INSTRUCTIONAL COACHING AND CO-TEACHING IN ELEMENTARY MATH CLASSROOMS

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ABSTRACT

Susan J. Price-Cole: Instructional Coaching and Co-teaching in Elementary Math Classrooms
(Under the direction of Eric Houck)

Educational leaders often search for professional development opportunities that are

within the context of the classroom where new research-based instructional practices can be

observed and incorporated into the teachers' practices. Instructional coaching and co-teaching

have been recognized as means for accomplishing this, while at the same time increasing

collaboration between educators and improving student learning. Very little research has been

done on where these two concepts intersect, especially as it is implemented in elementary math

classrooms. Using a socio-cultural lens and the Lave and Wenger (1991) LPP (Legitimate

Peripheral Participation) framework, the co-teaching relationship that is developed over time

between instructional coaches and classroom teachers affect the experiences that result from co-

teaching for both of them as they observe one another and interact within the environment. In

this holistic multiple case study of five elementary schools in a rural school district, the cross-

case analysis indicated that co-teaching facilitated: (1) collaboration between the educators to

impact student achievement, (2) learning experiences for the instructional coaches and the

teachers, and (3) an impact on student learning. Although partnerships grew and strengthened

with more trust between the instructional coaches and the classroom teachers, the primary issues

included: (1) a lack of planning time, (2) concerns over the co-teaching schedule, and (3) the

logistics of making co-teaching work in the classroom. Issues were broadly resolved through

communication, collaboration, and cooperation between the instructional coaches and the

teachers who co-taught with them.

ACKNOWLEDGEMENTS

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CHAPTER 1

INTRODUCTION

Background

The *Every Student Succeeds Act* (ESSA), which became law in December 2015, aims to improve the educational outcomes for all students, regardless of a student's address, race, language, disability, giftedness, or current level of achievement (Pickren, 2016). Although states and school districts are provided with more flexibility and creativity for finding solutions to overcome the racial and socioeconomic achievement gaps through this legislation, there is also a greater responsibility states have in supporting and monitoring academic improvement of all students (Alliance for Excellent Education, 2016; Gagnon, 2016; Pickren, 2016; Weiss & McGuinn, 2016).

Legislation to improve the educational outcomes for all students is not a new concept. The ESSA legislation replaced the *No Child Left Behind Act* of 2002 and reinstated the Elementary and Secondary Education Act of 1965. In 1975, the Education for All Handicapped Children Act passed, mandating that students with disabilities be provided with free educational services in the least restricted environment (Murawski & Swanson, 2001, Wilson & Blednick, 2011). The Individuals with Disabilities Education Act (IDEA) and the later amendments to this mandate emphasized the need for students with disabilities to be in regular education classrooms to have opportunities to learn the general education curriculum and to be held to the same high expectations as their non-disabled peers (Conderman, 2011; Murawski & Swanson, 2001; Villa et al., 2013; Wilson & Blednick, 2011). In fact, the IDEA of

1997 and 2004 mandated that students with disabilities take the same statewide assessments as their non-disabled peers and also be held to high standards and expectations (Kloo & Zigmond, 2008). Furthermore, the No Child Left Behind Act (NCLB) in the early 2000s emphasized the need for educators to consider the different educational needs of all students and to ensure that all students are receiving instruction from teachers who are highly qualified to teach the subjects they teach (Conderman, 2011; Kohler-Evans, 2006; Villa et al., 2013).

Statement of the Problem

With this pressure on states to improve academic achievement and academic growth for all students, state and district leaders are looking for innovative solutions to improving the effectiveness of teachers in the schools to improve educational outcomes (Alliance for Excellent Education, 2016; Weiss & McGuinn, 2016). One example of this is that many teachers are ill-prepared to teach mathematics to students from a variety of skill levels and backgrounds due to a lack of mathematical content knowledge and pedagogical content knowledge (Ball & Forzani, 2011; Battey, 2013). However, the nature of classroom environments is such that many teachers are isolated from other educators when most of their teaching occurs (Hammerness et al., 2005). Therefore, teachers may learn new teaching strategies from professional development opportunities, but they may not know how to implement the more difficult techniques in their classrooms (Bruce & Ross, 2008; Hull, Balka, & Miles, 2009). This has been shown to be true in mathematics classes, especially where math students have not been provided with challenging curriculum that correlates with their abilities. This is due to teachers not understanding the abilities of these students or how to add rigor and complexity to lessons (Anderson, 2013; Dial, 2011). Educational leaders continue to look for

ways to provide professional development for teachers that is cost-effective, differentiated for teachers, and within the context of their work environment.

Educational Coaching as a Solution

Although it can be challenging due to a history of teacher isolation, teachers providing feedback to one another in collaborative settings has been shown to foster growth in both teacher and student learning (Chenoweth, 2016; Hammerness et al., 2005). For teachers to change and improve their instructional practices, they need sustained support (Hull et al., 2009; Mangin & Dunsmore, 2015). Due to the positive effects of teachers working closely with other educators in their classrooms to enhance student learning, educational coaches are increasingly being employed by school districts to provide this level of long-term and classroom-embedded support to increase the instructional capacity of teachers (Bean et al., 2010; Killion, 2009; Neufeld & Roper, 2003).

Coaching in education can be defined as the use of master teachers to provide leadership and ongoing support for the teachers in their schools in order to develop more effective instruction, and positively affect student achievement (Ellington & Haver, 2013; Marsh et al., 2008; Marzano & Simms, 2013; Woleck, 2010). The coach is usually hired for their content knowledge, pedagogical content knowledge (PCK) , and interpersonal skills (Campbell & Ellington, 2013; Woleck, 2010). The role of the coach can include providing sustained professional development for teachers in the areas of content knowledge and high quality instructional practices (Bay-Williams & McGatha, 2014; Bean, Draper, Hall, Vandermolen, & Zigmond, 2010; Hull et al., 2009; Vanderburg & Stephens, 2010; Walpole et al., 2010; Woleck, 2010). In addition, coaches often assist a teacher or a team of teachers with analyzing student achievement data, designing lessons that target learning needs of students,

and designing effective classroom assessments (Bean et al., 2010; Gallucci, VanLare, Yoon, & Boatright, 2010; Hull et al., 2009; Killion, 2009; Vanderburg & Stephens, 2010; Walston & Overcash, 2013; Woleck, 2010). It is also common for coaches to provide curriculum resources to teachers that are aligned with standards or new instructional approaches and mentor new teachers to help them adjust to school routines and expectations (Killion, 2009; Marsh et al., 2008; Vanderburg & Stephens, 2010).

Utilizing educational coaches, especially those who can help support teachers with their content and pedagogical knowledge, has been part of many districts' vision for professional development. Because coaching aims to help teachers develop and maintain effective teaching practices, it is goal-directed and non-evaluative (Marzano & Simms, 2013). Instead of the coach telling teachers what they should do, the coach asks appropriate questions to facilitate reflection (Marzano & Simms, 2013). Important coaching components include modeling teaching techniques, mentoring, reviewing student work, planning with teachers, and co-teaching (Campbell, 2013). These components, as well as the components of inquiry, reflection, and feedback are discussed in greater detail throughout this paper (Knight, 2009; Neufeld & Roper, 2003; Woleck, 2010).

Co-teaching as a Solution

Co-teaching between the coach and classroom teacher has been used to help the teacher become accustomed to new instructional practices before trying them out on his/her own. Co-teaching, which has commonly been referred to as *cooperative teaching, collaborative teaching,* or *inclusion,* was initially a solution that came out of mandates in support of students with disabilities in the regular education classrooms (Murawski & Swanson, 2001; Villa, Thousand, & Nevin, 2013). Since general education teachers are considered to be content

specialists and special education teachers are considered to be specialists in the area of modifications and accommodations, the use of co-teaching in schools has become a solution to accomplish these goals (Kloo & Zigmond, 2008; Villa et al., 2013).

According to the literature, co-teaching can be defined as a service delivery or instructional model that places two or more professionals who use their expertise together in the same heterogeneous classroom setting to provide differentiated instruction and an appropriate education for a diverse group of learners that includes high expectations for all students (Conderman, 2011; Friend et al., 2010; Hang & Rabren, 2009; Honigsfeld & Dove, 2008; Sileo & van Garderen, 2010; Strogilos & Tragoulia, 2013; Villa et al., 2013; Walsh, 2012; Wilson & Blednick, 2011; York-Barr, Ghere, & Sommerness, 2007). Although the definition has most often included a partnership between a regular classroom teacher and a special education teacher, other specialists, such as ESL teachers, teachers of the gifted, and reading specialists, have also been mentioned in the literature as providers of support to help all students meet local standards, as well as national and state standards (Conderman, 2011; Honigsfeld & Dove, 2008; Villa et al., 2013). This support is provided for all students, but is especially designed to help students with disabilities, through the effective interaction and partnership between the two professionals that includes collaborative decision making and shared roles in the planning for instruction, the teaching of all students in the classroom, and the assessment processes (Friend et al., 2010; Murawski & Hughes, 2009; Pratt, 2014; Ploessl & Rock, 2014; Sileo & van Garderen, 2010; Sutton, Jones, & White, 2008). Students with disabilities or students who at risk receive the support that is needed while also having access to the regular education curriculum (Friend et al., 2010; Kloo & Zigmond, 2008). This aligns well with Tier II of the Response to Intervention model, where strategies from both the regular

education teacher and the special education teacher would be needed (Murawski & Hughes, 2009).

Approaches to Co-teaching

Although some descriptions may vary across the literature, there are six distinctive approaches to co-teaching that have been found: (1) the *one teach, one assist* or drift approach, (2) the *team teaching* approach, (3) the *station teaching* approach, (4) the *parallel teaching* approach, (5) the *alternative teaching* approach, and (6) the *one teach, one observe* approach (Bessette, 2007; Conderman, 2011; Conderman & Hedin, 2013; Friend et al., 2010; Jang, 2010; Ploessl & Rock, 2014; Ploessl, et al., 2010; Sileo & van Garderen, 2010). The *one teach, one observe* approach was not included in some literature about co-teaching approaches, which is likely due to the fact that the teacher instruction is not the focus, but rather the teacher is using this time to make notes about students while they are working or analyze their work samples that have recently been collected (Bessette, 2007; Ploessl, 2010). Specific data during this time of observation is collected from the non-teaching co-teacher, which may be academically, behaviorally, or socially important to students' Individualized Education Plans (IEPs) (Conderman & Hedin, 2013; Friend et al., 2010; Ploessl, 2010).

Other approaches to co-teaching have been found to be more effective. The *alternative teaching* approach allows for one of the co-teachers to work with a small group of students for a limited period of time while the other co-teacher manages and teaches the rest of the class (Bessette, 2007; Conderman & Hedin, 2013; Friend et al., 2010; Ploessl et al., 2010; Scruggs, Mastropieri, & McDuffie, 2007). By lowering the teacher-student ratio, more students are able to receive more one-on-one attention for remedial, enrichment, or assessment purposes (Friend et al., 2010; Sileo & van Garderen, 2010). When the *station teaching* approach to co-teaching

is used, the class of students is divided into three smaller groups, and the students rotate with their groups to the teachers to receive small group instruction on the same or differentiated content or to an independent station for review or practice (Bessette, 2007; Friend, 2010; Ploessl et al., 2010; Scruggs et al., 2007; Sileo & van Garderen, 2010; Strogilos & Tragoulia, 2013). The *team-teaching* approach, which has been considered as possibly the most difficult approach to implement, situates both co-teachers in the same instructional space with the entire heterogeneous mix of students (Bessette, 2007; Villa et al., 2013). Co-teachers using this approach position themselves as lead instructors during the lesson and share the responsibility of teaching the content and providing the modifications and accommodations that are needed for students (Conderman, 2011; Friend et al., 2010; Scruggs, et al., 2007; Villa et al., 2013).

Parallel teaching occurs when the class is split between the co-teachers into two separate groups, allowing for a higher student to teacher ratio to meet the diverse needs of the classroom (Friend, 2015; Ploessl et al., 2010). Although the teachers could provide the same instruction to their group of students, the instruction could also be presented in two different ways or the content could be presented at different levels, such as may be with students who are on different reading levels (Friend, 2015; Villa et al., 2013). Parallel teaching aims to differentiate instruction for students while also increasing the amount of student participation in a lesson (Friend et al., 2010).

The approaches are intended to be flexibly-used, depending on the instructional needs of the students on a particular day (Friend et al., 2010). However, several authors have indicated that the *one-teach, one assist approach* is used most often in classrooms (Bessette, 2007; Conderman & Hedin, 2013; Ploessl & Rock, 2014; Strogilos & Tragoulia, 2013). There is a concern that this approach may be one of the least effective approaches because it does not

incorporate the skills and expertise of both teachers in the classroom at the same time (Conderman & Hedin, 2013; Scruggs et al., 2007; Strogilos & Tragoulia, 2013). In fact, it has been observed that the special education teacher often only supports those students who need extra help and does not equally share the responsibility of teaching the students in the classroom, which can create tension between the regular education teacher and the special education teacher (Scheeler, Congdon, & Stansbery, 2010). In addition, Conderman and Hedin (2013) claim that this approach to co-teaching may hinder co-teachers from using assessments properly, adjusting instruction based on data, and differentiating assessments. Because of this, Pratt (2014) and Ploessl et al. (2010) recommend the use of station teaching, team teaching, or parallel teaching due to the utilization of both teachers equally during instruction.

Jang (2010) emphasized that the process of co-teaching included three stages: *forming, storming, and norming.* During the *forming* stage, co-teachers provide each other with their philosophies and thoughts about teaching, and they come to an agreement about how they will interact with each other and their students in the classroom (Jang, 2010). Expectations, such as in the areas of grading student work and how students will be grouped in the classroom, are discussed and clarified for each co-teacher (Stivers, 2008). During the *storming* stage, co-teachers recognize the potential for conflict due to differing perspectives or philosophies (Jang, 2010). Brief assessments could offer indirect feedback on the effectiveness of varying instructional strategies that are being used in the classroom, which may cause conflict (Stivers, 2008). While in this stage, it is critical that the co-teachers are willing to collaborate and learn from potential failures in a lesson or a misunderstanding (Jang, 2010). During the *norming* stage, co-teachers work as a team to benefit all of the students in the classroom. Collaborative norms are created, and this is when students benefit the most from being part of the co-teaching

experience (Jang, 2010). At this stage, co-teachers come to an agreement about how they will share the responsibilities of grading, creating rubrics, and communicating to parents (Conderman & Hedin, 2012). Pratt (2014) theorizes that this process of "achieving symbiosis" includes a lot of hesitation and anticipation at the beginning as teachers learn how to work with someone closely as co-teachers do, but there is a feeling of fulfilment at the end when teachers feel comfortable and compatible with one another.

