseudonyms, to ensure participant anonymity. The Rev Voice Recorder and Memos application was used to record and transcribe the interviews. Following review by the researcher, participants were given the opportunity to review the transcripts for accuracy.

During the interviews, the researcher recorded field notes about the circumstances, setting, observed behavior of the interview participants, and the researcher's reflections about the participants' responses. The notes were handwritten in a

spiral bound notebook, which allowed the researcher to document information about the context of the interviews (Phillippi & Lauderdale, 2018).

Trustworthiness of the Design

Trustworthiness for this phase of the study was established through the use of triangulation of data and member checking (Creswell & Guetterman, 2019). Data were collected using transcribed semi-structured interview responses, researcher field notes, and researcher reflective journaling. These allowed multiple sources of evidence to be collected to corroborate the findings.

Member checking was used to ensure the accuracy of the transcribed interviews. Copies of the transcripts were provided to the participants for their review. No inaccuracies were noted by the participants.

Research Ethics

Informed consent was provided to co-teaching teams who volunteered to participate in the qualitative phase of the research. Participants were informed of their right to withdraw from the study at any time and to refuse to answer any questions without penalty. The interview informed consent and questions were provided to the participants prior to the interviews. Participants signed informed consent forms acknowledging the protections of no risk or harm, the right to withdraw without penalty and the right to confidentiality.

All data were kept secure and triple-locked for storage. All data were kept on a password protected and locked laptop, which was stored in a locked cabinet in a locked office.

Data Analysis Approach

Creswell and Poth (2017) describe a spiraling of data, where the researcher works through different stages of the analysis process. This process begins with organizing the data then recording emerging ideas. Following this, the data are classified into themes followed by developing interpretations. The data are then represented, and the findings are determined (Creswell & Poth, 2017).

Semi structured interviews were transcribed. The transcripts checked for accuracy then were analyzed using a color-coding system to code key phrases that identified common themes and subthemes within the data. First cycle codes were assigned to the dat. The researcher used a provisional coding, based on prior research. These were: growth, instruction, and partnership. Additional codes were identified as the researcher analyzed the data. Additional codes subsequently added were: structural needs and social emotional. Subcodes were then developed to further detail the data (Miles, Huberman & Saldaña, 2014).

Researcher Role

As the data collection instrument, the researcher plays an important role. The researcher is an administrator at the school district where the participants are employed. Although the participants were encouraged to speak freely, it is possible that they edited their commentary based on the role of the researcher. The researcher was mindful to be objective when collecting and analyzing the data, however personal bias and perceptions may have interfered with what was heard or seen.

Mixed Methods Phase

The mixed methods research question asks the extent to which the qualitative data confirms the quantitative findings. The researcher compared the results of the quantitative and qualitative phases of this research and provided additional qualitative support to explain the quantitative findings (Creswell & Plano Clark, 2018).

Conclusion

The current researcher used an explanatory sequential mixed methods design to examine the relationships between co-teachers' growth mindset and instructional coaching of co-teachers and student achievement in reading and mathematics. Special education and general education co-teachers shared their beliefs about instructional coaching as it was related to their growth mindsets. The qualitative phase of the data collection supported the quantitative phase by providing rich descriptions of the experiences of general education and special education co-teachers. The findings of this research are reported in the following chapter.

CHAPTER 4 FINDINGS

The purpose of this mixed methods study was to investigate the relationships between co-teacher instructional coaching and co-teacher growth mindsets. An explanatory sequential mixed methods design was used. The mixed methods research design allows the researcher to use qualitative data to support and further explain the quantitative findings (Creswell & Plano Clark, 2018). During the quantitative phase of the study, the researcher compared the following independent variables: instructional coaching, teacher perceptions of growth mindset, teacher age, years of teaching experience, level taught, and teacher's role (special education or general education). The dependent variables were the teachers' self-assessed scores on the Growth Mindset Scale (Dweck 1999, 2006), student achievement gain scores in reading and mathematics from students in co-taught classes as measured by the i-Ready diagnostics (Curriculum Associates, 2022).

During the study's qualitative phase, a narrative approach using interviews and documents helped to explain teacher perceptions of growth mindset as it related to co-teaching and instructional coaching. Following these investigations, an analysis of the two phases of the mixed methods design was completed with the qualitative findings supporting the quantitative results (Creswell & Plano Clark, 2018).

Results

The participants in this study were teachers from a suburban school district outside of a large metropolitan area in the Northeastern United States. Special education (n = 23) and general education (n = 25) teachers who were co-teachers participated in this study. Of these co-teachers, 28 participated in instructional coaching.

Prior to completing the statistical analyses, the data were screened. No coding errors were observed. Cases were excluded on a hypothesis-by-hypothesis basis when data were missing, as described below.

Quantitative Research Question 1

The school district uses iReady to assess students' progress in reading three times during the school year. The first quantitative research question was: How do the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8, compare?

The hypothesis was:

H_0: There will be no significant difference in the May 2022 i-Ready a) reading achievement gain scores, and b) mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

An independent samples *t* test was chosen to conduct this analysis as the independent samples t test determines if there was a significant difference in the reading iReady gain scores between the two types of students. An alpha level of .05 was chosen to test the significance of the analysis.

Prior to conducting the analysis, the data were screened. There were no missing values or coding errors. The six assumption tests were run for each independent samples t test to determine if the data were appropriate for use with that analysis. The dependent variable, student iReady reading gain scores, was continuous. The independent variable for each analysis (type of student) was categorical with two levels (special education,

general education). There was independence of observations as each participant was in only one group. However, the data failed the tests of normality and variance, so the researcher used the Mann-Whitney U test to determine if there were differences in iReady reading Gain Scores between special education students and general education students. The rationale for using the Mann-Whitney U test is a nonparametric alternative to the independent samples t test which can be used if data fail the assumptions of the independent samples t test. The hypothesis was reworded to:

H_0: There will be no significant median differences in the May 2022 i-Ready reading achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

The four assumption tests of the Mann-Whitney U test were run to determine if the data were appropriate for this analysis. The dependent variable, student iReady gain scores, was continuous. The independent variable for each analysis (type of student) was categorical with two levels (special education, general education). There was independence of observations as each participant was in only one group. Visual inspection of the population pyramid indicated that the distribution of scores for both groups of the independent variable had a similar shape.

The Median iReady reading gain scores for general education students (mean rank = 432), were statistically significantly higher than special education students (mean rank = 234), $U = 56235.500$, $z = 2.401$, $p = .016$. General education students displayed greater gains in their iReady reading scores than special education students. The null hypothesis for the analysis was rejected.

A second independent samples *t* test was chosen to conduct this analysis as the independent samples t test determines if there was a significant difference in the iReady mathematics gain scores between the two types of students. An alpha level of .05 was chosen to test the significance of the analysis.

Prior to conducting the analysis, the data were screened. There were no missing values or coding errors. The six assumption tests were run for each independent samples t test to determine if the data were appropriate for use with that analysis. The dependent variable, student iReady mathematics gain scores, was continuous. The independent variable for each analysis (type of student) was categorical with two levels (special education, general education). There was independence of observations as each participant was in only one group. However, the data failed the tests of normality and variance, so the researcher used the Kruskal-Wallis H test to determine if there were differences in iReady Mathematics Gain Scores between special education students and general education students. The rationale for using the Kruskal-Wallis H test is a nonparametric alternative to the independent samples t test which can be used if data fail the assumptions of the independent samples t test. The hypothesis was reworded to:

H_0: There will be no significant median difference in the May 2022 i-Ready mathematics achievement gain scores for types of students (special education, general education) in co-teaching classrooms, grade levels K through 8.

The four assumption tests of the Kruskal-Wallis H test were run to determine if the data were appropriate for this analysis. The dependent variable, student iReady mathematics gain scores, was continuous. The independent variable for each analysis (type of student) was categorical with two levels (special education, general education).

There was independence of observations as each participant was in only one group. Visual inspection of the boxplot indicated that the distribution of scores for both groups of the independent variable had a similar shape.

The Median iReady mathematics gain scores for general education students (median = 5) were statistically significantly different than special education students (median = 3) , $H(2) = 9.402$, $p = .009$. General education students displayed greater gains in their iReady mathematics scores than special education students. The null hypothesis for the analysis was rejected.

Quantitative Research Question 2

The researcher then tested to determine how teachers' self-assessed growth mindset scores on the GMS compared between teachers' roles and receiving instructional coaching. The second quantitative research question was: How do teachers' self-assessed growth mindset scores compare between a) teachers' roles (special education, general education) and between b) those teachers who receive co-teaching instructional coaching and those teachers who do not?

The hypotheses were:

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing teachers' roles (special education, general education).

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing teachers' participation in co-teaching instructional coaching (yes, no).