Purpose of this Study

As the literature demonstrates, studies have addressed co-teaching and instructional coaching well in separate contexts and for different purposes (e.g. Conderman & Hedin, 2012; Knight, 2009). Co-teaching is primarily located within the Exceptional Child literature, focusing on how students with disabilities can be served within the context of the regular classroom. It has been utilized as an effective service delivery model to benefit students with disabilities, as well as general education students and the co-teachers that work together and learn from each other. On the other hand, instructional coaching was designed to increase the capacity of teachers and to improve instructional practices that would positively impact student achievement.

Few studies have addressed the experiences that result from a co-teaching relationship between instructional coaches and elementary classroom teachers (see *Figure 1.1*). It is important to analyze how relationships change over time between an instructional coach and a classroom teacher to know the effectiveness of instructional coaching in changing teacher beliefs and practices over time. Knowing what issues may result in a co-teaching relationship between an instructional coach and an elementary classroom teacher may help administrators and district leaders find solutions for dealing with these problems. Furthermore, it would be

useful to know how the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship, especially with respect to mathematics instruction. In essence, if educational leaders know the experiences that result from an instructional coach co-teaching with a classroom teacher, it can possibly provide a case for more funding to have instructional coaches, and it can add possibilities to how school improvement is implemented in schools.
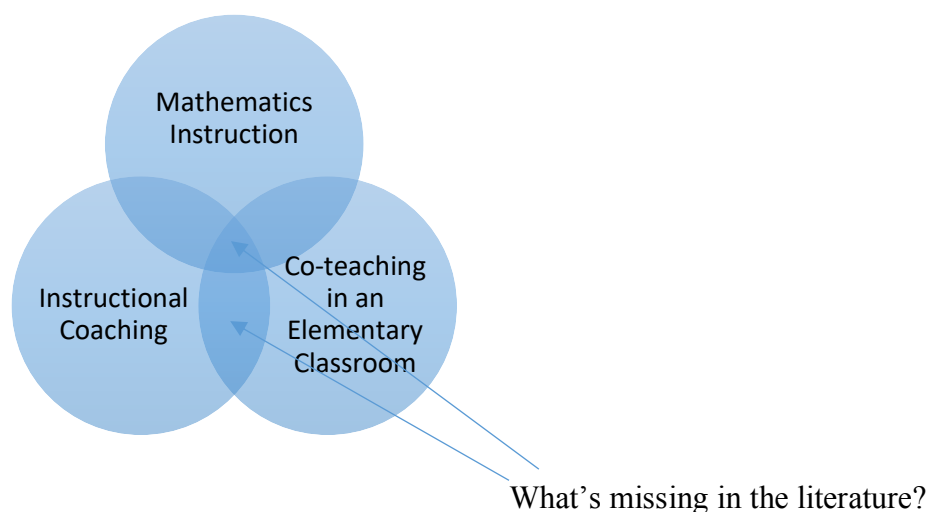
Figure 1.1. Framework for analyzing the literature. There is plenty of literature on these three topics separately. Limited literature on instructional coaching with co-teaching exists. Some literature concerning co-teaching during mathematics instruction and literature concerning instructional coaching to help teachers during mathematics instruction also exist. There are gaps in the literature concerning the experiences that result from a co-teaching relationship between instructional coaches and elementary classroom teachers, especially in regards to mathematics instruction.

The purpose of this holistic multiple-case study and comparative cross-case analysis was to illustrate what experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers. This includes relationship changes between an instructional coach and a classroom teacher, issues that come up, and how issues are resolved

by the instructional coach and the classroom teacher, especially within the context of mathematics classrooms.

Theoretical Framework

Due to the nature of social interactions within a work environment, the researcher chose to utilize a socio-cultural lens to investigate the experiences that result from a co-teaching relationship between instructional coaches and classroom teachers. According to the sociocultural perspective, learning happens within the social environment, where people learn mutually from others and the events that take place within the environment (Takahashi, 2011). People want to gain acceptance and recognition from others in their field or environment, so learning is complex and socially-dependent (Brown & Duguid, 2001). When people share a practice within the same environment, they share the *know-hows* of that practice and can improve upon their own *know-hows* (Brown & Duguid, 2001). Unlike cognitive theories, where the environment is separate from the individual's learning, socio-cultural theory posits that individuals' identities and understandings are formed from interactions with others and the environment (Takahashi, 2011). What people learn reflects the social context in which the learning happened and where they put the learning into practice (Brown & Duguid, 2001).

The socio-cultural framework is appropriate for use in this study because of the interactions that take place during co-teaching between the two professionals, such as with an instructional coach and a classroom teacher, when they are collaboratively working together in an environment to reach a goal. In the co-teaching context, the instructional coach and the classroom teacher are in the same classroom with students, and they have an opportunity to observe one another interact with the learning content and the students at the same time. Pedagogical techniques and instructional practices are observed by both participants, and they

learn new practices by comparing what they are seeing and hearing to what they would normally do in a similar situation. The participants engage in this participation fluidly because one person's actions determine the actions of the other in the co-teaching environment. In this study, information about the interactions and experiences of the instructional coaches and the classroom teachers was gathered and analyzed, including how the participants resolved issues that arose over time while they were trying to reach their mutual goal of maximizing student learning. The participants were also asked to describe their relationship with their co-teacher, discuss the daily interactions with their co-teacher, and discuss learning experiences. These questions align with the lens of socio-cultural theory, and they also align with the overarching research questions for the whole study.

Research Questions

The research questions reflect the socio-cultural lens that the researcher used due to the focus on the relationship between the co-teachers. This holistic multiple-case study with a cross-case analysis focused on the following questions:

(1) What experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers?

(2) How does the relationship between an instructional coach and an elementary classroom teacher change over time through co-teaching interactions?

(3) What issues result from a co-teaching relationship between an instructional coach and an elementary classroom teacher?

(4) With respect to mathematics instruction, how do the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship?

Assumptions

The researcher held several assumptions at the start of the study. The research questions imply that the researcher assumes that: (1) teachers who are placed in a co-teaching relationship agreed to be placed in that work environment, (2) positive experiences will result from the co-teaching relationship because of that agreement, (3) the relationship between the instructional coach and the elementary classroom teacher will change over time through co-teaching relationships, (4) issues will result from the instructional coach and the classroom teacher working closely together over a period of time, and (5) the instructional coach and the elementary classroom teacher will work together to resolve any issues that come up in their relationship. It was also assumed that the instructional coach would have had some sort of specialized training in the area of elementary mathematics, where the instructional coach could help the teachers in the areas of content knowledge, instructional strategies, and pedagogical techniques for teaching mathematics.

Hypotheses

Due to conducting a literature review on instructional coaching and co-teaching as separate concepts and then integrating the information from the various studies, the researcher had several hypotheses in regards to the outcomes of the study. From the research on co-teaching, the researcher hypothesized: (1) the instructional coach and the classroom teacher would learn from each other to improve instructional practices, (2) the co-teaching model most used would be team-teaching, where both co-teachers would be equal partners in the process, (3) the instructional coach and the classroom teacher would plan specific roles to do while co-teaching, and (4) having an adequate amount of planning time would be the biggest issue. From the research on instructional coaching, the researcher hypothesized: (1) the instructional coach

would be limited in time due to administrative duties and a busy schedule, (2) the instructional coach would have support of the principal for co-teaching and building the capacity of teachers, (3) the instructional coach would be involved in various professional development and training activities, and (4) the instructional coach would facilitate and improve the teachers' use of new instructional practices.

Organization of this Dissertation

This dissertation is organized in the following way. In chapter 1, the topic of the study is introduced and the importance of the study is discussed, as well as the gaps in the literature. In chapter 2, a literature review summarizes the research that has been done in the areas of educational coaching and co-teaching. In chapter 3, research methods are discussed. In chapter 4, the results of the study are revealed with answers to the research questions. Chapter 5 includes a summary and an analysis of the findings. Suggestions for future research are also discussed.

CHAPTER 2

REVIEW OF THE LITERATURE

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the same classroom with students, and they have an opportunity to observe one another interact with the learning content and the students at the same time. Pedagogical techniques and instructional practices are observed by both participants, and they learn new practices by comparing what they are seeing and hearing to what they would normally do in a similar situation. The participants engage in this participation fluidly because one person's actions determine the actions of the other in the co-teaching environment. For the literature review, both topics of educational coaching and co-teaching needed to be reviewed to find out what is known about these topics individually before intersecting them within the context of this study.

Introduction to the Literature Review

The purpose of this study is to illustrate what experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers, focusing on the area of mathematics. In order to find the literature to inform this study, the UNC library, Google Scholar, and Articles Plus were utilized. This literature review focuses on educational coaching and co-teaching, and the following terms and/or phrases were searched to find scholarly journal articles and books on these topics, both separately and together: *educational coaching, coaching in mathematics, coaching and co-teaching,* and *co-teaching in mathematics.* When other notable articles were referenced in the articles I found, those articles were also searched and considered for this literature review.

Theoretical, conceptual, and empirical studies focusing on these topics are included in the literature review. First, these include individual topics that are of high interest to practitioners in the field, including teachers, administrators, and support staff. Both instructional coaching and co-teaching are considered alone to be solutions to educational problems, so the frameworks on how they have been utilized in the past impacts how the research questions can

be answered. Also, it demonstrates how these two models, when intersected in a learning environment, could make a positive difference on student learning gains and teachers' attitudes and beliefs. Although there is abundant literature in regards to co-teaching and instructional coaching separately, there is paucity of literature where they come together and intersect with mathematics instruction.

As previously mentioned, due to past interests in both co-teaching and instructional coaching as models for meeting the academic needs of students, the literature in this review includes information from conceptual, theoretical, and empirical articles. First, in this review of the literature, I describe what coaching is, and then I highlight the common themes in the literature with respect to coaching. These themes of coaching include: (1) conditions that support coaching, (2) challenges that are presented by coaching, and (3) the outcomes of coaching in relation to student learning, Secondly, I will define co-teaching, describe the different models of co-teaching, and then highlights the common themes in the literature in regards to co-teaching. These themes include: (1) conditions that support co-teaching, (2) challenges that are presented by co-teaching, and (3) the outcomes of co-teaching in relation to student learning. Literature regarding co-teaching will be discussed in the second part of this literature review.

A Review of the Literature on Educational Coaching

Models for Coaching

Coaching has been defined as involving at least two educators collaborating with the intent to improve instruction and student learning through the building of trusting relationships. Different models for coaching have been defined in the literature, and these models are different in regards to how and for what purpose the coach is interacting with the educator.

Because the models do overlap, it is possible for multiple approaches to be utilized in the same coaching situation. Models for coaching include: peer coaching, instructional coaching, cognitive coaching, content coaching, differentiated coaching, the coaching continuum model, and virtual coaching.

Peer coaching.

Peer coaching occurs when pairs of teachers with similar experience and competence observe each other teaching and provide useful feedback to one another (Huston & Weaver, 2008). This coaching experience provides support to each teacher as they help each other improve their instructional skills and content knowledge (Bruce & Ross, 2008; Campbell & Malkus, 2011; Huston, & Weaver, 2008). Usually each teacher chooses the areas in which they want to be coached, individualizing the coaching process. In addition to the collegial relationship that develops between the two teachers, both teachers feel supported in experimenting with new approaches to teaching (Huston & Weaver, 2008). Because the coaching relationship continues over a defined period of time, teachers can focus on applying new techniques and engaging in reflective practice. As a result, goal setting becomes an important component within peer coaching (Huston & Weaver, 2008).

Instructional coaching: Big Four model.

Unlike peer coaching, instructional coaching provides on-going support instead of support for a defined period of time. According to Jim Knight (2009), instructional coaching provides support in the classroom for teachers to deal with a wide range of instructional issues, including classroom management, use of formative assessment, and content enhancement. The Big Four Model includes instructional coaches helping teachers in the wide and differing areas of classroom management, planning, instructional practices, and data literacy (Marzano &

Simms, 2013). Because instructional coaching is based on the "partnership principles", the coach and the teacher are viewed as equal partners, with the thoughts and beliefs of both considered equally. Teachers are provided with choices on what they want to learn, and planning is done collaboratively between the teacher and the coach. Professional dialogue is promoted because coaches are available to listen to teachers and want to genuinely know their opinions and concerns. Rather than forcing teachers to implement particular new strategies, instructional coaches encourage the teachers to consider how new strategies would work in their classrooms and reflect on the outcomes of using such strategies (Gallucci et al., 2010; Woleck, 2010). Although instructional coaching is offered as a choice for teachers to learn in a particular area, principals sometimes may influence teachers to seek out the help of a coach as an option for helping them improve instruction (Knight, 2009).

Cognitive Coaching.

The components of cognitive coaching are quite distinct from the other coaching models, and this model cannot be used all of the time (Costa & Garmston, 2002). The Cognitive Coach aims to help teachers become more self-directed and self-sufficient through asking thought-provoking questions for reflection, paraphrasing what the teacher has said, and pausing to give the teacher time for further reflection (Costa & Garmston, 2002; Ellison & Hayes, 2009; Marzano & Simms, 2013; Woleck, 2010). Cognitive Coaching helps build a teacher's expertise in planning, solving problems, making decisions, and reflecting (Costa & Garmston, 2002; Marzano & Simms, 2013; Woleck, 2010). Through building this expertise, it has been found that teachers' sense of self-efficacy, which is the belief that one's teaching can impact student learning and achievement, can improve to make the system of schooling work best (Cantrell & Hughes, 2008; Ellison & Hayes, 2009; Marzano & Simms, 2013).

Costa and Garmston (2002) describe four parts to a coaching cycle for teachers. In the planning phase, the coach mediates by having the teacher make goals clear and come up with a plan that includes an assessment. In the monitoring phase, observations and self-monitoring takes place. During reflection, the coach helps the teacher summarize and analyze the cause and effect relationships that occurred during the observation (Costa & Garmston, 2002). In the last phase, the coach helps the teacher apply what has been learned as a reflection and helps the teacher establish new goals based on what was learned.

Content coaching.

Although content coaching also includes a coaching cycle, it has been utilized for the purpose of helping teachers improve their pedagogical content knowledge in a specific academic area, such as with mathematics or literacy, so that student learning outcomes will improve (Chval et al., 2010; Neufeld & Roper, 2003; West, 2009; Woleck, 2010). This is especially useful when a coach has provided some professional development in an area, and the teacher is having trouble with implementing a new teaching practice, such as with mathematics (Chval et al, 2010; West, 2009). The coach is accessible to help with suggestions for implementing the new approach (Neufeld & Roper, 2003).

Although the process of content coaching requires dialogue that is centered on student learning, there remains a continued partnership between the teacher and the content coach. The facilitation of a coaching cycle consists of three main parts: a pre-lesson conference, a classroom lesson experience, and a post-lesson conference (Woleck, 2010). West (2009) distinguishes between the dialogue that occurs during a pre-conference planning session and the post-conference debriefing session. During the pre-conference planning session, the coach may help the teacher identify the important concepts for a lesson and ideas or misconceptions

that should be revealed in a lesson. Additionally, during the post-conference debriefing session, the coach may help the teacher understand how students may understand a concept in different ways and at varying levels. Helping teachers understand the content at a deeper level and providing suggestions to teachers for future lessons are topics that may be discussed between a content coach and a teacher (West, 2009; Woleck, 2010). Especially with new teachers, co-planning with teachers and co-teaching lessons for a particular content area is an important part of a content coach's work (Bean et al., 2010; Campbell & Malkus, 2014; Hull et al., 2009; Neufeld & Roper, 2003).

Differentiated coaching.

Instead of focusing on what is included in a coaching cycle, differentiated coaching focuses on how coaching should be approached in varying ways with different teachers. According to Kise (2009), it is important for coaches to consider the personality types of teachers in order to know how to approach working with them. As with the other approaches of coaching, differentiated coaching acknowledges the partnership between the teacher and the coach in regards to the teacher identifying their own professional needs. However, differentiated coaching occurs according to a process that also includes: making a hypothesis about the style of the teacher, finding out the teacher's beliefs about learning and instruction, and developing a coaching plan. The underlying assumption is that, in order to change the instructional practices of a teacher, the teacher has to first change his or her beliefs about learning and instruction.

Because people have different personality types and different concerns about change, Kise (2009) identified four coaching styles. People with the sensing and thinking style may view the coach as a useful resource and may ask for detailed directions about how to implement

lesson plans or ask for resources. People with the sensing and feeling style tend to require more specific step-by-step instruction and a clear understanding of what they are expected to do. While modeling for this type of teacher may be helpful, the teacher will likely prefer co-teaching opportunities where they can get immediate feedback on their use of the strategy. In consideration of people who have an intuition and feeling style, they are more concerned with a holistic picture of how the students will be affected by their change in practices. Because this personality type prefers to experiment with new practices in their classrooms before sharing their results, modeling and co-teaching would not be as well-appreciated by a teacher with this style. The last personality type describes people who have an intuition and thinking style. These teachers want evidence that the coach is knowledgeable, and they want to know the logistics of how and why a teaching strategy works. According to Kise (2009), an effective coach who is working with a teacher that has this style will use the coaching cycle and will facilitate study groups or collaborative conversations.

Coaching Continuum Model.

Similar to the differentiated coaching model, the coaching continuum model recognizes that teachers are different. However, instead of considering how teachers think about situations or their styles of learning, the coaching continuum model recognizes that teachers have varying levels of experience and expertise with their teaching practices. Specifically, some teachers need more modeling with new practices than others; this is particularly evident when considering novice teachers (Marzano & Simms, 2013). Therefore, the coaching continuum model is progressive as it slowly releases responsibility to the teacher for the implementation of new teaching practices. According to Collett (2012), this aligns with the *Gradual Increased Responsibility* model, where the coach may provide a teacher with recommendations, ask

reflective questions, and confirm that a teacher has made an appropriate decision. In an effort to build the teacher's capacity to reflect, the coach changes his or her role in four different phases of the model (Marzano & Simms, 2013). Within the phases, the coach's role may be that of a consultant who provides instruction to the teacher, a mentor who works alongside the teacher during various activities as an equal, or as a coach who can provide some non-judgmental mediation.

Virtual Coaching.

Unlike the other models for coaching, the virtual coaching model utilizes technology, such as a video camera, computer, and an earpiece, to provide coaching for teachers (Rock et al., 2011). It is based on the notion that immediate feedback is more effective than delayed feedback (Marzano & Simms, 2013; Rock et al., 2011). Because the coach provides feedback and support to the teacher while the lesson is unfolding, this "real-time feedback" allows the coach to assist the teacher in correcting or improving a situation in real time (Marzano & Simms, 2013). Used as an effort to support teachers in shared leadership, virtual coaching can help a teacher become a more reflective practitioner and improve learning outcomes for students (Rock et al., 2011).

Although there have been successes with virtual coaching, there are some concerns about how this model of coaching should be used. Due to the attention that teachers have to give to their class during instruction, as well as the voice of the coach at the same time, it normally takes a few episodes for a teacher to get accustomed to this form of coaching (Rock et al., 2011). Also, because the coach is attempting to change the teacher's behavior, positive statements should outnumber statements about correction, and the coaching should be based on

goals that the coach and the teacher have previously decided together (Rock et al., 2011).

Conditions that Support Coaching

Across the literature, it is demonstrated that there are specific conditions that can support effective coaching in a school (e.g. Confer, 2006; Ellison & Hayes, 2009; Galluccci et al., 2010; Hull et al., 2009; Inge et al., 2013; Mirkovich, Robertson, & Scherm, 2013; Woleck, 2010). Specifically, trusting relationships between the coach and the teachers, support for the coach from the principal, and opportunities for the coach to have professional development and training are conditions that support coaching. A discussion of these conditions is provided in the next few sections.

Trusting relationships between the coach and the teachers.

In order for coaches to have a positive influence on the teachers and facilitate change, it is importance for the coaches to build trusting relationships with the teachers and keep confidentiality a priority (Confer, 2006; Ellison & Hayes, 2009; Gallucci et al., 2010; Hull et al., 2009; Huston & Weaver, 2008; Inge, Walsh, & Duke, 2013; Marsh et al., 2008; Marzano & Simms, 2013; Neufeld & Roper, 2003; Woleck, 2010). Through these trusting relationships and the teachers' abilities to make choices about what coaching goals they pursue, the coach can help the teachers learn how to implement newly learned strategies their classrooms through modeling or co-teaching opportunities (Bean et al., 2010; Confer, 2006; Ellison & Hayes, 2009; Gallucci, Van Lare, Yoon, & Boatright, 2010; Killion, 2009; Mangin & Dunsmore, 2015; Marsh et al., 2008; Marzano & Simms, 2013; Neufeld & Roper, 2003; Walpole et al., 2010). Although the coach does provide descriptive feedback after observing a teacher's lesson, it is aimed to be non-evaluative and non-threatening to sustain the positive relationship between the teacher and the coach (Huston and Weaver, 2008; Marzano & Simms, 2013). It is important for

the coach to be perceived as a supporter rather than as an evaluator so that the teacher will feel comfortable coming to the coach (Inge et al, 2013). Inge et al. (2013) recommend that it is communicated to teachers from the beginning that the coach will not judge teachers on how much help they request or need or how students respond to instruction when the coach observes the teacher. If teachers understand the coach's role as non-evaluative from the beginning, teachers will be more likely to request help from the coach, and the coach will have more opportunities to work with teachers on improving instruction.

Other researchers (e.g. Inge et al., 2013; Mirkovich et al., 2013; Woleck, 2010) have shown there are other ways that the relationship between the coach and teachers can be strengthened. Teachers and the coach can celebrate successes in student learning or the teachers' professional growth (Mirkovich, et al., 2013). Once teachers discover how the coach can help them improve student learning outcomes, they tend to value the assistance the coach provides and request more help when it is needed (Inge et al., 2013). Additionally, if there are discussions about how feedback will be given, such as in the case that the teacher makes a mathematical error, teachers will have some ownership in the process, they see themselves as learners, and further trusting relationships can be built (Woleck, 2010).

Support for the coach from the principal.

Researchers also have emphasized the importance of having administrative support from principals for coaching to be an effective component of professional development (Chval et al., 2010; Neufeld & Roper, 2003). This support may be a determining factor in how a coach will be utilized in a school because the principal's beliefs lead to actions in regards to the coach's role (Matsumura, Sartoris, Bickel, & Garnier, 2009; Neufeld & Roper, 2003). For example, if a principal does not understand or value the difference that a coach can make with the staff's

learning, the principal might require the coach to be responsible for managerial or clerical tasks. On the other hand, when principals are more involved in the professional development for teachers, they tend to focus more intently on using coaches to help individual teachers with their instructional practices (Matsumura et al., 2009). In such cases, a coach's role as a supporter of teacher learning becomes more important, and the coach is not utilized as much in other ways.

Matsumura et al. (2009) also found that teachers participate more in coaching cycles when there is principal support for a coach because coaches have more access to classrooms and can provide feedback to the teachers about their instructional practices. These researchers found that the opportunity to model in classrooms or provide professional development for teachers was also provided more often to the coach when the principals publicly identify the coach in a school as an expert in a particular area. Walpole and colleagues (2010) found that the number of constructive collaborations between a coach and principal and the degree that the principal committed to instructional leadership were indicative of how much change teachers would make in their instructional practices.

According to Mangin and Dunsmore (2015) in a coaching model study, they showed that coaches did not feel they had targeted support from the principals to encourage teachers to get help with their instructional practices. During an interview in this study, a literacy coach specifically reported that teachers' practices were not aligned with the school goals. However, because the coach's role did not include being an evaluator, the interviewed coach expressed the need to have principal support in communicating with the teachers about changes that needed to be made. The training emphasized the importance of the principal complementing the

coach role and providing the necessary support for change, but the principals were not required to attend this training to find this information out.

The Mangin and Dunsmore (2015) study and other literature (e.g. Inge et al., 2013) reflect a strong need for the coach to have support from the principal in order to positively impact teachers' instructional practices in a school. In their roles, the principal and the coach both have the responsibility to support instruction; when their beliefs and visions about teaching and learning are aligned and shared, coaching can be much more effective (Inge et al., 2013). Inge and colleagues (2013) recommend that the principal and the coach build a partnership for the instructional program and construct a plan for how the coach will support teachers. Through having discussions about their vision for the instructional program and student learning, the principal and coach will have aligned expectations for the coach's role as well as how support for the teachers will be provided. Additionally, Inge et al. (2013) suggested that a coach, especially a new coach, meet with the principal before the new school year starts to have conversations about the goals and the support that will be provided for teachers during the upcoming year. With principal support, a culture in the school can be developed where coaching is seen as a positive intervention and where continuous teacher learning is the norm.

Opportunities for the coach to have professional development and training.

Although preparation for coaches may vary across districts and even states, there is a focus in the literature on the need for coaches to have their own on-going professional development in order to be highly effective (Biancarosa, Bryk, & Dexter, 2010; Chval, et al., 2010; Gallucci et al., 2010; Van Lare, Yoon, & Boatright, 2010; Neufeld & Roper, 2003; Woleck, 2010). There have also been concerns about coaches not knowing how to work with the different personalities of the teachers. The identities that coaches take on have to be

different, depending on the context, the time, place, practices and the teacher's personality (Rainville & Jones, 2008). According to Rainville and Jones (2008), the coach may need to become the knower, the co-learner, or the concerned colleague, to name a few. Transitioning from a teacher to a coach in a leadership role requires that the person have continued opportunities for professional learning themselves (Ellington & Haver, 2013).

Learning opportunities for coaches that influence their ability to facilitate change include training that comes from external sources and on-the-job opportunities (Gallucci, et al., 2010). Through external sources, professional development for coaches may include coaching simulations and practicing how to deal with specific issues, such as with a conflict with a teacher (Rainville & Jones, 2008; Woleck, 2010). Working through difficult scenarios can facilitate discussions that help a coach see what options he or she can take in situations and decide on the most productive option (Woleck, 2010). By analyzing videos and transcripts of conversations between coaches and teachers, coaches can also learn how to position themselves so that relationships with teachers can be developed and maintained (Rainville & Jones, 2008). Furthermore, looking at such case studies with other coaches can facilitate helpful dialogue that can help coaches with their own communication skills and practices of coaching (Woleck, 2010). Other effective training for coaches may include observing other coaches to facilitate their own coaching practices (Neufeld & Roper, 2003; Woleck, 2010).

Coaches also need to have sufficient training in the coaching model that they will be utilizing. In a study by Biancarosa, Bryk, and Dexter (2010), the literacy coach model was used, which was organized with a various collection of detailed instructional practices. The literacy coaches trained for their new role on this model for a year before conducting professional development activities with the teachers at their schools. This study showed

significant gains in student literacy learning from the first year of the study through the third year of the study, and the gains were, at least partially, attributed to the effectiveness of the training for the coaches (Biancarosa et al., 2010). If coaches are not well-trained with the model that they will be utilizing in their schools, it is possible that they may have a hard time working effectively with teachers in the classroom. In fact, they could possibly provide teachers with inaccurate information about the strategies that they are trying to implement (Knight, 2009). Woleck (2010) recommends that coaches keep a reflection journal to become better aware of their decisions and to consider what steps should come next in the coaching process with particular teachers.

With on-going professional development for coaches, coach expertise in multiple areas can develop over time (Biancarosa et al., 2010). To be an effective coach, a person has to have organizational skills, a great amount of content knowledge, and be willing to be flexible with time and other ideas that lead to productive collaboration (Rainville & Jones, 2008). Chval and colleagues (2010) found that first-year mathematics coaches were willing and able to perform some of the tasks that were asked of them; however, not all of them felt comfortable with leading professional development offerings. Therefore, depending on the coach's pedagogical knowledge, content knowledge, and experience, the professional development for coaches should be differentiated (Neufeld & Roper, 2003).

Challenges Presented by Coaching

Although coaching can be supported through the means that have been discussed, some challenges of coaching have been presented in the literature. Specific challenges that are presented to coaches include: communicating the role of the coach, managing time effectively to facilitate change, and reaching teachers who need help.

Developing and communicating the role of the coach.

There is concern in the literature that a coach's job description and role are not always well-defined for all of the teachers, coaches, and administrators in a school (Hull et al., 2009; Killion, 2009; Knight, 2009). It has been found that coaching is not the same from one school to the next, and this is true even within the same district (Bean et al., 2010; Walpole et al., 2010). In fact, some literature has suggested that coaches often feel ambiguous about their roles because their roles are ill-defined (Gallucci et al., 2010).