H_0: There will be no interaction effect between teachers' roles (special education, general education) and teachers' participation in co-teaching instructional coaching (yes, no).

A two-way between subjects ANOVA was selected as the appropriate analysis to use since there were two independent categorical levels and a continuous dependent variable. In addition, it was desirable to determine if there was an interaction between the independent variables. The rationale for choosing the two-way between subjects ANOVA is that it is a statistical analysis to test the mean differences between groups that have been split on two independent variables and determine if there is an interaction between the two independent variables. An alpha level of .05 was chosen for testing the significance.

Before running the analysis, the data were screened. There was one missing value, and this case was excluded from the analysis. There were no coding errors. The six assumption tests for the two-way ANOVA were run to determine if the data were appropriate to use with this analysis. The dependent variable, the teachers' scores on the GMS were continuous. The two independent variables, teachers' roles (general education teacher, special education teacher) and receiving instructional coaching (instructional coaching, no instructional coaching) were categorical. There was independence of observations as there were different participants at each level of each group. The normality assumption was assessed through visual inspection of *Q-Q* plots, histograms, and Shapiro-Wilks tests. Shapiro Wilks values were non-significant for the following groups: special education teachers who participated in instructional coaching ($M = 3.83$, $SD = .56$, $p = .169$), special education teacher who did not participate in

instructional coaching (M = 3.47, SD = 53, p = .082) and general education teachers who did not participate in instructional coaching (M = 4.02, SD = .84, p = .068). The Shapiro Wilks value for the general education teachers who participated in instructional coaching failed the Shapiro Wilks test (M = 3.30, SD = 98, p = .027), however visual inspection of the Q-Q plot and histogram showed data that were close to being normally distributed.

Tests for main effects indicated that there was no statistically significant main effect of teacher role on the GMS score, $F($1, 44) = .003, p = .954. The null hypothesis was retained. There was no statistically significant main effect of participating in instructional coaching on the GMS score, $F($1, 44) = .594, p = .445. The null hypothesis was retained.

There was a statistically significant interaction effect between teachers' roles and participating in instructional coaching, F (1, 44) = 5.675, p = .022). The interaction effect had an effect size of η^2 = .114, which is medium. The post hoc analyses using the simple effects were computed. For general education teachers who participated in instructional coaching, there was a statistically significant mean difference between those general education teachers who participated in instructional coaching and those who did not (MD = -.713, SE = .305, p = .024).

Table 4

Two-Way Between Subjects Main ANOVA Table

	SS	*df*	*MS*	*F*	*p*	η^2
Teacher Role	.002	1	.002	.003	.954	
Participation in Coaching	.345	1	.345	.594	.445	
Interaction	3.300	1	3.300	5.675*	.022	.114
Within (Error)	25.590	44	.52			
Corrected Total	29.495	47				

Note. $*p < .05$

Quantitative Research Question 3

The researcher then compared teachers' responses on the GMS between teacher grade level taught and year of teacher experience. The third quantitative research question was: How do teachers' self-assessed growth mindset scores compare between a) grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8) and b) years of teacher experience (1-5 years, 6-10 years, 11+ years)?

The hypotheses were:

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing grade level taught (kindergarten- grade 2, grades 3-5, grades 6-8).

H_0: There will be no significant difference in teachers' self-assessed growth mindset scores when comparing years of teacher experience (1-5 years, 6-10 years, 11+ years).

H_0: There will be no interaction effect between grade level taught (kindergarten-grade 2, grades 3-5, grades 6-8) and years of teacher experience (1-5 years, 6-10 years, 11+ years).

A two-way between subjects ANOVA was selected as the appropriate analysis to determine if there were significant differences in responses on the GMS based on teachers' grade level taught and years of teachers' experience. The two-way between subjects ANOVA was selected as the appropriate analysis to use since there were two independent categorical levels and a continuous dependent variable. In addition, it was desirable to determine if there was an interaction between the independent variables. The rationale for choosing the two-way between subjects ANOVA is that it is a statistical analysis to test the mean differences between groups that have been split on two independent variables and determine if there is an interaction between the two independent variables. An alpha level of .05 was chosen for testing the significance.

Before running the analysis, the data were screened. There was one missing value, and this case was excluded from the analysis. There were no coding errors. To create more equal groups for the analysis, the researcher combined the kindergarten-grade 2 responses with the grades 3-5 responses and compared the responses of elementary grade teachers with the responses of middle school grade teachers. Similarly, the researcher combined the years of teaching experience to create two groups- 1-10 years of teaching experience and 11+ years of teaching experience for analysis of more equal groups.

The six assumption tests for the two-way ANOVA were run to determine if the data were appropriate to use with this analysis. The dependent variable, the teachers'

scores on the GMS were continuous. The two independent variables, teachers' grade level taught (elementary, middle school) and teachers' years of experience (1-10years, 11+ years) were categorical. There was independence of observations as there were different participants at each level of each group. The normality assumption was assessed through visual inspection of *Q-Q* plots, histograms, and Shapiro-Wilks tests. Shapiro Wilks values were significant for the following groups: elementary teachers with 1-10 years teaching ($M = 3.00$, $SD = 0$, $p = .012$) and elementary teachers with 11+ years of experience ($M = 4.00$, $SD = .57$, $p = .015$). Although the significance levels for these groups were significant, the Q-Q plots showed that the dots followed fairly close to the line. Middle school teachers with 1-10 years teaching ($M = 3.70$, $SD = .66$, $p = .306$) and middle school teachers with 11+ years of experience ($M = 3.39$, $SD = .95$, $p = .240$) had Shapiro Wilks values that were nonsignificant. As the ANOVA is robust to deviations from normality (Winer, 1991), the researcher proceeded with the analysis. The Levene's Test of Variances was not statistically significant ($p = .106$), indicating that there was homogeneity of variances.

There was not a statistically significant interaction effect between grade level taught and years of teaching experience, $F(1, 1.41) = 2.420$, $p = .127$). Tests for main effects indicated that there was no statistically significant main effect of grade level taught on the GMS score, $F(1, 44) = .013$, $p = .911$. There was no statistically significant main effect of years of teaching experience on the GMS score, $F(1, 44) = .686$, $p = .412$. Grade level taught and years of teaching experience did not make a difference in the teachers' growth mindsets. Therefore, the null hypothesis was retained.

Table 5

Two-Way Between Subjects Main ANOVA Table

	SS	*df*	*MS*	*F*	*p*
Grade Level Taught	.007	1	.007	.013	.412
Years Teaching	.399	1	.399	.686	.911
Interaction	1.410	1	1.410	2.420	.127
Within (Error)	25.639	44	.583		
Corrected Total	29.495	47			

Quantitative Research Question 4

The researcher assessed factors that may influence the teachers' GMS scores. The fourth quantitative research question was: How do teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught influence their self-assessed growth mindset scores?

The hypotheses were:

H_0: There will be no significant relationship between teachers' numbers of years of teaching experience, teachers' age, teachers' role, or grade level taught and teachers' self-assessed growth mindset scores.

A multiple linear regression was selected to test for the relationships between the variables. The rationale for using a multiple regression is to predict the value of a variable based on the value of two or more other variables. The independent variables were number of year teaching experience, teachers' age, teachers' role and grade level taught. When viewing the variables, number of years of teaching experience and teachers' age were polychotomos variables, which required that they be dummy coded for the multiple

regression. Grade level taught and teachers' role were dichotomous variables and were dummy coded. The alpha level of .05 was chosen to test for significance.

Prior to completing the multiple linear regression analysis, the data were screened. There was one missing value, and this case was excluded from the analysis. There were no coding errors. The six assumption tests for the multiple linear regression analysis were conducted. The relationship between the independent and dependent variables was linear as was demonstrated by scatterplots. There was no multicollinearity in the data as the VIF scores were well below 10 (years teaching experience = 2.185, teachers' age = 2.112, teachers' role = 1.103, grade level = 1.210) and tolerance scores were above 0.2 (years teaching experience = .458, teachers' age = .473, teachers' role = .908, grade level = .826) There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.534, which was close to 2, indicating that there was no correlation between residuals. The variance of the residuals was constant, which was identified by the scatterplots showing no evidence of funneling or fanning, which suggests that the assumption of homoscedascity has been met. The values of the residuals were normally distributed based on visual inspection of the *P-P* plot. Finally, there were no influential cases of biasing or outliers evident in the data, which was verified by calculating Cook's Distance values, all of which were below 1.00.