Because of this and their more flexible schedules, coaches are often asked to do non-instructional or clerical tasks (Bean et al., 2010; Knight, 2009). For example, they may be asked to work with testing, analyze data, teach lessons to groups of students, or work on writing the school improvement plan (Bean et al., 2010; Campbell & Malkus, 2011). Due to a lack of understanding the coach's role, teachers have asked coaches to do their own job responsibilities, such as conducting student assessment interviews, without any interest in receiving training to do tasks such as these on their own (Chval et al., 2010). Coaches have also felt that their principals considered them to be "spies", which has conflicted with what their understanding of their role was when they moved into the new position (Chval et al., 2010). Hence, the literature demonstrates the importance of a principal understanding and communicating the expectations of the coach to all staff in a school to avoid the misuse of the coaches.

Time management concerns.

One challenge that is presented by the coaching model pertains to how coaches should allocate their time. Several researchers (e.g. Bean et al., 2010; Ellington & Haver, 2013; Killion, 2009; Woleck, 2010) have made the recommendation for educational coaches to

remain focused on their primary role of coaching teachers. Woleck (2010) emphasizes how the coach needs to have a sufficient amount of time to work with teachers in order to positively impact teacher practice. This requires the coach to work around the teachers' schedules to attend team meetings, have conferences with the teachers, and conduct observations in the classrooms (Ellington & Haver, 2013). Still others, such as Elish-Piper and L'Allier (2011) recommend that principals allocate at least one third of the coach's time to work with teachers.

However, in addition to being given clerical or teaching tasks, some coaches have been asked to support district initiatives, which have lessened their time to work with teachers. Mangin & Dunsmore (2015) found that coaches were in conflict with how they could support system-wide changes in literacy instructional practices and also be responsive to individual teacher needs. They found that the literacy coaches worked with teachers directly on literacy for only about five hours per week. Utilizing coaches in this way is not going to substantially affect student achievement outcomes, and it is an expensive way to have clerical tasks completed.

In addition, Bean et al. (2010) found in their study of 20 Reading First coaches that the time spent coaching affected how coaches were viewed by the teachers. They worked with groups of teachers at grade-level meetings and formal professional development sessions about 12.1% of the time, worked directly with individual teachers in their classrooms about 23.6% of the time, and were engaged with tasks that were not in direct support of teachers the rest of the time. They found that, the more coaches spent time on management or administrative tasks, the more likely their work was less valued and less respected by the teachers.

One suggestion from the literature aimed at helping coaches stay focused on their goals through completing logs of daily activities and interactions that occur with the teachers

(Killion, 2009). The logs can be used to help the coach and the principal set goals, but it can also show how a coach is spending most of her time during work hours (Killion, 2009). This is important to monitor, especially when time spent actually coaching is what will affect the improvement of teaching and learning (Knight, 2009).

Reaching teachers who need help.

A third challenge presented by coaching is the reluctance of some teachers to get help and support (Hull et al., 2009; Sheffield, 2006). These teachers are often fearful that the new techniques will not actually help their students perform better or that they may lose teaching time or classroom control if they try out new teaching practices (Hull et al., 2009). Also, some are often uncomfortable being observed, or they worry about having problems with the content (Sheffield, 2006). However, it is often that the teachers who need the coaching the most are the ones who resist coaching opportunities. Because the teacher being coached has to be willing to change and believe that a change in his or her practices is needed, this causes a dilemma (Marzano & Simms, 2013).

When teachers don't respond to a coach's invitation to support them, a coach has to find a way to get into the classrooms of reluctant teachers. Chval and colleagues (2010) found that some teachers did not want to work with the coaches, and this led to the coaches feeling frustrated. Sheffield (2006) recommends that coaches help these reluctant teachers slowly and strategically. Through helping teachers with the setup of their classrooms, planning, and modeling instructional approaches, she emphasizes that coaches can gain the trust of these teachers. Another set of researchers, Hull and colleagues (2009), suggest that coaches use trend data on students to provide supported evidence that the use of certain teaching practices can positively impact student learning outcomes over time. When teachers find that their student

learning outcomes have been impacted, they are more likely to change their beliefs about teaching and learning and have greater self-efficacy (Hull et al., 2009).

Because the coach's purpose is to help a teacher make instructional changes, negative perceptions of coaches sometimes exist. In an effort to avoid making certain teachers feel as if they are being targeted, coaches often try to get into every classroom in a year's time. However, due to the large number of teachers who may be in a school setting, it can be difficult (Ellington and Haver, 2013). Therefore, the coach may have to make important decisions regarding which teachers should be supported first. If it is a coach's first year at a school, Ellington and Haver (2013) recommend that the coach start with coaching the teachers who are most interested in having a coach as a partner and in getting supportive help.

Through modeling or co-teaching a lesson for one respected teacher, a coach can gain the respect of other teachers in a building (Ellington & Haver, 2013; Smith, 2006). The idea is that once other teachers see how one coach is successfully helping another teacher with a new strategy or two, more teachers will be likely to want assistance and help too (Smith, 2006). Marzano and Simms (2013) propose that, especially for teachers who need the most assistance and support, that principals use coaching as an option for a teacher who is showing poor performance and needs to make instructional improvements. Although the teacher may demonstrate resistance in doing this, the coach can be presented as a solution to their problem instead of as a threat.

Reluctant teachers often don't believe that a demonstration lesson, which involves the coach showing the teacher how to implement a new strategy, would work with their students; therefore, it is important for a coach to model lessons within the teacher's classroom setting (Sheffield, 2006). However, there is some research that suggests that demonstration teaching

may hinder a coaching relationship and the change process (Woleck, 2010). For example, if demonstration teaching is done too early in a coaching relationship, the teacher may see the coach as the expert and may be afraid that the coach will judge the teacher (Hull et al. 2009). In such cases, teachers may not feel that they are capable of implementing a strategy due to a lack of time, resources, or management in the classroom with the students. Hull and colleagues (2009) recommend that coaches be willing to try new strategies that the teacher recommends too, in order to demonstrate that a continuous partnership exists between the coach and the teacher.

Woleck (2010) further cautions the use of demonstration teaching with the claim that it does not require the teacher to be an active participant. This author emphasizes that a demonstration lesson does not have the capability to impact a teacher's practice unless it includes the teacher having responsibilities before and during a lesson. Similar to how a co-teaching model works, the coach and the teacher should have an opportunity to discuss the goals of a lesson, and the coach would have an opportunity to find out exactly what the teacher is interested in seeing or learning about (Sheffield, 2006).

On the other hand, if a teacher cannot be involved in the direct implementation of a demonstration lesson for some reason, Woleck (2010) recommends that the teacher fill out a guided observation worksheet to focus his or her attention on the big ideas of the lesson, the questions that are posed to the students during the lesson, and evidence that students learned during the lesson. The intention of the worksheet is to make the teacher a more active participant who should be adequately prepared to implement some of the strategies that were utilized in the near future. However, co-teaching has been shown to be more effective than

demonstration lessons in facilitating teacher growth because there is shared ownership in the lesson from the planning phase to the reflection phase (Woleck, 2010).

Outcomes of Coaching in Relation to Student Learning

Bruce and colleagues (2010) discussed how professional learning opportunities can lead to improved student achievement outcomes. Specifically, they show how embedded professional learning opportunities can lead to higher teacher efficacy, higher expectations for students, the use of effective strategies, increased student self-monitoring skills, and then to higher student achievement outcomes in a subject area. Because coaching is an embedded professional learning opportunity that has the capability of increasing teacher efficacy, the impact of coaching on teachers does also have an indirect relationship with student learning (Bruce et al., 2010). Similarly, if students are motivated to learn and are engaged in learning situations because of changes that a teacher made in his or her practice, student learning has been shown to result. In the next couple of sections, the impact of coaching on teachers and students are discussed as having an overall positive effect on student learning outcomes.

The impact of coaching on teachers.

The literature indicates that coaching on specific practices that were learned during a recent professional development can have a positive impact on how teachers implement the newly-learned research-based practices (Elish-Piper & L'Allier, 2011). Teachers have communicated that coaching is more effective than someone providing a demonstration lesson to them or a trainer providing a professional development session to them after school (Kretlow, Cooke, & Wood, 2012). This confirmation of coaching effectiveness has been true for both peer coaching and co-teaching situations, which Kretlow and Bartholomew (2010) referred to as supervisory coaching, side-by-side coaching, or a blending of both situations.

Implications from their study reveal that observing teachers utilize new instructional strategies and providing feedback to them after a professional development session is particularly effective because the teachers get feedback and help during the initial stages of implementation.

Kretlow and colleagues (2012) studied how an in-service professional development, along with coaching support, would affect first grade teachers' fidelity of specific research-based practices during math instruction. Although the professional development session lasted only for three hours, the training from the coaches was supplemented with pre-conferences with the teachers. The results of this study supported that coaching is effective in increasing the implementation fidelity of newly-learned, research-based practices of teachers. In addition to improving instructional practices, there was also evidence that coaching improved student engagement and teacher procedures, even after only four sessions with the teachers. This study also suggests that teachers may improve instruction in other areas once professional development and coaching has been utilized in one area of instruction. This is likely due to an increase in reflective thinking on the part of teachers, an increase in teacher satisfaction with their careers, an increase in teacher collaboration, and an increase in teacher efficacy and positive attitudes (Knight, 2009).

There is literature that specifically supports peer coaching as an effective strategy for meeting the professional development needs of teachers. Huston and Weaver (2008) found that peer coaching offers a confidential and safe opportunity for professionals to discuss specific problems, have important discussions about what good teaching entails, and have a chance to strategize new approaches because of the level of support that is provided. Cornett and Knight (2009) supported this idea when they investigated several research studies and also found some positive effects of peer coaching. After peer coaching was incorporated as part of professional

development for teachers, one study by Bush from 1994 found that about 95% of the teachers followed up with implementing the new instructional practices in their classrooms. Coaching was also supported in studies by Showers in 1982, and by Truesdale in 2003, who found that teachers who were not coached were much less likely to utilize new instructional practices over a period of time than teachers who did have coaching support.

More recent research (e.g. Bruce & Ross, 2008; Busher, 1994; Cantrell & Hughes, 2008; Perkins, 1998) communicates that peer coaching increases teacher efficacy and the desire that teachers have to change instructional practices. This happens because input from another professional with similar experiences can cause a teacher to reflect on his or her teaching and prompt him or her to make self-judgments based on the recognition of the other teacher's success with the new strategies from observations (Bruce & Ross, 2008). In the study by Cantrell and Hughes (2008), coaching and collaboration were found to be significant factors in increasing teachers' sense of efficacy and use of content literacy strategies.

However, research from Perkins (1998), Busher (1994), and Bruce and Ross (2008) showed that, for a peer coaching program to be effective, teachers need to be trained on how to be a peer coach, as well as on content-specific pedagogical skills. If the teachers don't know how to utilize effective questioning techniques, and are not incorporating new content-based instructional practices that are being observed and reflected upon, peer coaching has not been found to be as effective. This has been confirmed by Bruce and Ross (2008), who found that combining content-based pedagogical training with the influences of peer coaching as part of a professional development program was an effective method for supporting teachers with the implementation of new instructional strategies.

The impact of coaching on students.

Although the main intention of coaching is to increase a teacher's capacity and improve instructional practices for student learning, some studies (e.g. Filcheck, McNeil, Greco, & Bernard, 2004; Kohler, Ezell, & Paluselli, 1999) have found other positive effects of coaching that directly impact students. Filcheck, et al., (2004) found that behaviors of students in the classroom improved after the teacher was coached, and coaching also affected how the teachers provided praise to the students when they behaved in appropriate ways. When considering how peer coaching affected teachers' facilitation of pair activities, Kohler, Ezell, & Paluselli (1999) reported that teachers were much more likely to facilitate students' interactions with their peers through the use of questions, prompts, and suggestions, and these techniques increased the engagement of the students during instruction.

Although there is not a lot of research that links coaching to student achievement, several studies suggest that educational coaching can positively impact these outcomes. Studies by Showers in 1982 and 1984 linked student achievement with coaching, which precipitated much of the current interest in educational coaching. More recently, Kretlow and Bartholomew (2010) found a study where students became more engaged after a coach had provided the teacher with feedback, and there were also cases where the student responses increased. With increased engagement and activity in classroom settings, side-by-side co-teaching and coaching were found to be the determining factors in the increased performance on elementary students' spelling tests. Elish-Piper and L'Allier (2011) reported that the amount of time literacy coaches spent with the teachers contributed to significant reading achievement at the Kindergarten and second grade levels. Specifically, the positive results were linked to the amount of time that coaches spent analyzing data with teachers from assessments, modeling lessons, observing the

teachers, focusing on comprehension strategies, and conferencing with the teachers about concerns of the practice. Another study by Bean and colleagues (2010) reported that, in schools where coaches spent more time working directly with teachers, more students scored at proficient levels on the Terra Nova in the first and second grades, and fewer students were labeled as "at risk". Overall, coaching research in the area of literacy has shown that students of teachers who were coached performed better in several areas of literacy (Marzano & Simms, 2013).

Where teachers have been well-trained and experienced with coaching, significant achievement results have been reported. Campbell and Malkus (2011) found in their three-year randomized control study that trained math coaches had a positive effect on student achievement with elementary students in comparison to the control group. This was especially true in grades 4 and 5 and during the 2nd and 3rd year that a coach was placed within a school. The study revealed that it may take time for coaching to show substantial results. The authors emphasize that the lack of results after one year of having a coach in a school could be due to the time it takes for a coach and the staff to learn and to work together.

This was supported by Biancarosa, Bryk, and Dexter (2010) who showed that, as coaches became more experienced over time, student achievement improved. During the first year of the implementation of this study, coaches had been trained well, and the students made a 16% growth from the previous year when the coaching model had not been used. In the following year, there was a 12% growth from the first year, and in the third year, student literacy learning rose another 4%. Therefore, over the three year time of the study, student literacy learning increased a total of 32% from the baseline data (Marzano & Simms, 2013).

This study showed that, when coaches are trained and gain experience, it could be responsible for the increase in student achievement.

However, not all studies have shown gains in student achievement from coaching (Marzano & Simms, 2013). Garet and colleagues (2008) reported that coaching did not significantly add any overall effect on teacher knowledge, teacher practices, nor student achievement in reading, according to the standardized test scores. The Reading First Impact study by Gamse and colleagues (2008) showed similar results in regards to student achievement. Although Reading First significantly impacted the total amount of time that teachers spent on reading instruction and the components of it, there were no significant impacts on how students engaged with print nor on students' reading comprehension scores.

Overall, the research literature shows that productive coaching can positively affect student achievement. Varying results across the studies on student achievement could have been due to differences in the coaches' experiences and approaches that coaches used when working with the teachers. Other factors, such as time, principal support, and teacher perceptions of the coach also need to be considered when creating a model for coaching that is going to be effective.

Co-teaching

Due to my interest in educational coaching with the use of co-teaching as a potential tool for modeling and improving teachers' instructional practices, the second part of the literature review highlights the current literature on co-teaching, which mainly positions co-teaching as an instructional strategy and a service delivery model. I will highlight the major themes in the literature in regards to co-teaching, which include: (1) the importance of providing training to teachers on co-teaching, (2) the importance of providing mutual planning

time for co-teachers, (3) the importance of co-teachers collaborating about their roles and responsibilities during instruction, (4) how successful co-teaching can be implemented in classrooms, and (5) the effects of co-teaching on teachers and students.

Importance of Providing Training to Teachers on Co-teaching

One theme that appears in the literature is the importance of providing training to teachers on co-teaching (Conderman & Hedin, 2013; Friend et al., 2010; Pancsofar & Petroff, 2013; Ploessl & Rock, 2014; Pratt, 2014; Scruggs et al., 2007; Stivers, 2008; Strogilos & Tragoulia, 2013; Sutton, Jones, & White, 2008; Walsh, 2012; Wilson & Blednick, 2011). Due to the most common use of the *one teach, one assist* approach , it has been found that special education teachers are often managers of behavior only and not participating equally in the instructional practices with the regular education teachers (Ploessl & Rock, 2014; Strogilos & Tragoulia, 2013). Because regular education teachers often do not feel that they are prepared to work with students who have disabilities, a lack of individualized instruction has been the result (Strogilos & Tragoulia, 2013). Therefore, collaborative teaching is not only recommended at the university level, but it is also recommended at the district and school levels (Strogilos & Tragoulia, 2013). It has been found that teachers who received opportunities for in-service training on co-teaching had more confidence in their co-teaching practices and had more positive attitudes in regards to implementing co-teaching in their classrooms (Pancsofar & Petroff, 2013; Ploessl & Rock, 2014).

Components of training.

A variety of co-teaching practices should be utilized in co-taught classrooms (Ploessl & Rock, 2014). One aspect of training should include information about and demonstrations of the different co-teaching approaches that can be implemented in classrooms (Pancsofar &

Petroff, 2013; Walsh, 2012). While learning about the different approaches, teachers can see how the approaches can benefit different instructional needs of students and find the models that best match their students' needs and classroom environment (Stivers, 2008; Walsh, 2012). Although providing co-teachers with demonstrations of the different co-teaching approaches during training is necessary, teachers also need opportunities for guided practice and coaching for the learned skills to transfer into their regular practices (Friend et al., 2010; Ploessl & Rock, 2014). It has been found that professional development on co-teaching was most effective when the professional development was linked to student learning outcomes and supplemented with frequent and in-depth demonstration, practice, feedback, and coaching (Friend et al., 2010; Pancsofar & Petroff, 2013; Ploessl & Rock, 2014; Walsh, 2012).

Researchers (e.g. Jang, 2010; Pratt, 2014; Tannock, 2009) have found that there are other aspects of training for co-teachers are also essential to promote effective co-teaching relationships and implementation. Due to the nature of co-teaching, co-teachers need training on effective communication and collaboration so that conflicts can be avoided or mediated appropriately and professionally (Jang, 2010; Pratt, 2014; Tannock, 2009). Specifically, through training, teachers can learn to listen to each other, respect others' viewpoints, and trust in others' decisions as equal partners (Jang, 2010; Kohler-Evans, 2006; Pratt, 2014; Tannock, 2009). Training on topics, such as how to incorporate different co-teaching roles and how to approach different communication styles, can include discussions on possible solutions to problems, classroom management, and how to plan for meetings (Ploessl & Rock, 2014). This training on effective communication prepares co-teachers for discussions about their philosophies of teaching and assessment and self-advocacy (Ploessl & Rock, 2014). Stivers (2008) posits that when teachers are honest and learn to have a sense of humor, team building,

communication, and creativity can be fostered. Additionally, Pancsofar and Petroff (2013) report that teachers who have frequent opportunities for training on co-teaching tend to keep more optimistic attitudes about co-teaching than teachers who had fewer opportunities for training.

Due to a lack of differentiated instruction in co-taught classrooms, including use of accommodations and modifications, a need for professional development on differentiated instructional strategies has also been evident (Ploessl & Rock, 2014). Professional development training sessions have provided co-teachers with strategies to tier assignments for students of various levels or to promote higher levels of student engagement, especially for students with disabilities (Ploessl & Rock, 2014; Walsh, 2012). Ploessl and Rock (2014) found that, when the co-teachers were coached with the "bug-in-the-ear" technology, the three dyads of teachers who participated planned for student accommodations according to their students' Individualized Education Plan (IEP) goals.

Importance of Providing Mutual Planning Time for Co-teachers

Another theme in the literature on co-teaching is the importance of providing mutual planning time for co-teachers (Conderman, 2011; Conderman & Hedin, 2013; Friend et al., 2010; Fenty, McDuffie-Landrum, & Fisher, 2012; Hang & Rabren, 2009; Honigsfeld & Dove, 2008; Hull et al., 2009; Kloo & Zigmond, 2008; Kohler-Evans, 2016; Pratt, 2014; Scruggs et al., 2007; Sileo & van Garderen, 2010; Strogilos & Tragoulia, 2013; Sutton et al., 2008; Tannock, 2009; Villa et al., 2013; Wilson & Blednick, 2011; York-Barr et al., 2007). Researchers have recommended that co-teachers meet and plan together at least monthly, if not weekly, to decide on differentiated activities and units for the students based on learning objectives and standards and determine methods of assessment (Friend et al., 2010; Honigsfeld

& Dove, 2008; Kohler-Evans, 2006; Ploessl et al., 2010; Stivers, 2008; Villa et al., 2013; York-Barr et al., 2007). When co-teachers are able to plan together, the students are more apt to receive appropriate instruction that is content-based with the use of specialized strategies, such as with the use of question-answer relationships (QAR) or color coding (Conderman & Hedin, 2013; Fenty et al., 2012). Both teachers' expertise in the areas of curriculum and instructional strategies will have the opportunity to be shared (Sileo & van Garderen, 2010). It is further recommended that co-teachers use this time to get to know one another and share philosophical viewpoints (Bessette, 2007; Hang & Rabren, 2009; Sileo & van Garderen, 2010; Villa et al., 2013). Ploessl et al. (2010) also recommend that co-teachers reflect on their lessons together and use this time to provide honest feedback and specific praise for accomplishments during the lesson, as both a motivator and honest positive feedback.

However, it has been found that finding adequate time for co-teachers to collaborate during the school day is not always easy (Honigsfeld & Dove, 2008; Kloo & Zigmond, 2008; Sileo & van Garderen, 2010). If co-teachers are not able to plan together, there is a likelihood that conflict between co-teachers will increase due to feelings of inequities about the workload or responsibilities (Sileo & van Garderen, 2010; Strogilos & Tragoulia, 2013; Tannock, 2009). Kohler-Evans (2006) recommends that co-teaching not be used if co-teaching teams are not able to plan together regularly.

Several authors emphasize the importance of making planning time effective (Conderman, 2011; Conderman & Hedin, 2013; Tannock, 2009; Villa et al., 2013). Tannock (2009) recommends that co-teaching teams incorporate written documentation into their planning time to guide and support the planning process. Written documentation may include the use of written schedules, notes about student work or behavior, or a formal planning form

for co-teaching processes over a period of time (Conderman, 2011; Honigsfeld & Dove, 2008; Murawski & Dicker, 2013; Ploessl et al., 2010; Tannock, 2009). Planning time can also be effective when the co-teachers are participating in professional development or analyzing student work together (Conderman, 2011).

Importance of Co-Teachers Collaborating about their Roles and Responsibilities

A third theme in the literature is the importance of co-teachers collaborating about their roles and responsibilities for co-taught lessons before implementation (Bessette, 2007; Conderman, 2011; Conderman & Hedin, 2013; Hang & Rabren, 2009; Hull et al., 2009; Kloo & Zigmond, 2008; Pratt, 2014; Strogilos & Tragoulia, 2013; Sutton et al., 2008; Tannock, 2009; Villa et al., 2013). Co-teachers may be working in the same classrooms, but they may not be connecting their teaching strategies for the students in the classroom (Tannock, 2009). In such cases, the regular education teacher controls the instruction while the special education teacher modifies the instruction for students with disabilities and is not fully utilized (Bessette, 2007; Strogilos & Tragoulia, 2013). Therefore, the co-teachers may not have a clear understanding about who is responsible for classroom processes, such as behavior management of the students (Hang & Rabren, 2009). On the other hand, when co-teachers are able to collaborate and flexibly change their roles for different lessons, instruction becomes more diverse, blended, and differentiated for the students with less confusion for everyone (Pratt, 2014; Strogilos & Tragoulia, 2013; Villa et al., 2013). In essence, the special education teacher becomes the second teacher of the whole class, not just a teacher for certain students (Strogilos & Tragoulia, 2013). Conderman & Hedin, 2013).

Researchers have discussed the importance of making the guidelines and expectations for the special education teacher's role more formalized and explicit (Kloo & Zigmond, 2008).

As part of their planning time together, co-teachers can outline their strengths, weaknesses, and responsibilities on charts, which could help the co-teachers decide how to balance the instructional duties of the classroom (Conderman, 2011; Pratt, 2014). For example, Conderman and Hedin (2013) discuss how the special education teacher could take on the role of "strategy leader" and participate more meaningfully through teaching students *emphasis strategies*, such as color coding parts of an assignment, *study skills*, such as modeling to the class with the think-aloud strategy, or other specialized strategies. However, due to the way that co-teaching reduces the teacher-to-student ratio, co-teaching has the potential to increase student engagement through the use of small group instruction (Friend et al., 2010; Kloo & Zigmond, 2008).

Therefore, some researchers recommend that co-teaching teams consider the increased use of specific co-teaching approaches, such as parallel teaching, station teaching, and alternative teaching (Kloo & Zigmond, 2008). For teachers to be successful in dividing the roles and responsibilities of the classroom, they need to have time and opportunities to communicate their views in open and honest discussions (Pratt, 2014).

How Successful Co-teaching can be Implemented in Classrooms

A fourth theme in the literature is that successful co-teaching can be implemented in classrooms when both co-teachers contribute equally to classroom activities and work for the achievement of all students in the classroom. There is also a need for administrative support for successful co-teaching to take place. The next couple of sections discuss specific findings.

What Effective Co-Teachers Can Do

Due to the content knowledge that classroom teachers have and the specialized support that co-teachers, such as special education teachers or reading specialists can offer, students can

benefit from the support of multiple stakeholders (Fenty, McDuffie-Landrum, & Fisher, 2012). To meet the diverse needs of learners, the co-teacher who is not leading the instruction can be effective by engaging in any of these activities with proper record-keeping: (1) monitor students' behaviors and keep students on track, (2) provide students with questions and feedback about their work, (3) reteach difficult concepts to one student or a small group, (4) help the lead teacher monitor student responses and ensure that all students participate in a lesson, (5) provide adaptations and modifications to improve the success of students when necessary, and (6) offer a different viewpoint on a topic that the leading teacher may not have shared or considered for a lesson (Wilson, 2008).

Specific strategy instruction, such as through using graphic organizers or highlighters, can also be provided from a co-teacher who is not leading the class during instruction (Fenty, McDuffie-Landrum, & Fisher, 2012). In addition, having the presence of another adult to supervise students can be helpful to a science teacher who is leading the class during direct instruction or activities in the science lab (Johnson & Brumback, 2013).

Several authors emphasize the use of purposeful assessment practices (Conderman & Hedin, 2013; Stivers, 2008). Before instruction, during instruction, and after instruction, co-teachers should review the data and decide how instruction should proceed together (Conderman & Hedin, 2013; Stivers, 2008).

Importance of Administrative Support

Several authors stress that the successful implementation of co-teaching depends on the proactive and purposeful support of school district leadership from the beginning (Walsh, 2012). For example, support is needed from administrators to ensure that teacher preferences have been considering when pairing up co-teachers for instructional blocks with students

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(Wilson & Blednick, 2011). Therefore, to work optimally, administrators need to know the personality traits and work habits of their teachers to know if the pairings of teachers will work (Pratt, 2014). As the principal places students in classes before school starts for students, administrative support is further necessary to ensure that the ratios of students with and without disabilities are effective at about 30% for students with disabilities (Wilson & Blednick, 2011).

In addition, support is necessary from administration to ensure that co-teachers, as well as themselves, are properly trained, including having the initial training and scheduled continued training on co-teaching (Pratt, 2014; Wilson & Blednick, 2011). The administrator should have enough training to be able to support and direct co-teachers with their initial efforts as co-teachers attempt to try out and use the co-teaching approaches in classrooms (Conderman, 2011). To ensure that the strategies learned during training are implemented properly in classrooms, administrative walk-throughs can include expectations for the utilization of the various co-teaching models and differentiation strategies (Walsh, 2012). Although providing mutual planning time has been shown to be difficult, administrators can protect the effectiveness of co-teaching through providing staff resources and scheduling for co-teachers to have common planning time on a regular basis (Pratt, 2014; Strogilos & Tragoulia, 2013; Wilson & Blednick, 2011; York-Barr et al., 2007).

Effects of Co-teaching

Although the findings are mixed on the effects of co-teaching in the literature, most of the effects of co-teaching on teachers and students reported have been positive. The literature suggests that when a co-teaching model is supported through proper training and administrative support, positive results will occur in multiple areas. The following sections discuss findings in the literature of the effects of co-teaching on teachers and students.

Effects on teachers.

When implemented as the literature recommends, co-teaching has been shown to positively impact teacher learning and improve instruction (Hull et al., 2009; Kohler-Evans, 2006; Pratt, 2014; Rytivaara & Kershner, 2012; Sileo & van Garderen, 2010; Tannock, 2009). Because co-teachers have varying levels of experiences, they can expand their knowledge bases on instructional practices by working with one another and taking risks to use the innovative strategies that they would not have taken otherwise (Honigsfeld & Dove, 2008; Kloo & Zigmond, 2008; Pratt, 2014; Rytivaara & Kershner, 2012; Tannock, 2009). For example, when one teacher, such as an ESL teacher, demonstrates effective instructional strategies during a lesson, the regular classroom teacher can observe and continue to use those same instructional strategies, even when the co-teacher is not in the classroom (Honigsfeld & Dove, 2008).