The multiple regression analysis was conducted using SPSS. R^2 for the overall model was 16.1% with an adjusted R^2 of 8.2%. Overall, the model did not significantly predict the teachers' GMS scores, F (4, 43) = 2.056, p = 103. Two factors predicted teachers' GMS scores, grade level taught (β = -.342, p = .031) and teacher's age (β = -.403, p = .049), while number of years teaching (β = .192, p = .357) and teacher role (β =

.058, p = .694) did not significantly predict teachers' GMS scores. Grade level taught had the strongest positive weight in the model and provided the unique contribution of sr^2 = .097, or about 9.7%. Teacher's age followed as the next strongest positive weight and had a unique contribution to the model of sr^2 = .077. or about 7.7%. This suggests that the grade level taught by a teacher and the teacher's age predicted their self-assessed growth mindsets.

Table 6

Regression of Teacher GMS Scores on Teacher's Years of Experience, Age, Role and Level Taught

	GMS Score			
Variable	*B*	*SE B*	β	sr^2
Grade Level Taught	-.548	0.246	-.342*	.097
Years Teaching	.359	0.385	0.192	
Teachers' Role	.91	0.230	.058	
Teachers' Age	-0.447	0.225	-0.403*	.077
R^2		0.161		
F		2.056		

Note: *$p < .05$

Quantitative Research Question 5

Participants completed the GMS based on their personal beliefs of their own growth mindsets and also completed the GMS based on their perceptions of growth mindsets of their general education student and special education students. The fifth research question was: What is the relationship of teachers' self-assessed growth mindset scores to their perceived students' growth mindset scores? Two linear regressions were run to test the research question.

The hypotheses were:

H_0: There will be no significant relationship between teachers' self-assessed growth mindset scores to their perceived general education students' growth mindset scores.

H_0: There will be no significant relationship between teachers' self-assessed growth mindset scores to their perceived special education students' growth mindset scores.

The first simple linear regression was used to predict if teachers' self-assessed growth mindset scores have a relationship with their perceived students' growth mindset scores. The rationale for choosing a simple linear regression is to predict the value of a variable based on the value of one other variable. The independent variable was the teachers' self-assessed growth mindset scores. The dependent variable for the first simple linear regression was the teachers' perceived growth mindset scores of their general education students. The alpha level of .05 was selected to test the analysis for significance.

Prior to conducting the first simple linear regression, the data were screened. One participant did not complete the perceptions of students' section of the GMS, so this case was deleted and not used in the analyses. The six assumption tests for each simple linear regression were conducted. For the first simple linear regression, a scatterplot of teachers' GMS scores against perceived GMS scores of general education students was plotted. Visual inspection of this scatterplot indicated a linear relationship between the variables. There was independence of residuals, as assessed by a Durbin-Watson statistic, which was close to 2 (Durbin-Watson = 1.796). The variance of residuals was

constant, which was identified upon visual inspection of the scatterplot. No evidence of funneling or fanning was observed, which suggests that the assumption of homoscedasticity has been met. The value of the residuals were normally distributed, as observed on the *P-P* plot. Finally, there were no influential cases of biasing or outliers evident in the data, as indicated by Cook's Distance values, which were under 1.00.

The simple linear regression was conducted with SPSS and the correlation of the independent variable (teachers' scores on the GMS) were significantly correlated with the dependent variable (perceived scores of general education students on the GMS), $r = .66$, $p < .001$. A significant regression equation was found $F(1,46) = 36.65$, $p < .001$. Teacher scores on the GMS accounted for 44.3% of the variance in perceived scores of general education students on the GMS ($R^2 = .443$, adjusted $R^2 = .431$). Teacher GMS scores ($\beta = .666$, $p < .001$) predicted perceived scores of general education students on the GMS, as shown in Table 7. Results predicting the perceived GMS scores of general education students was equal to a regression equation of: Predicted GE GMS = 1.468 + .615(teachers' GMS Scores). The null hypothesis was rejected for this analysis.

Table 7

Regression of Teachers' GMS Scores on Perceived GMS Scores of General Education Students

	Perceived Scores of GE Students		
Variable	*B*	*SE B*	*β*
Teachers' GMS Scores	.615	.102	.666*
R^2	.443		
F	36.647*		

Note: *$p < .001$.

A second simple linear regression was used to predict if teachers' self-assessed growth mindset scores have a relationship with their perceived students' growth mindset scores. The rationale for choosing a simple linear regression is to predict the value of a variable based on the value of one other variable. The independent variable was the teachers' self-assessed growth mindset scores. The dependent variable for the second simple linear regression was the teachers' perceived growth mindset scores of their special education students. The alpha level of .05 was selected to test the analysis for significance.

A second scatterplot of teachers' GMS scores against perceived GMS scores of special education students was plotted. Visual inspection of this scatterplot indicated a linear relationship between the variables. There was independence of residuals, as assessed by a Durbin-Watson statistic, which were below a 2 (Durbin-Watson = 1.659) which indicates a slight positive autocorrelation of the residuals detected in the sample (Kenton, 2021). However, values in the range of 1.5 to 2.5 are relatively normal. The variance of residuals was constant, which was identified upon visual inspection of the scatterplot. No evidence of funneling or fanning was observed, which suggests that the assumption of homoscedasticity has been met. The value of the residuals were normally distributed, as observed on the *P-P* plot. Finally, there were no influential cases of biasing or outliers evident in the data, as indicated by Cook's Distance values, which were under 1.00.

The simple linear regression was conducted with SPSS and the correlation of the independent variable (teachers' scores on the GMS) were significantly correlated with the dependent variable (perceived scores of special education students on the GMS), $r = .746$,

$p < .001$. A significant regression equation was found $F(1,46) = 57.634$, $p < .001$. Teacher scores on the GMS accounted for 55.6% of the variance in perceived scores of special education students on the GMS ($R^2 = .556$, adjusted $R^2 = .546$). Teacher GMS scores ($\beta = .746$, $p < .001$) predicted perceived scores of special education students on the GMS, as shown in Table 8. Results predicting the perceived GMS scores of special education students was equal to a regression equation of: Predicted SE GMS = 1.083 + .701teachers' GMS Scores). The null hypothesis was rejected for this analysis.

Table 8

Regression of Teachers' GMS Scores on Perceived GMS Scores of Special Education Students

	Perceived Scores of SE Students		
Variable	*B*	*SE B*	*β*
Teachers' GMS Scores	.701	.092	.746*
R^2	.556		
F	57.634*		

Note: *$p < .001$.

Qualitative Phase

Findings

During the study's qualitative phase, a narrative approach was used to help explain teachers' perceptions of growth mindset as it related to co-teaching and instructional coaching. The narrative approach allowed the researcher to collect experiences of individuals, providing rich, thick descriptions to support the quantitative findings with in-depth meaning (Butina, 2015).

Data were collected using semi-structured interviews using a four-question interview protocol. The researcher used field notes to record information about the setting, participant behaviors, and mood during the interviews. The following central research question and sub-questions guided the research framework:

What beliefs do special education and general education co-teachers have about their positions?

1. What beliefs do special education and general education co-teachers have about growth mindset?
2. How do special education and general education co-teachers explain the challenges and benefits of their positions?
3. How does instructional coaching influence special education and general education co-teachers' beliefs and practices?

Participant Demographics

The researcher used purposive sampling to recruit participants. The participants indicated their willingness to participate in interviews as indicated by completing an item on the quantitative survey recruiting interview volunteers. Six teachers participated in the qualitative portion of the study.

The participants for this phase of the study included three special education/general education co-teaching pairs. All of the teachers had been teaching for more than eleven years and were in the age range of 35-45 years. One teacher pair taught kindergarten, one pair taught grade five, and one pair taught grade seven. Table 9 presents a description of the qualitative phase's participants, including their pseudonym,

role, grade level taught, years of teaching experience, and years of co-teaching partnership.

Table 9

Description of Participants

Pseudonym	Role	Grade Level	Years' Experience	Years' Partnership
Kim	Special Education	Kindergarten	11+	3
Kari	General Education	Kindergarten	11+	3
Susan	Special Education	5	11+	5
Tami	General Education	5	11+	5
Sharon	Special Education	7	11+	6
Nancy	General Education	7	11+	6

The co-teaching partners were interviewed together, in person, at their respective schools in their classrooms. The interviews took place during a professional development period within the school day. Kim and Kari participated in a virtual interview, as they are no longer co-teaching and work at different elementary schools in the school district. Each co-teaching pair worked at different schools, with Susan and

Tami in one of the district's elementary schools and Sharon and Nancy in one of the district's middle schools.

The semi-structured interview protocol (see Appendix C) included four open-ended questions designed to elicit responses about the participants thoughts and feelings of their experiences as special education/general education co-teachers, experiences with the instructional coach, and their perceptions of their students' progress during the 2021-2022 school year. The findings were organized by themes and subthemes that emerged through the data analysis and coding process. Table 10 outlines the themes and subthemes by research question and topic.

Qualitative Central Research Question

What beliefs do special education and general education co-teachers have about their positions?

The central qualitative research question allowed the participants to provide information about their positions as teachers. The participants were asked to describe their co-teaching relationships and experiences, their impressions of their work with instructional coaches, and their thoughts on the progress or lack of progress their students made during the 2021-2022 school year.

Research Sub-Question 1

What beliefs do special education and general education co-teachers have about growth mindset?

Research sub-question one provided information about the teachers' beliefs about student ability and progress. Teachers were asked to describe students who had surprised

them with their progress and/or lack of progress. Several subthemes were also identified from their responses.

Table 10

Sub-questions, Themes, and Sub-themes

Research Question	Sub-question	Themes, Sub-theme
What beliefs do special education and general education teachers have about their positions?	What beliefs do special education and general education teacher have about growth mindset?	**Growth** Student growth Teacher growth
	How do special education and general education teachers explain the challenges and benefits of their positions? general education	**Structural needs** Physical setup Planning time Class makeup **partnership** collaboration Friendship **Instruction** Co-teaching models **Social emotional** Student needs Teacher satisfaction
	How does instructional coaching influence special education and general education teachers?	**Instruction** Co-teaching models Academics **Teacher Satisfaction** Coach Feedback

Skill Growth

Findings suggest that special education and general education co-teachers display a growth mindset regarding themselves and regarding the special education and general education students in their classes. The researcher's field notes demonstrated that this was evident in their positive affect and body language as they were describing their personal development as teachers and their students' progress in academic and social skills. Subthemes that emerged from the participants' responses indicted that although overall growth was seen in many areas by the teachers, concerns about the progress of some students was also evident.

Academic Growth. All of the teachers noted that particular students in their classes displayed academic growth that surprised them. Susan, a fifth-grade special education (SE) teacher and Tami, a fifth-grade general education (GE) teacher, shared an experience about a special education student who had progressed, they stated:

> Tami (GE): Well, [student name] is the one student that…
>
> Susan (SE): She made a ton of progress. She was almost like, I wouldn't say a nonreader, but…
>
> Tami: Like K or 1. And she struggled.
>
> Susan: She got to a fourth-grade level…
>
> Tami: By the end of the year.

While each of the co-teaching pairs shared about students who made academic progress, some co-teachers also referenced other growth that they had observed in the students. Kim and Kari, kindergarten special education (SE) and general education (GE)

teachers, respectively, expressed that all of their students had displayed growth in some manner. Kim (SE) shared that:

> I think overall, out of all of our students, they each made some kind of academic growth, some a lot of growth. And then we had some that maybe made a little growth, but they made growth and maybe those students made more social emotional growth where they didn't make as much academic growth.

Kari (GE) also shared about the ways students displayed growth in their kindergarten class:

> I feel some kids came in strong academically and they just grew. Some kids came in, they had no independent skills and they left being able to do things. So, you have to look at growth based on where the child is. So, I would say if you look at that, for the most part, most of them did make growth.

This sentiment was echoed by Sharon, the seventh-grade special education co-teacher, who expressed, "Some made progress more in like becoming more outgoing or having better organizational skills that I've helped them with. Even reading comprehension has increased."

While all of the teachers expressed that their students grew academically, some teachers also reported concerns with the progress of some of their special education and general education students. Kim (SE, Grade K) shared:

> And then we also had gen[general] ed[education] kids that were struggling with, let's say letter [identification], letter sounds, where some of our special ed. kids went past them at some points. So, I think you see the strengths and weaknesses across the board.

The teachers also shared about students who did not display progress academically and expressed concerns about these students. Grade 5 teachers Tami (GE) and Susan (SE) expressed:

> Susan: We have two students that didn't [progress] last year. [Student names]
>
> Tami: Right, they struggled.
>
> Susan: They struggled.
>
> Tami: They didn't make as much [progress] as we would've liked.

Teacher Growth. Special education and general education co-teachers described developing their own skill sets as teachers. The seventh-grade co-teachers, Sharon (SE) and Nancy (GE) discussed how they incorporated the use of academic vocabulary into their lessons. Nancy shared:

> That's something Sharon and I have been working on since last year is with the academic vocabulary. We really, together, started to push toward looking at those tier two vocabulary words, looking at our content sources, and pulling out the words that we felt would enhance their writing, enhance their speaking. So, we've developed so many activities and assessments revolving around that from last year. Really just building upon it into this year that that really has, I think it has helped the students…..I think sometimes you hear them using the words and you're like, 'Yay. You're using the language' and they're able to use it correctly in their writing. So, I think her and I having that opportunity last year to really delve into is and now kind of fine-tune it and find different ways to work vocabulary.

Research Sub-Question 2

How do special education and general education co-teachers explain the challenges and benefits of their positions?

Research sub-question two provided information about challenges and benefits that they have experienced as a result of being part of a special education/general education co-teaching partnership. Teachers were asked to share experience, impressions, and beliefs about the difficulties and rewards of a co-teaching relationship.

Structural Needs

Findings suggest that special education and general education co-teachers experience difficulties related to the logistics of co-teaching. This was evident in their descriptions of challenges they face while instructing their students. Subthemes that emerged from the participants' responses were related to difficulties within the physical classroom space, common planning time and the mix of general education and special education students in the classes. These impacted their abilities to use different co-teaching models.

Physical Setup: Special education and general education co-teachers described how the physical space of the classroom interfered with their ability to use different co-teaching models effectively. Sharon (SE, Gr. 7) shared that the classroom space and furniture impacts her teaching, saying:

> I just want to make a point that it's hard to do different models, especially in a classroom that doesn't really lend itself, the physical space doesn't necessarily lend itself to co-teaching. Do you know what I mean? So, if it was more flexible seating or if we all had horseshoe tables, like elementary, just have that space to

say, all right, go to this table…...I'm very lucky that I can come across the whole alternative teaching, but the physical space does not lend itself to co-teaching at all. I co-teach three periods out of five. It's like, where am I pulling these kids? It's like a mess. Then moving the desks. This is something we need to work on.

This sentiment was shared by the kindergarten co-teachers as well. Kim (SE) said:

> …it's challenging for the teaching part because you have to be able to try to fit all of the different models of teaching in that we're asked to try. But at the same time, it's hard to do a lot when you don't have the ideal set-up for it.

Planning Time: All of the participants expressed challenges with having time to engage in lesson planning together. Two of the co-teaching partnerships, Susan (SE, gr.5) and Tami (GE, gr.5) and Sharon (SE, gr.7) and Nancy (GE, gr.7), shared that in prior years co-teachers were given one half day per month for lesson planning, and they found this was effective. Tami shared:

> Well, [former administrator] gave the inclusion pairs half a planning day. It wasn't in the contract. She just thought it was a nice…it would be effective to do that. But then with the sub[substitute teacher] situation, it kind of fell to the wayside.

Tami's co-teacher, Susan added:

> So that went to the wayside. But when we were first teaching together, I'd say our first two years, we used to have planning days. And we would hash everything out, not just in 40 minutes, where its 20 minutes after you answer an email, and make copies. The half day was effective.

The seventh-grade co-teachers shared these thoughts. Sharon (SE, gr.7) expressed frustration with her lack of planning time saying:

> Keep the partnerships together, give them time to plan, give them the support that they need. If they need even, I don't know, scheduling, I know it's tough as sub[substitutes], but even a half day to plan out lessons or something, If they lack that period to plan together, having a school business day, even on Superintendent's Conference Day, perhaps having a co-teaching workshop where you just get to meet with your co-teachers and plan out for the yeast. That would be so helpful. Just more time.

Class Make-up: Each pair of co-teachers expressed concern with the mix of general education and special education students in their classes. Their responses indicated that they thought more care could be taken by administrators when creating class rosters to develop more balanced classes, where general education student can act as positive social and academic role models for the special education students. Nancy (GE, gr.7) expressed:

> …I think that [administrators] really need to look at who they're putting in these inclusion classes on the gen. ed. side. In 16 years of teaching inclusion…...I've taught inclusion every year of my career. There was one class where I could genuinely say the gen. ed side lifted the inclusion side. It was the most well put together class ever. Since then, it has not. I think sometimes the thought process with administration is, well there's two of you, so were going to put IEPs on one side and all the [English Language Learners] on the other side in the class. So, who's lifting who here? Or you have all the IEPs and them we're going to give

you maybe half and half, which is really not the proper model, right? We shouldn't have eight IEPs and eight gen. ed. kids. We should have more gen. ed. kids in that class. But out of those eight [general education students], six of them are behavior problems or known to be discipline issues. That doesn't help lift the inclusion kids up to have models, positive student role models in the classroom.