Hence, collective expertise has the potential to meet the needs of more diverse students (York-Barr et al., 2007). However, it is important that the co-teacher, who is also the specialist for the population of students, makes explicit to his or her regular classroom co-teacher, what strategy he or she is using, and why it is important to use (Kloo & Zigmond, 2008). Furthermore, Scheeler and colleagues (2010) emphasize the importance of co-teachers providing feedback to one another about instructional techniques to ensure that students receive differentiated instruction that is needed in co-taught classrooms. This immediate feedback is effective because it alerts the co-teacher to perform the specific teaching technique correctly for students during the next lesson (Scheeler et al., 2010).

Due to the professional collaboration that co-teaching provides, it has been found that teachers who co-teach are often more satisfied with their practice and appreciate the opportunities for professional growth that comes from providing and obtaining feedback from a

colleague that they feel comfortable with (Kloo & Zigmond, 2008; Kohler-Evans, 2006; Rytivaara & Kershner, 2012; Sileo & van Garderen, 2010; York-Barr et al., 2007). This was supported by Pratt (2014) who found that when teachers were partnered with a compatible co-teacher or could equally contribute to planning and instruction, teachers were more receptive to learning better ways of teaching to meet the needs of diverse students. As a result, through co-teaching, teachers can learn from each other through reflection and may provide a safe avenue for teachers to discover their own solutions in working with diverse student groups (Johnson & Brumback, 2013; Rytivaara & Kershner, 2012; York-Barr et al., 2007). This has promoted high levels of satisfaction for both regular education teachers and special education teachers because they find that they both enjoy not being isolated in their rooms (Kloo & Zigmond, 2008; Tannock, 2009; York-Barr et al., 2007).

Although much of the literature promotes co-teaching as an effective instructional model, some perceptions of co-teaching have not been found to be positive. According to Tannock (2009), in some cases, regular classroom teachers perceive special education teachers as not having necessary content knowledge to actively participate in classroom instruction. Therefore, it is often that the special education teacher assumes a role similar to that of a paraprofessional or an assistant. Kohler-Evans (2006) found that some special education teachers have not been positive about co-teaching because they were resentful about losing their own office or classroom space that they had previously, and they were placed in a classroom with a teacher who they felt did not need them. In addition, York-Barr and colleagues (2007) found that some co-teachers felt that they had lost autonomy, flexibility, and creativity due to a set schedule. Challenges presented in the study also included teachers' concerns over increased communication demands and confusion about how to share

responsibilities. Overall, the mixed research indicates that, with proper planning time, training, and the pairing of co-teachers with an appropriate partner, these challenges will greatly decrease.

Effects on students.

According to Welch (2000), very few studies have found a correlation between co-teaching and an improvement in student outcomes. For example, Klinger et al. (1998) found that achievement declined in reading, and achievement gains were not significant for mathematics for students with disabilities or those who are at-risk. However, since that literature was published, co-teaching has been shown to have positive effects on all students, with and without disabilities (Hang & Rabren, 2009; Pratt, 2014; Sileo & van Garderen, 2010: Walsh, 2012). For students with disabilities, co-teaching can foster achievement for students when the needed supports are provided at the district-level (Walsh, 2012). Students with disabilities have demonstrated an increase in achievement in math and the same gains in reading when compared to students who only received pull-out services with the special education teacher (Kohler-Evans, 2006). This may be due to students getting more help with two educators in the room, and students may benefit from multiple viewpoints and explanations (Conderman, 2011). Through the use of groupings and a lowered teacher-to-student ratio, students with disabilities feel more comfortable to participate more in classroom activities and discussions (Wilson & Blednick, 2011). Several authors have discussed how co-teaching is effective because it supports varying learning styles (Conderman, 2011; Walsh, 2012). There is continuous improvement for all students because the lesson will likely meet the visual, kinesthetic, and processing needs of all students (Conderman, 2011).

In studies where teacher perceptions were surveyed, the results regarding the effects of co-teaching on students have been mostly positive. In a study by Kohler-Evans (2006), 77% of the teachers surveyed responded that co-teaching positively impacted student achievement. Researchers found that co-teaching can meet the needs of all students, except in the cases of severe disabilities. York-Barr and colleagues (2007) found that teachers perceived the expectations for ELL students to be higher in co-taught classrooms, which increased achievement. This was attributed to using instructional time more flexibly and creatively while also having more knowledge about students' strengths.

Researchers have also studied the specific impact of co-teaching on student achievement. Students placed in classrooms where co-teaching is implemented have shown to demonstrate more achievement on state assessments when compared to students in similar classrooms that did not utilize a co-teaching model (Rea, McLaughlin, & Walther-Thomas, 2002; Walsh, 2012). Rea and colleagues (2002) also found that students with disabilities who were taught in regular education classrooms where co-teaching occurred earned better course grades in a variety of subjects than other students with disabilities who received pull-out services. In a study on the incorporation of collaborative concept mapping, Jang (2010) found that team teaching had a positive effect on the final test scores of the experimental groups. After finding an overall mean effect size of 0.40 in their study, Murawski and Swanson (2001) claim that co-teaching can moderately affect student outcomes. Additionally, Hang and Rabren (2009) also found that students with disabilities who had experienced co-teaching for one year improved significantly on their SAT NCES in reading and math from the year before. This was supported by Walsh (2012) who found that, in the 2008-2009 school year, students with disabilities had an increase in their reading and mathematics proficiency by 11% in reading and

14.5% in mathematics. This was attributed to the coaching support that co-teachers had received during that year, indicating that achievement will be more positively affected when co-teachers have continued feedback and support (Ploessl & Rock, 2014; Walsh, 2012).

Co-teaching has also been shown to benefit all students socially (Walsh, 2012). Because co-teaching has the potential to improve students' academic performance, students' social and emotional needs are also met through having more confidence, higher self-esteem, and positive relationships with their peers (Hang & Rabren, 2009; Kloo & Zigmond, 2008; Sileo & van Garderen, 2010; Walsh, 2012). This may be due to the reduction of the stigma that only students with special needs require extra help (Kloo & Zigmond, 2008; Wilson & Blednick, 2011). This also may be due to students with disabilities or ELL students feeling like they are part of the entire school community, and students without disabilities or special needs have the opportunity to learn respect and appreciate diversity (Kloo & Zigmond, 2008; Kohler-Evans, 2006; Wilson & Blednick, 2011; York-Barr et al., 2007). With an expanded perception of support, students have felt more engaged in instructional and social situations and learned from and supported one another (Kloo & Zigmond, 2008; York-Barr et al., 2007). The lowered teacher-to-student ratio also fosters more behavior support for students who need it (Hang & Rabren, 2009; Sileo & van Garderen, 2010; York-Barr et al., 2007). Hang and Rabren (2009) found that discipline referrals increased in co-taught classrooms, but they attribute these results to the increased monitoring that is possible with an extra person in the room. Although Hang and Rabren (2009) found that attendance of students decreased in co-taught environments, Rea et al. (2002) found that students in co-taught environments had better attendance than those who were not.

Chapter 2 Summary

State and federal mandates have placed tremendous pressures on schools to demonstrate their effectiveness through the outcomes of state testing (Kloo & Zigmond, 2008). With teacher quality being the top factor in student achievement, there is pressure on administrators and teachers to improve instruction (Kloo & Zigmond, 2008). The use of coaching and co-teaching models in schools have been used to help teachers improve instruction and also meet the diverse needs of students in the classroom.

According to the literature, certain conditions have to be met before any coaching or co-teaching model can be effective. Because both models include two educators working together to meet the academic needs of students, it is important that trusting relationships are built between the educators in both situations. Also, in both models, there is potential to positively support changes in teachers' instructional practices through the facilitation of reflection and problem solving. There is also a need for these teachers to be supported by administration with time to dedicate to planning and working with one another. In both models, professional development should be provided on an on-going basis throughout a school year, and teachers should be expected to utilize and implement what they learn from professional development sessions in their classrooms.

Although educational coaching and co-teaching have independently shown varied results, little to no literature has found the effects of combining these models. In this specific cross-case analysis study, the author aims to put these two models together to determine what experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to illustrate what experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers, focusing on the teaching and learning of mathematics. Through utilizing a qualitative design, instructional coaching with co-teaching was understood in authentic contexts, and the participants were able to provide descriptive detail about how these two concepts intersect and interrelate in their respective settings.

This was a holistic multiple-case study, where five elementary school sites within a district were the focus. Yin (2018) defines a multiple case study as "a case study organized around two or more case studies" (p. 287). When applicable, Yin (2018) recommends the use of multiple-case studies because the evidence is generally more compelling and robust than single case study designs, unless the single case is an unusual or extreme case which would not fit well with other studies on a similar topic and with similar questions. The researcher chose to use the term "holistic" from Yin (2018) in describing the multiple case study because the general nature of instructional coaching and co-teaching was examined in each of the separate cases. The surveys and interviews were very descriptive, which provided the description needed for the contexts and the cases. Conducting a holistic multiple-case study design for this study was appropriate because the researcher was looking for a replication of findings to strengthen the

overall findings of the study. Since all of the elementary school sites were located in the same rural district, and co-teaching was utilized for the same purpose in all five schools, the researcher predicted that similar results would persist across the cases. She also believed that there would be some differences. This chapter describes the research methods used to explore the perspectives of principals, classroom teachers, and instructional coaches regarding their perceptions of instructional coaching that includes use of co-teaching models.

Qualitative Methods

Creswell (1998) defines qualitative research as a "complex narrative that takes the reader into multiple dimensions of a problem or issue and displays it in all of its complexity" (p. 15). Use of a qualitative case study design and an interpretivist approach to research is appropriate when the researcher wants to understand and interpret "human ideas, actions, and interactions in specific contexts or in terms of the wider culture" (Glesne, 2011, p. 8). In this holistic multiple-case study, the researcher aimed to understand what instructional coaches, classroom teachers, and principals in varying school environments experience and perceive within a co-teaching environment. Through obtaining multiple perspectives over a period of time and in the different contexts, the researcher was able to examine how relationships change over time and discover issues that arise from these interactions.

According to Creswell (1998), the researcher and the participants are actively learning throughout the research process. Both the researcher and the participants gain knowledge through the participants giving their points of view and their own interpretation of an event. As researchers learn more from asking participants questions and gathering data, questions often change to obtain a greater understanding of the situation being described. Because knowledge is within the meanings that people make of it, participants also gain knowledge of the situation

being discussed through reflecting on how it is and how it could be (Creswell, 1998). During this study, the participants appeared to gain, through reflection and discussion of the questions, a greater sense of what instructional coaching with co-teaching is at their school and how it could be improved. As with other qualitative research, the data presented is partially based on the perspectives of participants and partly based on the researcher's interpretation of what is shared (Creswell, 1998).

Case Study Methodology

The researcher conducted a qualitative holistic multiple-case study of five schools within a rural school district in the eastern United States. According to Creswell (1998), features of a case study include having a definitive time frame and site for the study, as well as multiple data sources to provide a detailed and holistic picture of the context and situation being studied. This study took place over a ten-month period of time, from March 2017 to December 2017, and the data includes schools which were in their first or second year of implementing instructional coaching with co-teaching. In regards to the use of multiple sources, each participant completed a survey and had three interviews over a period of 3-4 months. Surveys were used to collect the initial data, for it included demographic information and general information about perceptions in regards to instructional coaching and co-teaching (see Appendix A). After the initial survey, each participant was interviewed three times, about once every four to five weeks, over the course of a three-month period (See Appendix B). Additional questions were added during interviews to gain more details about situations or events.

Conceptual Framework

Communities of practice.

There is often the "sticky" challenge of moving knowledge throughout an organization (Brown & Duguid, 2001). According to Wenger (1998), communities of practice promote learning in an organization through participation with support within the context of the job that needs to be done. On-going participation over time is important, and situated interactions within the boundaries of everyday work are key factors (Levine & Marcus, 2010; Little, 2002). The support comes from the observations that participants make and then the actual participation in work that is at the core of the community (Levine & Marcus, 2010). While practitioners are interacting with each other in their environment, they negotiate the meanings of their experiences together and make evidence-based decisions (Takahashi, 2011). Both participants also construct shared identities within the social context of the work environment (Brown & Duguid, 2001). The practitioners may include novices and experienced practitioners, but all the participants are able to make observations, have discussion, and engage in practices together (Levine & Marcus, 2010).

Due to the perspectives that are shared, knowledge can also be shared because it is readily accepted (Brown & Duguid, 2010). A few of the identified characteristics of a community of practice include: (1) relationships that persist over time, (2) mutual decisions on how things are to be accomplished, (3) communications that are easily established, (4) a quick movement of information, (5) shared discourse, and (6) an engagement of doing things together in shared ways (Roberts & Amin, 2008; Wenger, 1998). Levine and Marcus (2010) recommend that the discussions about means and ends and how progress will be assessed be ongoing to benefit the learning of the participants in the community of practice.

Communities of practice provide opportunities for knowledge creation and organizational learning (Brown & Duguid, 2010). Theories of communities of practice can be applied to this study because through planning, implementing, and reflecting on co-teaching experiences, the classroom teachers and the instructional coach discuss and make informed decisions together about teaching practices and student learning. New ideas are shared between the teachers and the instructional coach, and learning on the part of the teachers and the instructional coach is able to take place because the ideas are put into situated practice and are observed and experienced. These ideas also have the opportunity to benefit the school as a whole because the knowledge can be collected and shared with others in the school, a situated work environment, over time.

During the course of this study, the co-teaching relationship between instructional coaches and the classroom teachers at their schools was analyzed using a *situated learning* lens, which Lave and Wenger (1991) have regarded as *legitimate peripheral participation (LPP)*. Within this view of learning, Lave and Wenger (1991) stress that newcomers, or apprentices, participate with practitioners in the community, and learning is an integral component of this participation. Hence, social co-participation is necessary within the contexts for learning to result. These authors posit that learning takes place when one person who is less skilled than the other is able to participate within the context of the other's expert performance. Learning is mediated by the varying points of view of the co-participants; therefore, it is distributed among all of the participants to benefit the context in some way. However, the relationship and interactions between a master and an apprentice create opportunities for both of them to learn and change through the co-learning process because experience and understanding are constantly evolving.