These ideas were shared by Susan (SE, gr.5), as well, who shared:

Every year our profile class has been different. We don't ever have a consistent profile. I think our first year we had that. [It was] a bigger class, but we had more high functioning gen. ed. and more typical functioning gen. ed. students. Where because Tami has the [English for New Learners], we tend to have a lower profile gen. ed. student in the class. It does really change the ability to do station work and have the role model piece. I do think that's one shift we've seen every year.

Partnership

Findings suggest that special education and general education co-teachers value working together as partners. This was evident in the stories and shared experiences that each of the teachers shared and the body language they displayed when speaking about their partnership. When talking about their teamwork, the co-teachers smiled, laughed, nodded their heads, and were animated.

Collaboration. The co-teachers reported a high level of collaboration with their teaching partners. When asked to talk about some experiences they have had, Kari (GE, gr. K) shared:

I feel co-teaching it really comes down to your partnership and it almost like a marriage in a way. You have to have someone that is just right for you and for the

> class. I feel like Kim and I; we could have been thrown the worst situation and we would've made it work because that's just the way we were together. I think her strengths were my weaknesses or my weaknesses were her strength. We each brought something to the class that I feel like enhanced the other.

The fifth-grade team expressed that some changes to the instructional delivery in their school changed them from working together all day to only working together half of the day. Susan (SE, gr.5) expressed, "I think it's just different. We aren't as…we're not a cohesive, but we're together. Well, we're not together all day, we're together only half [of] the day." This idea was shared by the seventh-grade team, with Sharon (SE) saying:

> Because I have three co-teachers, so it's really tough to have that time to plan, especially with our PLCs [professional learning communities]. I don't have PLC with my [social studies] department. I mean, I have PLCs with my special ed. Department. I don't have it with my social studies content department.

Friendship. The development of friendships between special education and general education teachers was described by the participants. Sharon (GE, gr.7) stated, "so that's great because you know establish that relationship with your co-teacher, but you also…we're friends." The researcher noted smiling, laughing, and nodding their heads when the other co-teacher was speaking, indicating strong positive relationships between co-teaching partners. Kim (SE, gr.K) and Kari (GE, gr.K) shared similar thoughts, with Kim saying, "But it really does come down to the person you're with. It really is a huge part of it."

Instruction

Findings suggest that special education and general education co-teachers work diligently to co-plan effective instruction that meets the needs of all of the students in their classes. Evidence shows that co-teachers devote a high level of time and effort to providing instruction for their students.

Co-teaching Models. Co-teachers report using varying co-teaching models to provide instruction to the students. Co-teaching models mentioned by the participants include, alternative teaching, one teach, one assist, station teaching, and parallel teaching. Nancy (GE, gr.7) shared about using parallel teaching:

We've been trying more of this year. So, we'll divide the class, and she'll take five, I'll take eight. We've been doing that recently. So, I'll take eight in the hallway, and she'll take five in the classroom. [Teaching assistant] has been taking a small group. So, we find that that's, for this year, has been effective.

Kim (SE, gr.K) noted, "But I loved a lot of the models that [the coach] showed us, the station teaching we really enjoyed."

Social Emotional

The findings that emerged from this theme presented evidence of social emotional needs of students while also demonstrating evidence of teacher resilience. Participants expressed concern for their students who have been displaying social emotional challenges, which relates to the ability of teachers to be resilient during these times of difficulty.

Student Needs. Participants reported that students appear to be displaying social emotional difficulties at a greater level than before. Kim (SE, gr.K) described the need of

some of her students, saying, “I think the makeup of the children is changing as time’s going on, and we’re getting a lot of students that just need a lot of extra care and support, which kind of…its challenging for the teaching part.” These sentiments were echoed by her co-teacher, Kari, who stated, “I agree with her wholeheartedly when she says it’s tough nowadays with the social-emotional piece, how that’s changed so much. Home lives have changed. There’s so many different…just a change in education.”

Sharon (SE, gr.7) and Nancy (GE, gr.7) attributed many of the social-emotional difficulties that students are presenting to the return to school following the COVID-19 pandemic. Nancy stated that the students needed to learn:

> how to behave as students, really, that was a big part of last year was like, ‘Guys, you’re not in front of a computer. Raise your hand. Sit in your seat. Follow classroom routines.’ That was a lot of what we did last year was just, all right, this is student 101.

Sharon, Nancy’s co-teacher, added:

> Even speaking. I remember the first day of school last year, no one spoke. They were shell shocked. No one spoke…...They were totally traumatized last year. They didn’t even know really how to speak with each other. They’re behind phones anyway. They’re texting, whatever. That’s their communication, not necessarily interpersonal. So, its teaching those skills, too. Really difficult. Really difficult social skills.

Teacher Satisfaction. Participants reported varying levels of professional satisfaction that was evident in their statements and their body language as they spoke of being committed to inclusion. Tami (GE, gr.5) shared, “I was at [another elementary

school] doing inclusion with [another teacher], so I'm in it for… this is all I know, pretty much," Some participants shared some difficulty they had with co-teaching. Kari (GE, gr.K) shared:

> Mentally, I think it took a lot out of us. And hence I'm not in the room anymore. It was tough. And I love teaching. I'm not looking to leave this job, but you need to have the support for the teachers too, because that's where…people like [Kim] and I, they don't come often, I don't feel.

Kari and Kim are no longer in a co-teaching partnership.

Research Sub Question 3

How does instructional coaching influence special education and general education co-teachers' beliefs and practices?

Research sub-question 3 provided information about the co-teachers' work with an instructional coach. Teachers were asked to share about strategies and ideas that the instructional coach provided that were helpful and those that were not helpful.

Instruction

The findings that emerged from this theme suggest that working with the instructional coach enhanced the ability of the special education and general education co-teachers to use varying co-teaching models effectively to provide academic instruction to the students in their classes.

Co-teaching Models. Participants shared that the instructional coach gave them feedback and suggestions about using different co-teaching models. Kim (SE, gr.K) expressed that the instructional coach:

> Definitely gave us some insight. I think she definitely laid out the models, so where you're looking at it and reading a description and then seeing the visual, she helped us put into a real classroom situation to understand what the model looked like and how it worked.

Positive feelings about the suggestions of the instructional coach were expressed by Susan (SE, gr.5) , as well, saying, "I can't say there was anything that's…..there's nothing that hasn't worked. She hasn't given a recommendation that hasn't worked at this point."

The seventh-grade co-teaching team expressed a different perspective. Nancy (GE, gr.7) shared:

> I don't feel that coaching is really beneficial for us as a partnership. I don't feel that we, me personally, I don't feel that I learn any other, okay, these are the models. They're always the same models. We know what the models are, and we also know our students. So, we know what models work better in some years than others.

However, Sharon (SE, gr.7) expressed that she had received some worksheets for tracking her co-teaching models usage, and that she found that helpful.

Academics. Some participants reported that the instructional coach provided strategies for supporting academic instruction in the co-teaching classrooms. Susan expressed that the coach was easy to work with and experienced with similar types of classes. Susan (SE, gr.5) said, "But she's good. She'd take curriculum and she's like, 'Well, this is what you have, so this is what we're working with.' She's matter of fact.

She knows what's going on, so that's good." This sentiment was supported by Kari (GE, gr.K), who said:

> She gave us great guidance and she let us try new things and then she was able to say, 'Okay, what'd you think of…?' She also gave us time to say what we were doing right and also how we could tweak things. She even will bring us materials and show us things that we didn't have time to print out.

Teacher Satisfaction

Findings from this theme indicated that the instructional coaching also assisted the teachers with addressing their level of satisfaction in their positions as special education and general education co-teachers.

Coach Feedback. Some participants shared that the feedback that was received from the instructional coach was validating and affirmed the effort that they put into co-teaching. Kim (SE, gr.K) shared that, "The feedback that she gave us, I mean, it was so beautiful. I mean, she really saw Kari and I as partners and friends and it was validating that we were doing what we had to do." Kari (GE, gr.K) echoed this sentiment saying:

> It made me feel good to have her say, 'I really feel like you guys are amazing.' And made us feel like what we were doing was right. I think she saw us for the team that we were, and she gave us great guidance.

The fifth-grade co-teaching team shared other feedback about the instructional coach. Susan (SE, gr.5) stated:

> She totally understands, so it was easy in that respect. She understands where we're coming from. So, I think that was a positive. I think that's positive. For

who she is, I think she's good. She knows. She understands the teacher, she's in it.

Tami (GE, gr.5) added, "She understands the struggles."

Mixed Methods Results

With the explanatory sequential mixed methods design, the qualitative findings confirmed the quantitative results. The mixed methods research question was: To what extent do the qualitative findings in the study confirm the quantitative results?

Academic Achievement

Academic achievement, for students in co-taught classes, as measured by iReady gain scores, was statistically significantly greater for general education student than special education students. Through semi-structured interviews, the qualitative data suggests that although general education students may have shown greater gains as measured on iReady, their special education and general education co-teachers suggest that most of the students in their co-taught classes progressed academically to some degree. The co-teachers recognize that the students started the school year at differing levels and worked together to support the varying needs of all of the students in the co-taught classes. The co-teachers' experiences suggested that some students may have displayed growth in other areas, such as social or organizational areas.

Teacher Growth Mindset Scale Scores

The quantitative analysis suggests that there was no statistically significant effect of teachers' role, participation in instructional coaching, grade level taught and years of experience on the special education and general education teacher responses to the GMS. Further analyses suggested that there was no statistically significant relationship between

the teachers' age, years of experience, role and grade level taught. However, teachers' age and grade level taught were correlated with teacher responses on the GMS. The qualitative results regarding teacher years of experience and teacher role confirmed these results. The co-teachers who participated in the qualitative portion of the study had varying level of years of teaching experience, so their comments regarding co-teaching didn't appear to vary based on this factor. General education and special education teachers interview responses supported growth mindset principles and didn't appear to vary based on these factors.

Qualitative data suggests that, although not reflected on the teachers' GMS scores, instructional coaching has a positive effect on the mindsets of co-teachers. Interview data suggests that working with the instructional coach affirmed the co-teachers practices and validated their efforts in working in a collaborative setting. Additionally, there appeared to be some variation to interview responses based on grade level taught. The elementary special education/general education co-teaching teams responses suggest a greater level of positivity about instructional coaching when compared with the interview responses of the middle school co-teaching team.

Perceived Student Growth Mindset Survey Scores

Quantitative analysis suggests a statistically significant relationship between teachers' GMS scores and their perceived GMS scores of general education and special education students. Qualitative data supports this finding as the co-teachers expressed that most of their general and special education students had displayed progress during the school year in some manner, whether it be academically or socially. The teachers' responses reflected their views of students as individuals, who start at different levels and

progress at different rates, but all of their responses suggested that they have a strong commitment to growing as educators and for meeting the educational needs of all of their students. As one co-teacher stated, “Our work environment is the student’s learning environment.”

Conclusion

This chapter presented the qualitative, quantitative, and mixed methods findings based on statistical data analysis and analysis of semi-structured interviews. The findings suggest that special education and general education co-teachers’ personal growth mindsets are related to their perceived growth mindsets about their special education and general education students. In the following chapter, the researcher will discuss how these findings relate to the related literature and theoretical framework of this study.

CHAPTER 5 DISCUSSION

The following chapter discusses and interprets the major findings in Chapter 4 and how these findings relate to Dweck's (1999) Growth Mindset theory. This chapter will analyze how the findings support the theoretical framework (Figure 2) discussed in Chapter 2. Implications to prior research is discussed in this chapter, connecting the results to related literature. The limitations of this study are explained, and recommendations suggested to policy makers and school district officials. Finally, this chapter provides recommendations for future research.

Implications of Findings

The theoretical framework that guided this study was Dweck's Growth Mindset theory. This theory suggests that different mindsets held by people can influence their responses to challenges and setbacks (Dweck, 1999). Findings arose that were significant for teachers of students in general education and special education co-taught classes. One finding related to the academic and social growth of students, another on the influence of different factors on teacher's self-reported growth mindsets and another on how teachers' growth mindsets influence their perceptions of general and special education student's growth mindsets.

In terms of student academic and social growth, data analysis suggests that general education students displayed greater academic growth in reading and mathematics then special education students in co-taught classes. Teachers recognized that the students started the school year at differing levels and worked together to support the varying needs of all of the students in the co-taught classes. The co-teachers'

experiences suggested that some students may have displayed growth in other areas, such as social or organizational areas.

Teachers' personal growth mindsets were measured using Dweck's Growth Mindset Survey (1999). General and special education teachers' responses appeared consistent between both groups, with both groups of teachers holding growth mindsets. Teachers believed that a person's ability is changeable, that ability can be improved through effort and persistence, and that mistakes are opportunities (Dweck, 2006).

Participation in instructional coaching was a factor that influenced teachers' growth mindsets. Surprisingly, general education teachers who did not participate in instructional coaching displayed higher GMS scores than general education teachers who participated in instructional coaching. In contrast, special education teachers who participated in instructional coaching scored higher on the GMS than special education teachers who did not participate in instructional coaching, although this was not a statistically significant finding. General education teachers who did not participate in instructional coaching scored higher on the GMS than special education teachers who did not participate in instructional coaching, although this was not a statistically significant finding.

The instructional coaching, while not focused on developing a growth mindset, did provide suggestions for teacher teams regarding use of co-teaching models. Results of semi-structured interviews demonstrated that teachers viewed instructional coaching positively, so it is unclear as to why teachers who did not participate in instructional coaching had greater growth mindsets. This is an area for future research.

The grade level that a teacher taught did not significantly influence the teachers' GMS scores. Although not statistically significant, elementary level teachers with 11+ years of experience had the higher scores on the GMS than elementary level teachers with 1-10 years of experience. The reverse was observed with middle school level teachers' responses on the GMS. Middle school teachers with 1-10 years of experience scored higher on the GMS that those teachers with 11+ years of experience. It is interesting that there is a converse relationship between elementary teacher and middle school teachers on the GMS when looking at the number of years a teacher has been teaching. This may be due to elementary teachers remaining with the same students during the school day, while middle school teachers have different classes each instructional period. Elementary teachers have the opportunity to see students in all subject areas, while middle school teachers see them in only one subject, which may influence the teachers' beliefs in growth mindset.

During the semi-structured interview, the middle school team discussed their continual growth as professionals, which conflicts with the survey results. The middle school teachers, both of whom had 11+ years of teaching experience, spoke enthusiastically about developing new skills with teaching academic vocabulary. Their excitement about continuing to develop their skills, even though it took a lot of effort, speaks to their growth mindsets.

In looking at factors that may predict a teachers' score on the GMS, years of teacher experience and teacher's role did not significantly predict the teachers' scores. Teacher's age and grade level taught were statistically significant predictors for teacher scores on the GMS. An increase in grade level was associated with a decrease in GMS

score. This supports the previous findings of this study, which suggested that middle school teachers had lower scores on the GMS than elementary teachers. An increase in teachers' ages was associated with a decrease in GMS scores. This supports the previous findings related to elementary teachers' years of experience. Elementary teachers with 11+ years of experience had higher scores on the GMS. This is presuming that older teachers have more years of teaching experience.

Teachers' mindsets can influence their perceptions of their students. Teacher's responses to the GMS about their personal mindsets were associated with their perceptions of their general education and special education students' growth mindsets. This suggests that the teachers' mindset influences their perceptions of general and special education students in their classes. For every point on the teachers' GMS, there is a predicted increase of .62 points on the teacher perceptions of their general education students' GMS scores. For every point on the teachers' GMS scores, there is a predicted increase of .70 points on the teacher perceptions of their special education students' GMS scores.

Semi-structured interviews provided additional data regarding the experiences of general and special education co-teachers. The teachers' responses supported Dweck's Growth Mindset theory, as the teachers described student growth in different domains, such as academic skills, social skills and organizational skills. Some teachers also provided examples of a desire to continue professional growth, an indicator that they display a growth mindset.

When describing challenges and benefits of their positions, special and general education teachers reported challenges related to things unrelated to students, such as the

physical set-up of the classrooms, class make-up, and planning time. This was surprising to the researcher, who had anticipated that teachers would describe challenges related to student learning and student behavior. Teachers expressed that the classroom furniture and size of the classrooms did not lend itself to optimal use of some co-teaching models, particularly those that require the class to split into groups. Teachers reported that their classes often seemed unbalanced, and this led to situations where the special education students may not have had access to positive academic and social role models to "lift them up," as expressed by Nancy, a general education middle school teacher. Consistent among the teachers were challenges related to lesson planning time. Teachers discussed a time under a prior administrator where they had one half day per month to dedicate to lesson planning. All of the teachers felt that time to co-plan lessons was valuable for supporting them as co-teachers and for meeting the needs of their students.

The co-teachers also reported a high level of friendship, collaboration, and a strong sense of being able to work together to manage any challenging situations that came along. Teachers' body language and affect as they were speaking indicated positive relationship between the co-teachers. The teachers all spoke of a high level of working together to accomplish tasks and to overcome challenging situations. This reflects a growth mindset in these teachers, as they expressed that by working together they can overcome these challenges.

Social emotional needs of students were mentioned by the co-teachers as an area of concern. The co-teachers discussed the impact of the COVID-19 pandemic on the students, and how this has changed the level of "care and support" that students need, as expressed by Kim, a kindergarten special education teacher. Students were described as

having to relearn how to be students and interact with one another. This aligns with a growth mindset as the teachers expressed that this can be improved with effort and persistence.