Within the context of this study, the instructional coach's role was to work towards improving the instructional practices of teachers, just as a mentor, expert in the field, or as a master to an apprentice. Due to the nature of the instructional coach planning with the teacher and co-teaching within the same environment as the classroom teacher, the classroom teacher, regardless of the amount of his or her experience, is like an apprentice, working towards improving his or her instructional practices with intent. Using an LPP lens, the co-teaching relationship between the instructional coach and the classroom teacher should change over time, through their interactions and discussions to reach the common goal of impacting student learning. With this conceptual framework in mind, the research questions focused on the experiences that result from co-teaching, how the relationship between the instructional coach and the teachers changed over time due to co-teaching together, and how they resolved issues to reach a common goal.

Research Questions

With a qualitative design, this holistic multiple-case study focused on the following questions:

(1) What experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers?

(2) How does the relationship between an instructional coach and an elementary classroom teacher change over time through co-teaching interactions?

(3) What issues result from a co-teaching relationship between an instructional coach and an elementary classroom teacher?

(4) With respect to mathematics instruction, how do the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship?

Context of the Study and Site Selection

Although the literature acknowledges that co-teaching may be included with instructional coaching, no studies were found that analyzed the intersection of co-teaching and instructional coaching. The context of this study is a rural school district in the eastern United States where the instructional coaches regularly co-teach with teachers. In this district of around 13,000 students and 15 elementary schools, co-teaching is used as a model to serve all students, including the academically and intellectually gifted students, within the district. At the time of the study, the district was in its first two years of implementation of this model. Data was collected from two schools during the second semester of the school year, and data was collected from three schools during the first semester of the second year. All of the data was collected within a ten-month time frame, between March 2017 and December 2017.

Although all five cases were positioned within the same district, purposeful sampling was utilized to find the five schools which would participate in the study. Through using purposeful sampling, cases tend to highlight diverse perspectives on the topic, but they may also be cases that are accessible or unusual (Creswell, 1998). Five schools within this district were purposefully-selected to participate because of the differences between them and the accessibility of the cases. The schools varied in the number of students who attend there, the diversity of their populations, the experiences of the participants, and the culture of the community within the school context. A description of each school is included in chapter 4. In this manuscript, pseudonyms are used to identify all schools and participants.

Participants

Instructional coaches.

This study includes five instructional coaches from five different elementary schools within the district. The schools were purposefully selected to include instructional coaches who regularly co-taught with third through fifth grade teachers during mathematics instruction. The instructional coaches varied in their experience as instructional coaches and with co-teaching. It was important to consider the experience level of the instructional coaches and their time at the current school in analyzing perceptions, issues, and resolutions of any issues were found in the data. It was also useful to understand what experiences were common when instructional coaching and co-teaching intersected, regardless of the amount of experience and time that instructional coaches had at a school. Prior to participation in this study, all instructional coach participants gave written and oral consent.

Classroom teachers.

Two classroom teachers at each purposefully-selected school participated. The teachers were in a co-teaching situation with the instructional coach, and there were two 3rd-5th grade classroom teachers at each school participating. These classroom teachers were also responsible for teaching grade-level math for the current year. Due to the nature of purposeful selection, the teachers varied in their level of teaching experience, and they also varied in their level of comfort and training in regards to co-teaching. Prior to participation in this study, all teacher participants gave written and oral consent.

Principals.

Five principals, one at each purposefully-selected school, participated in the study. Due to the nature of purposeful selection, the principals varied in their level of administration

experience, and they also varied in their level of comfort and training in regards to co-teaching. Prior to participation in this study, all principal participants gave written and oral consent.

Sources of Data

Research methods. The purpose of this holistic multiple-case study was to obtain a full understanding of how the social interactions between the classroom teacher and the instructional coach and their perceptions changed over time as the teacher and the instructional coach mediated the co-teaching experience to enhance student learning. Different aspects of the coaching and co-teaching experience, including co-planning and co-assessing, were analyzed and compared across cases through the use of surveys and interviews. The multiple sources of data collected in this holistic multiple-case study provided an opportunity for the researcher to collect authentic data that could be triangulated and lead to well-developed findings (Glesne, 2011; Stroglilious & Tragoulia, 2013). Through triangulation, the findings of each case were vetted for consistency, and any discrepancies in the findings revealed even more about the nature of instructional coaching, that includes co-teaching, to meet the academic needs of students, within the case (Patton, 1999).

Participant interviews. Semi-structured interviews were used with the participants to elicit qualitative data that is reliable and comparable with data from the other participants (Cohen & Crabtree, 2006). Interview data from the instructional coaches were compared with the data coming from the other participants to better understand the nature of instructional coaching with co-teaching. Although most questions were prepared ahead of time, the open-endedness of questioning during these interviews allowed participants to freely express their perspectives with comfort and ease. Additional questions were added during the interview to facilitate a deeper understanding of the participants' viewpoints or gain greater understanding of a situation within

coaching with co-teaching. Interviews at each site were conducted three times over the course of four months, approximately once every five to six weeks (see Appendix B). The interviews were recorded and transcribed for analysis.

Participant surveys. Each participant was surveyed during the time of their participation in the study, which asked for narrative answers in a questionnaire format. The survey questions addressed information regarding the participants' experience in their current role, their training on co-teaching, and how co-teaching was currently being implemented in their situation. It was important to triangulate the contextual information from the surveys with the interview data to provide more description that would lead to a deeper analysis of the themes found from the study. The researcher compared the participant responses on the survey with the interview data to assess alignment between responses regarding experience and perceptions of co-teaching.

Data Analysis

Due to the nature of the research questions and the research methods that were used, the different sets of data were analyzed through using a qualitative design and a triangulation of sources (see *Table 3.1*). Patton (1999) reports that triangulating the varying data sources within the same method can help the researcher analyze a phenomenon at different points in time and compare the perspectives of different participants in the study to produce greater understanding about the phenomenon. In this study, through triangulating the data from the initial surveys and all of the participant interviews from the five school sites, the researcher gained a deeper understanding of the experiences that come with instructional coaching and co-teaching and was able to complete a comparative data analysis (see *Figure 3.1).*

Table 3.1
Research Questions and Data Collection Crosswalk

Research Question	Methods	Data
What experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers?	Surveys Interviews	Survey Data Interview data
How does the relationship between an instructional coach and an elementary classroom teacher change over time through co-teaching interactions?	Surveys Interviews	Survey Data Interview data
What issues result from a co-teaching relationship between an instructional coach and an elementary classroom teacher?	Surveys Interviews	Survey Data Interview data
With respect to mathematics instruction, how do the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship?	Surveys Interviews	Survey Data Interview data
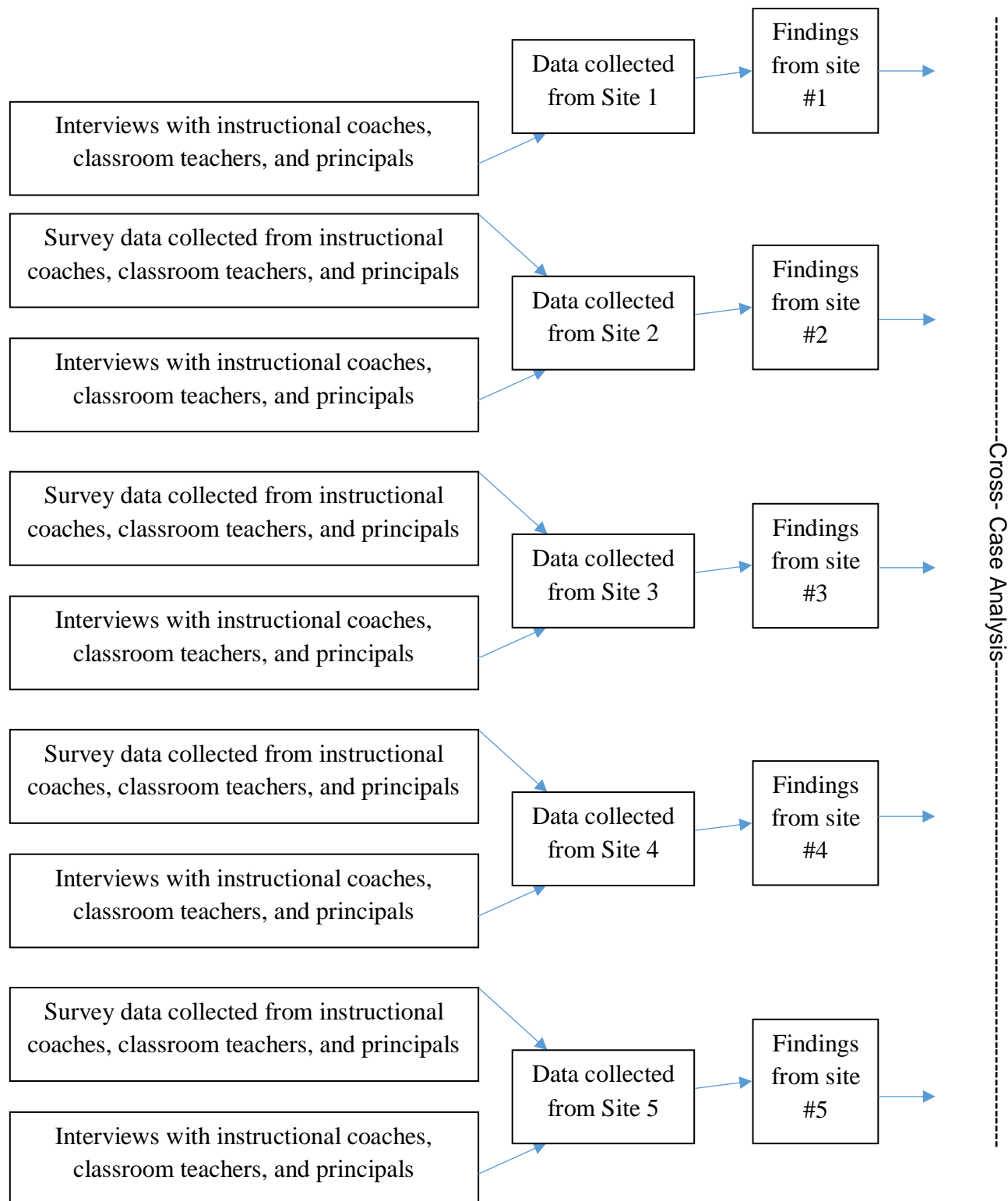
Figure 3.1. A triangulation of data to inform results for each school site. After data is collected from each school site, a comparative case analysis will be completed to discover findings.

To assist with answering the research questions and the triangulation of sources, thematic analysis was utilized. Braun and Clarke (2006) recommend using thematic analysis because it can be used flexibly across different locations and across different sources, yet it also provides thick detail as it recounts the experiences of the participants. Thematic analysis was also used to help the researcher search for common themes and patterns across the data that can be reported in the findings (see Figure 3.1).

Open coding was utilized during the first phase of the analysis process. Codes were derived from inductive and deductive topics, which came from the literature review. For example, the literature review highlighted the importance of collaboration and communication between co-teachers. In regards to instructional coaching, the importance of the principal's support and the many administrative duties of the instructional coach have been stressed in the literature. These were codes that were also found when instructional coaching and co-teaching intersected, which were important to the analysis. Inductive codes also emerged from the data, which included the shared ownership of students and the complexity of facilitating co-teaching when space, noise, time, and materials have to be considered.

MAXQDA 2018 software was utilized to import, organize, and code the data from the interviews in the study. Data was color-coded to correlate with the four research questions, and subcodes were generated through the open coding process. Core themes were disaggregated during the qualitative data analysis through the process of axial coding. Through looking at the same codes across all five cases, the researcher was able to find common themes within each case and across the five cases, which helped with the comparative cross case analysis. The researcher grouped codes based on how they interconnected with one another and how they were related to establishing and maintaining the co-teaching relationship. A codebook was developed

with codes, definitions, and examples. In the results, diagrams of the codes and the subcodes are displayed to reflect the frequency of the codes found in the data.

Role of the Researcher

According to Brink (1993), the researcher can be a risk to validity and reliability in a qualitative study. He suggests that the presence of a researcher may cause participants to distort or withhold particular information, depending on who the researcher is in relation to the participants, how the researcher looks at the time of data collection, and how comfortable the participant is with the researcher. The researcher of this study is a Caucasian female who was a parent of a student in the school district at the time of the study. The researcher worked in the school district for a number of years prior to the study in a leadership position, and many of the participants knew the researcher prior to the study. Although the researcher was trusted by the participants, this aspect could have impacted how the participants responded to questions during the interviews and on the surveys. Some of the participants may have wanted to make the situation seem better or worse than it really was, or the participants may have tried to please the researcher by responding in ways that they believed were expected (Brink, 1993).

Currently, the lens of the researcher is as an instructional coach in another district in the area. The researcher is familiar with instructional coaching and working with teachers as the instructional coach of a school. Due to the positive working relationship that the researcher had previously with many of the participants, it is possible that the participants used the opportunity to participate as a means to express their own personal concerns about instructional coaching and co-teaching with hope that district leaders or principals may hear about the study and that the model at their schools may be improved.

Throughout the interviews with the various participants, the participants demonstrated reflection about their co-teaching model, which they may not have been cognizant of otherwise. Over time, relationships improved, but a factor in their improvement could have been the act of reflecting on their instructional coaching and co-teaching practices at their school. Utilizing questions for reflection for all personnel involved with instructional coaching and co-teaching may be an effective practice for implementation improvement and for collaborative ideas for improvement.

Researcher Bias

It is clear that researcher bias also needs to be considered. Researchers have their own personal biases and perspectives which need to be taken into account (Brink, 1993). The way in which the research questions are asked and the lens through which the data is interpreted is based on the researcher's perspectives and assumptions (Creswell, 1998). Hence, asking different researchers to code and interpret the same data would likely result in differences in coding and analysis between the researchers (Armstrong et al., 1997). This study incorporated pre-coding and open coding, so there would likely have been differences in interpretation if inter-rater reliability had been utilized.

The researcher took the advice of Brink (1993) and did the following to increase the validity of responses in each school setting: (1) spent time vising the research sites regularly over a four-month period to build a trusting relationship, (2) test-retested the same participants on the same information across three interviews, (3) made sure that the participants clearly understood the nature and purpose of the research before starting the interviews with them, and (4) compared the interviews and surveys within each school site to triangulate the data. As Brink (1993)

recommends, the researcher has openly considered the biases that could have impacted this study, and the researcher's connections to this study have been openly discussed.