When discussing their experiences with the instructional coach, the co-teachers' feedback was mixed. The middle school team felt that the coaching wasn't beneficial for them and expressed that the instructional coach reviewed the co-teaching models, which they felt they knew. The elementary co-teachers expressed that the instructional coaching assisted them with implementing some of the co-teaching models in a real classroom setting.

Many of the statements from the co-teacher about the instructional coaching were related to them as teachers. The teachers seemed to feel that the feedback of the instructional coach was affirming, and they felt that the instructional coach understood their perspectives.

The co-teachers did not speak about how the instructional coaches provided strategies for differentiation of instruction or scaffolding of skills. This was surprising to the researcher, as using the co-teaching models is one part of co-teaching special and general education students, but instructional strategies are a seemingly greater part of co-teaching special and general education students.

Relationship to Prior Research

There is a connection between teachers' mindset and their implicit beliefs about student intelligence and achievement (Hattie, 2021, Gutshall, 2013). Gutshall (2013) examined teachers' mindsets and the relationship between these mindsets and the perceived ability of students using student scenarios. The results of the analysis indicated

that there was a significant relationship between the teachers' overall mindset and the teachers' perception of the students in the scenarios. The analysis of the relationship between teacher GMS scores and teachers' perceived GMS scores of general education and special education students supports Gutshall's findings.

A teacher's mindset can affect student learning. In his meta-analysis of influences on student achievement, Hattie (2021) noted that teacher estimates of achievement had a relatively high positive effect on student achievement. In terms of his ranking of influences related to student achievement, teacher estimates of achievement ranked third out of 252 influences, indicating that the teacher's perception of the student's ability is a strong influence on student achievement (Waack, 2018). In the current study, general education students demonstrated greater iReady reading and mathematics gain scores than special education students, while the teachers' personal GMS scores were correlated with their perceived GMS scores of their general education and special education students, with a greater correlation with special education students. This finding contrasts with Hattie's (2021) work as the teachers' GMS scores were more highly correlated with their perceptions of special education students and the special education students displayed smaller gains in achievement.

Brendle, et. al. (2017) investigated the knowledge, perception, and implementation of co-teaching with their qualitative, descriptive case study. Two pairs of co-teachers' experiences were examined using interviews, completion of a rating scale and classroom observations as the data sources. The study participants indicated that although time was provided for co-planning, the teachers did not receive administrative guidance with planning and executing co-teaching models. Teachers in the study

expressed a need for training in co-teaching strategies. Additionally, the teachers in the study reported the desire to work with the same co-teacher for multiple years to develop a professional relationship. Similar themes were evident in the current study. The need for co-planning time was expressed by the co-teachers in this study, as was maintaining co-teaching partnerships over multiple years. A contrasting theme was regarding knowledge of co-teaching models. The co-teachers in this study expressed that they had knowledge of different co-teaching models and were able to implement them according to the needs of their students.

Walther-Thomas (1997) investigated the beliefs and challenges teachers participating in co-teaching over a three-year period. Results of the study indicated that benefits for special education students, general education students and participants were noted. The benefits for special education students were positive feelings about themselves as learners, improved academic performance, improved social skills and stronger peer relationships. Benefits for general education students were noted as well. These were improved academic achievement, more time and attention from the teacher, increased emphasis on cognitive strategies and study skills, increased social skills and improved classroom communities. These findings are supported by the current study as the co-teachers expressed that they observed growth in their students in academic skills, social skills, or organizational skills. The co-teachers shared that while not all students grew in every way, all of the students displayed growth in some area.

Hang & Rabren (2009) identified teachers' and students' perspectives on co-teaching and its efficacy. The authors note that during the study, the teachers and students reported positive perspectives of co-teaching. Although not statistically significant, both

groups of teachers reported perceptions that students' academic performance improved while in the co-taught class. The findings of the current study support Hang & Rabren's (2009) work, as the co-teachers in the current study reported positive experiences as co-teachers and expressed that students in their classes displayed growth in academic skills, social skills and organizational skills.

Narian, et. al. (2012) used participatory action research to investigate a professional development model that utilized embedded instructional coaching to support co-teachers with the inclusion of students with emotional disturbances. Teachers reported that the instructional coaches had provided emotional support and the opportunity for problem solving solutions to issues in the classroom. Teachers felt that this was a more positive approach than the expert-student approach to coaching. In the current study, the teachers expressed that the instructional coach's feedback was affirming and emotionally supportive.

Limitations of the Study

The current study presented some limitations. The GMS was used in this study as self-reported measure, so this may limit the interpretation of the findings. A teacher's growth mindset may also be influenced by other external factors and these may not have been reported by the participants. Additionally, teachers who volunteered to be interviewed and/or volunteered to participate in coaching may be people who are seeking challenges or professional growth intrinsically and may have a growth mindset. The participants may not necessarily represent a population of teachers at large. As such, the findings of this study should be interpreted with caution.

The study was conducted within a single, suburban school district and all of the teachers who participated had the option of participating in instructional coaching. This limits the ability of the findings to be generalized to special education and general education teachers who had the opportunity to participate in instructional coaching.

The sample size of this study was small (n = 48). This may have impacted the conclusion of the results. However, adequate data analysis took place in the study, including careful attention to the assumption tests for each type of inferential analysis.

Additionally, a possible threat to the internal validity of this study is regression threat. This study examined iReady gain scores of students with disabilities who had lower achievement on reading and mathematics than their general education counterparts. To minimize this threat, the researcher used the iReady gain scores, which measure student growth rather than achievement.

Recommendations for Future Practice

Findings from this research are important for school district leaders to help support general and special education co-teachers and students in co-taught classes. School district leaders should develop district-wide policies around developing rosters of co-taught classes to ensure a balance of student needs and strengths. Co-teachers reported concerns with the make-up of their co-taught classes and expressed that the classes did not contain proper role models to "bring up" the special education students. Co-teachers also expressed the desire to provide input into these decision-making processes.

The need for dedicated planning time was expressed by general and special education co-teachers. When crafting master scheduled, school principals should ensure

ample time for lesson planning and collaboration between co-teachers, especially those at the middle school level, where co-teachers may be co-teaching will different teachers during different classes. Additionally, monthly time out of class for planning was suggested by all three pairs of teachers as an effective solution for lesson planning.

Additional professional development for teachers regarding growth mindset is recommended. This study, along with previous studies detailed in Chapter 2, demonstrate the effect that teacher mindset has on the teachers' perceptions of students. This, in turn, affects the manner in which teachers interact with students and the academic and social growth of students. Professional development should focus on shifting teachers' mindsets, perhaps by providing education and information to teachers about the importance of growth mindset and how it can influence students.

Professional development for school leaders is also important. School district and building leaders need further education on supporting co-teachers with instructional practices and interpersonal relationships. School leaders should guide co-teaching pairs and understand how to assist them should conflicts between teachers arise.

Recommendations for Future Research

Although research exists to demonstrate the needs of general and special education co-teachers, additional research is needed to examine the association between growth mindsets of teachers and instructional coaching. While the current study's qualitative findings supported this, the quantitative findings indicated that general education teachers who did not participate in instructional coaching had greater scores on the GMS than those who participated in instructional coaching. This is a finding that requires further exploration.

Further research is needed to determine the association between teacher growth mindsets and the academic achievement of their students. Although Hattie (2019) suggests that teacher mindset influences student achievement, it is important to understand if a teacher's belief in a growth mindset relates to greater student academic achievement.

Co-teaching of special education and general education teachers occurs in many classrooms across the United States. Although there is ample literature about different co-teaching models and about providing on-going support for co-teachers, it is important to determine which of the co-teaching models is the most supportive for students for developing their academic and social skills. The most recent research regarding co-teaching models should be incorporated as well as examining other factors that can affect the selections of a particular co-teaching model.

Conclusion

The central idea of this study is that growth mindsets of special education and general education teachers influence the academic skill development of their students. Co-teaching is an instructional model for teaching special education general education students in general education settings. This study sought to determine factors that influence teachers' growth mindsets and how this, in turn, influences teachers' perceptions of their students.

Students with disabilities are an historically underperforming group in schools. Working with teachers to develop personal growth mindsets will positively influence student academic performance. Removing barriers for co-teachers will support their mindsets, which will have a positive influence on special and general education students.

APPENDIX A IRB APPROVAL MEMO

Federal Wide Assurance: FWA00009066

Nov 30, 2022 2:53:49 PM EST

PI: Lori Goldstein
CO-PI: Joan Birringer-Haig
The School of Education, Ed Admin & Instruc Leadership

Re: Expedited Review - Initial - **IRB-FY2023-20** *Co-Teaching and Academic Achievement: Instructional Coaching as an Influence on Teacher Growth Mindset and Student Academic Achievement*

Dear Lori Goldstein:

The St John's University Institutional Review Board has rendered the decision below for *Co-Teaching and Academic Achievement: Instructional Coaching as an Influence on Teacher Growth Mindset and Student Academic Achievement*. The approval is effective from November 30, 2022 through November 29, 2023.

Decision: Approved

PLEASE NOTE: If you have collected any data prior to this approval date, the data must be discarded.

Selected Category: 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Sincerely,

Raymond DiGiuseppe, PhD, ABPP
Chair, Institutional Review Board
Professor of Psychology

APPENDIX B SURVEY

Growth Mindset Scale

Dear Participant,

I am a doctoral candidate in the Department of Administrative and Instructional Leadership at St. John's University. I am conducting a study for my dissertation titled: *Co-teaching and Student Academic Achievement: Instructional Coaching as an Influence on Teacher Growth Mindset and Student Academic Achievement.* The details of the study are provided below.

Purpose - Elementary special education and general education co-teachers are invited to participate in a research study being conducted for my dissertation for St. John's University. The purpose of this non-experimental, causal-comparative research study is to investigate the relationships between co-teacher instructional coaching and co-teacher growth mindsets. Teacher growth mindset and participation in instructional coaching will also be used as a predictor for student achievement in reading and mathematics.

Potential Risk - There are no known risks or discomfort for participating in this study.

Potential Benefit - There are no direct benefits to you for participating in this research project. However, the results may have informational benefits for educators and policy makers regarding instructional coaching as a professional development method for co-teachers, which may help co-teachers use instructional strategies that may benefit student achievement.

Anonymity / Confidentiality - The data you provide in this survey will be kept confidential and used for research purposes only. All data are coded, and your name will be kept anonymous. In addition, the coded data will only be available to the researcher associated with this project. No identifying information will be included in the study. All data will be kept securely on a locked and password protected laptop and locked in a cabinet.

Participation and Withdrawal – Participation is strictly voluntary. As a participant, you can withdraw from this study at any time or refuse to answer any questions without penalty. You are not obligated to continue.

Taking this survey is your consent to participate in the study.
Thank you for your help.
Best,
Researcher: Lori Goldstein lori.goldstein20@my.stjohns.edu

Part 1: Demographic Information

1. During the 2021-22 school year, were you a general education teacher or a special education teacher?

Choose 1: general education teacher special education teacher

2. Thinking of your co-teacher during the 2021-22 school year, how many years did you teach in a co-teaching partnership?

Choose 1: 1-3 4-6 6+

3. How many total years have you been teaching?

Choose 1: 1-5 6-10 11+

4. What grade do you teach?

Choose 1: K-2 3-5

5. Did you and your co-teacher participate in instructional coaching with CDMI during the 2021-22 school year?

Choose 1: yes no

6. What is your age?

Choose 1: 20-30 years 31-40 years 41+ years

Part 2: Growth Mindset Scale

Please indicate your level of agreement with the following statements.

1. No matter who you are, you can significantly change your intelligence level.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

2. You can always substantially change how intelligent you are.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

3. No matter how much intelligence you have, you can always change it quite a bit.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

4. You can change even your basic intelligence level considerably.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

Think of the special education students in your class during the 2021-22 school year when responding to the following items.

5.No matter who they are, special education students can change their intelligence level.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

6. Special education students can always substantially change how intelligent they are.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

7. No matter how much intelligence special education students have; they can always change it quite a bit.

(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

8. Special education students can change even their basic intelligence levels considerably.
(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

Think of the general education students in your class during the 2021-22 school year when responding to the following items.

9. No matter who they are, general education students can change their intelligence level.
(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

10. General education students can always substantially change how intelligent they are.
(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

11.No matter how much intelligence general education students have; they can always change it quite a bit.
(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

12.General education students can change even their basic intelligence levels considerably.
(1) Strongly Disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly Agree

APPENDIX C INTERVIEW PROTOCOL

CO-TEACHER INTERVIEW QUESTIONS

Introduction

Hi, I am Lori Goldstein, a doctoral candidate at St. John's University in the Department of Instructional and Administrative Leadership. I am studying the co-teaching experiences of special education and general education teachers related to the growth mindsets of teachers. This interview should take about 45-60 minutes and your responses and identity will be kept anonymous. Should I require further clarification about your responses, I will contact you via email.

Thank you for taking the time to meet with me and participate in this interview. I will begin by reviewing the consent form that you signed and returned to me before this meeting.

Do you have any questions for me?

Here are a few reminders before we begin:

1. This interview will be audio recorded and transcribed. I will send you a copy of the transcribed interview for your review. You can review the audio recording at any time and request that it be destroyed.
2. You can decline to respond to any question I ask if you feel uncomfortable or unwilling to answer. Please let me know right away. You can stop the interview at any time without penalty.
3. The interview questions were emailed to you prior to out meeting today. I will ask the questions and you can respond during this session.

Just a reminder, I will start recording this interview now. To confirm verbally, do I have your consent to audio record this session?

Questions

General Questions

1. Thinking about last school year (2021-2022), please tell me how your year went.
2. Tell me about an experience that you had with your co-teacher that was memorable to you.
3. Please share a little bit about your experience with the instructional coach.
    a. Describe some strategies or feedback that was helpful and that you were able to implement.
    b. Describe some strategies offered by the coach that was not helpful in your classroom.
4. How did the students in your class progress last year?

    Please share a story about a student or two who surprised you. Why was this a surprise to you?

Those are all of the questions that I have today. Do you have any questions for me? Thank you for talking with me and for participating in this interview.

APPENDIX D SUPERINTENDENT'S LETTER OF INFORMED CONSENT

Dear Dr. Jones,

I am a doctoral candidate in the Department of Administrative and Instructional Leadership at St. John's University. I am conducting a study for my dissertation titled: *Co-teaching and Student Academic Achievement: Instructional Coaching as an Influence on Teacher Growth Mindset and Student Academic Achievement.* The details of the study are provided below.

Purpose - Elementary special education and general education co-teachers are invited to participate in a research study being conducted for a dissertation for St. John's University. The purpose of this non-experimental, causal-comparative research study is to investigate the relationships between co-teacher instructional coaching and co-teacher growth mindsets. Teacher growth mindset and participation in instructional coaching will also be used as a predictor for student achievement in reading and mathematics.

Participation Requirements - The elementary co-teachers (K through Grade 5) will be asked to complete a 15-question online survey via Microsoft Forms. The survey is voluntary and will take less than 10 minutes to complete. It is comprised of demographic data, a series of questions about teachers' perceptions of growth mindset and teachers' perceptions of their students' growth mindsets.

Potential Risk - There are no known risks in this study. Participation is completely voluntary, and participants may withdraw at any time and may choose not to respond to any of the questions on the survey. All survey data will be kept confidential. At no time will a name or identifying school information be included in the study.

Potential Benefit - There are no direct benefits to the school district for participating in this research project. No incentives will be offered. However, the results may have informational benefits for educators and policy makers regarding instructional coaching as a professional development method for co-teachers, which may help co-teachers use instructional strategies that may benefit student achievement.

Anonymity / Confidentiality - The data collected in this study will be kept confidential. All data are coded such that the school district and teachers will be anonymous. In addition, the coded data will only be available to the researcher associated with this project. No identifying information will be collected.

Right to Withdraw - The school district and teachers have the right to withdraw from the study at any time without penalty. Participants may omit any questions on the survey they do not wish to answer.

Contact Information - If you have questions about the purpose of this investigation, you may contact the Principal Investigator, Lori Goldstein, at lori.goldstein20@my.stjohns.edu. If you have questions concerning your rights as a human participant, you may contact the University's Human Subjects Review Board at St. John's University, specifically Dr. Raymond DiGiuseppe, 718.990.1955, or digiuser@stjohns.edu. If you feel you have any questions or concerns about the study, please contact the dissertation chair, Dr. Joan Birringer-Haig, at birringj@stjohns.edu.

I would be pleased to meet with you to further explain my doctoral study and what is required for my research. I am available at any time of day or evening. Please respond either to this email or by calling me at (631) 804-4283 to let me know your interest in supporting this study.

I look forward to hearing from you soon.

Sincerely,

Lori Goldstein

Doctoral Candidate,

Administrative and Instructional Leadership

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Queens, NY 11439

Signatures

I have read the above description of the proposed study by Lori Goldstein and understand the conditions of the district personnel's participation. I understand the data will be coded and will not be used in any way to identify the school district, the superintendent, the school, or the staff members. Your signature indicates that you agree to allow the district personnel (elementary co-teachers) to participate in this study.

Superintendent's Signature: _____Date: _____

Superintendent's Name:

Researcher's Signature: _____Date: _____

Researcher's Name: Lori Goldstein

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