Limitations

This study provides a general account of the experiences that can result from a co-teaching relationship between instructional coaches and classroom teachers. The details included in this study add to the literature on both instructional coaching and co-teaching, for it confirms what much of the literature says, and it provides a model for instructional coaching that can be utilized in schools to benefit both teachers and students. The methodology of this study allowed time and cause for participants to reflect on their practices and relationships, which may have not been an opportunity for all participants if this study had not taken place.

However, there were several limitations to this study. The study is limited to five elementary schools in a district over a four-month time frame. As the instructional coaches, teachers, and principals work through and learn through the process of instructional coaching and co-teaching with more and more experience, it is likely that processes will become more refined and efficient, which the timeline of this study did not allow. Since the study took place in a rural school district, the results may not be applicable to larger schools or urban school districts. Furthermore, because the school district utilized instructional coaching with co-teaching as an instructional model in all of the elementary schools, most of the principals, teachers, and instructional coaches had been involved in some type of co-teaching training. The study would likely have looked quite different if co-teaching training had not been offered to some of the schools. In addition, observations of instructional coaching and co-teaching taking place were not included in this study. These factors should be considered if school leaders are interested in pursuing a similar model for their district.

CHAPTER 4

RESULTS

This chapter includes the analysis and presentation of qualitative data from this study. It is organized into six sections: (1) a description of the purpose of the study, (2) a description of the methodological approach, (3) a description of the conceptual framework utilized, (4) a description of the sample, (5) a presentation of the within-case analysis for each case, and (6) a presentation of the results of the cross-case analysis.

Purpose of the Study

The purpose of this study was to illustrate what experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers, focusing on the teaching and learning of mathematics. Through utilizing a qualitative design, instructional coaching with co-teaching was understood in authentic contexts, and the participants were able to provide descriptive detail about how these two concepts intersect and interrelate in their respective settings. This was a holistic multiple-case study, where five elementary school sites within a district were the focus.

Methodological Approach

The researcher conducted a qualitative holistic multiple-case study of five schools within a rural school district in the eastern United States. According to Creswell (1998), features of a case study include having a definitive time frame and site for the study, as well as multiple data sources to provide a detailed and holistic picture of the context and situation being studied. This

study took place over a ten-month period of time, from March 2017 to December 2017, and the data includes schools which were in their first or second year of implementing instructional coaching with co-teaching. In regards to the use of multiple sources, each participant completed a survey and had three interviews over a period of 3-4 months. Surveys were used to collect the initial data, for it included demographic information and general information about perceptions in regards to instructional coaching and co-teaching (see Appendix A). After the initial survey, each participant was interviewed three times, about once every four to five weeks, over the course of a three-month period (See Appendix B). Additional questions were added during interviews to gain more details about situations or events.

Conceptual Framework

During the course of this study, the co-teaching relationship between instructional coaches and the classroom teachers at their schools was analyzed using a *situated learning* lens, which Lave and Wenger (1991) have regarded as *legitimate peripheral participation (LPP)*. Within this view of learning, Lave and Wenger (1991) stress that newcomers, or apprentices, participate with practitioners in the community, and learning is an integral component of this participation. Hence, social co-participation is necessary within the contexts for learning to result. These authors posit that learning takes place when one person who is less skilled than the other is able to participate within the context of the other's expert performance. Learning is mediated by the varying points of view of the co-participants; therefore, it is distributed among all of the participants to benefit the context in some way. However, the relationship and interactions between a master and an apprentice create opportunities for both of them to learn and change through the co-learning process because experience and understanding are constantly evolving.

Within the context of this study, the instructional coach's role was to work towards improving the instructional practices of teachers, just as a mentor, expert in the field, or as a master to an apprentice. Due to the nature of the instructional coach planning with the teacher and co-teaching within the same environment as the classroom teacher, the classroom teacher, regardless of the amount of his or her experience, is like an apprentice, working towards improving his or her instructional practices with intent. Using an LPP lens, the co-teaching relationship between the instructional coach and the classroom teacher should change over time, through their interactions and discussions to reach the common goal of impacting student learning. With this conceptual framework in mind, the research questions focused on the experiences that result from co-teaching, how the relationship between the instructional coach and the teachers changed over time due to co-teaching together, and how they resolved issues to reach a common goal.

Research Questions

With a qualitative design, this holistic multiple-case study focused on the following questions:

(1) What experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers?

(2) How does the relationship between an instructional coach and an elementary classroom teacher change over time through co-teaching interactions?

(3) What issues result from a co-teaching relationship between an instructional coach and an elementary classroom teacher?

(4) With respect to mathematics instruction, how do the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship?

Description of the Sample

The context of this study is a rural school district in the eastern United States where the instructional coaches regularly co-teach with teachers. In this district of around 13,000 students and 15 elementary schools, co-teaching is used as a model to serve all students, including the academically and intellectually gifted students, within the district. At the time of the study, the district was in its first two years of implementation of this model. All of the instructional coaches and most of the principals and teachers participating in the study had experienced formal co-teaching training at the district level. Data was collected from two schools during the second semester of the school year, and data was collected from three schools during the first semester of the second year. All of the data was collected within a ten-month time frame, between March 2017 and December 2017.

Five elementary schools within the district participated in this collective case study, and each school receives Title I federal funding. Participants of the study included five principals, five instructional coaches, and two classroom teachers from each school (see *Tables 4.1* and *4.2*). The principals, instructional coaches, and teachers varied in their experience with their current role and time that they had worked in the current school (see *Table 4.3*). Each school in this study has been assigned a pseudonym and is described by the school's population, demographic information, and student achievement data (see *Table 4.4*).

Table 4.1

Principal and Instructional Coach Participants

Participants	School	Years as an Educator	Years at Current School in Current Role
Principal	Albatross	12	1
Instructional Coach	Albatross	21	1
Principal	Brant	20	2
Instructional Coach	Brant	23	8
Principal	Calliope	15	1
Instructional Coach	Calliope	11	4
Principal	Dunlin	20	2
Instructional Coach	Dunlin	18	7
Principal	Eastern Towhee	9	1
Instructional Coach	Eastern Towhee	18	2

Table 4.2
Teacher Participants

Participants	School	Grade Level Taught	Years as an Educator	Years at Current School in Current Role
Teacher A	Albatross	5th	1	1
Teacher B	Albatross	3rd	8	4
Teacher A	Brant	4th	15	6
Teacher B	Brant	4th	12	12
Teacher A	Calliope	4th	28	7
Teacher B	Calliope	5th	10	10
Teacher A	Dunlin	4th	10	10
Teacher B	Dunlin	5th	16	13
Teacher A	Eastern Towhee	5th	15	3
Teacher B	Eastern Towhee	4th	26	15

Table 4.3
Experience Levels of Participants as an Educator and In Current Role

Role	Years as an Educator	Years at Current School in Current Role
Principals	9-20	1-3
Instructional Coaches	11-23	1-8
Classroom Teachers	1-28	1-15

Table 4.4
School Information

School	Population	Grades Served	Average Class Size	Percent Proficient in Reading (2017)	Percent Proficient in Mathematics (2017)
Albatross	417	PK-5	21	41	44
Brant	469	PK-5	22	55	70
Calliope	291	PK-5	20	55	65
Dunlin	419	K-5	21	63	72
Eastern Towhee	473	PK-5	25	54	48

About Albatross Elementary School

Albatross Elementary School has a diverse population of 417 students and serves students in pre-kindergarten through fifth grade. The demographics of the population are 56% African American, 22% Caucasian, 11% Hispanic, 9% two or more races, and 2% Asian. The average class size in the third through fifth grade classrooms is 21, and the school includes 26 classroom teachers. All of the teachers are certified to teach their respective grade levels. In regards to the academic achievement of students, in the 2016-2017 school year, 41% of the students in grades 3-5 were reported as being proficient in reading and 44% of the students were reported as being proficient in mathematics at those grade levels.

About the participants.

At the time of the study, Albatross Elementary School was in its first year of implementation with instructional coaching and co-teaching. Although the instructional coach had over 21 years of experience as an educator, this was her first year as an instructional coach and her first year working at Albatross Elementary. She reported adequate training and some experience with co-teaching before this school year started. In addition, one third grade teacher

and one fifth grade teacher participated in the study. The third-grade teacher had eight years of experience as an educator, and she had taught at this school for four years. She reported a high level of experience with co-teaching because she had been a special educator before being a classroom teacher, and she had training at the university, as well as experience with co-teaching in the past. On the other hand, the fifth-grade teacher was a first-year teacher, and she reported that she had no prior experience or training with co-teaching. The principal at Albatross Elementary had been an educator for 12 years, and she had worked at Albatross for three years as an administrator. It was her first year as a principal at Albatross at the time of the study, and she participated in co-teaching training with the other administrators in the district prior to and during the start of implementation. The principal at Albatross expressed support for the co-teaching model and communicated how beneficial it would be for all of her teachers to have some experience with it. However, being a first-year principal at a school with a first-year instructional coach, the principal acknowledged that she was learning how to utilize the coach to benefit the learning of teachers, as well as the students. When pairing up the instructional coach with teachers for co-teaching, she considered what teachers would be interested and receptive to the idea of co-teaching.

Planning for co-teaching.

At Albatross, there were varied times when the instructional coach would meet with the classroom teachers for planning. The teachers regularly met with the instructional coach during their professional learning community weekly for 45 minutes to discuss student data and progress and create common grade-level assessments. However, most planning for co-teaching was done via email or meeting informally for short periods of time, such as in the hallway or before or after school. The teachers also were supplied with two extended planning sessions

annually, where they have the opportunity to work with the instructional coach for an extended period of time to create common assessments, plan for co-teaching, and/or determine pacing of teaching the standards.

Co-teaching models utilized.

Time spent co-teaching varied, depending on the schedule of the week. At the time of the study, the instructional coach was able to consistently co-teach with the third-grade teacher for 45 minutes a week, and they were able to keep with that schedule most weeks. The most common model of co-teaching used was station teaching, where the instructional coach and the classroom teacher both worked with small groups of students at the same time when another group worked independently at their seats. The groups rotated around to each station, which were based on the needs of the students, so both of the co-teachers had time to interact with all of the students. Station teaching was utilized in both the third and the fifth-grade classrooms. The instructional coach also utilized alternative teaching each week, where students were pulled out of classrooms in small groups for instruction on their level. In addition, team teaching was utilized some, but it did not occur as frequently. Due to it being the instructional coach's first year coaching and an educator at this school, the instructional coach attempted to get to know other teachers and the students in the building through utilizing the one-teach, one-observe and the one-teach, one-assist models of co-teaching.

Within Case Analysis for Albatross Elementary School

Experiences that result from co-teaching.

Theme 1: Collaboration to impact student achievement.

Collaboration to impact student achievement was one theme found in the experiences that result from co-teaching. Due to co-teaching, the instructional coach was able to get to know the

students and their academic needs, so their collaborative discussions reflected that. The

instructional coach and the teachers regularly reviewed how students were performing and

discussed how they could differentiate the students' work based on the data. During their

professional learning community time, they created groups of students based on pretest results

and student needs, but conversations were extended because of the opportunity to co-teach. The

fifth-grade teacher explained how she and the instructional coach collaborate to impact student

achievement.

> Ms. (instructional coach) and I planned intervention groups based on student needs. We collaborated … to determine the need for each group of students. We put together our groups and then worked on different skills in the classroom. When we planned, she kind of planned lessons to target the areas that she was working on with her students for. I think it was fractions. I planned different activities for mine, and we just talked about how things went after a lesson.

This sentiment was supported by the third-grade teacher, who said,

> If I am teaching a group and she is teaching a group, then afterward, we will talk about it, and she might say that 'this child was struggling here'. Or 'I noticed that this group struggled with this' and 'I noticed that they were strong here in this area'.

The principal added how this collaboration can positively impact student achievement.

> It gives us a person that is able to focus solely on the instructional piece. Developing teachers' pedagogy and methodologies is so important. I feel that, in an environment like ours, where students don't all learn the same way, we really have to meet them where they are. So, providing teachers with constant development, professional development, so they're able to meet their students' needs, is so important.

Theme 2: Professional Learning for Instructional Coach and Teachers.

Another theme found was the professional learning that both the instructional coach and

the teachers had from the opportunity to co-teach. Through co-teaching together, both the

instructional coach and the teachers were able to see different pedagogical strategies in action

from each other. The principal at Albatross discussed the increased effectiveness of the

instructional coach because of co-teaching and the expertise of the instructional coach had with

meeting the needs of advanced students.

> I think it's much more effective because I feel like all students' learning needs are
> being met. The instructional coach comes with a different perspective of the content.
> They are able to address students that are definitely on a higher level because she does
> incorporate more various learning styles into her instructional practices. I feel like she's
> able to appeal to those students, but also through kinesthetic movements and that kind of
> things. She's able to get to all students, so I think the opportunity to be able to rotate
> through all of those groups with both teachers is a great experience for students.

The instructional coach supported the principal by sharing how she has, through bringing in a

different perspective, helped teachers understand research-based practices in mathematics.

> I think, for some teachers who may not be as well-versed in Common Core, their
> practices may teach shortcuts. So it is redirecting them to using Common Core, other
> modes of thinking rather than traditional algorithms…I have seen that practice improve.

The sharing of resources and instructional strategies between the classroom teachers and the

instructional coach was common. The fifth-grade teacher stated,

> I have a hard time. I am a first-year teacher, and sometimes I have a hard time
> finding other resources from what I've used in the past or what I've heard from other
> people. I am open to any and all resources all of the time, so it is very helpful that she has
> been teaching for so long and knows so much. She showed me, like with triangles. We
> were working on like scaling up obtuse and equilateral and all those kinds of triangles, so
> she showed me some different ways to teach the kids, even like little things like making
> the "E" with all three fingers so they can see that they are all lined up, so…just small
> things like that. Ideas she has off of her brain from the years are very helpful.

The third-grade teacher supported what the fifth-grade teacher said and emphasized the learning

by both the IC and the teacher by saying,

> I always learn from her ideas and resources that she provides. She might send an
> email with a packet of resources or some ideas that she's tried before. I think anytime
> you co-teach together, you can learn someone else's teaching style, activities that they are
> using to teach the skill. There are opportunities to learn from each other, methods and
> teaching styles.

The instructional coach expressed how much she learned from the teachers about their

expectations with students, especially referring to grade levels in which she had the least amount

of experience. In referring to the primary grades, the instructional coach said,

> In the younger grades, which is a fun area for me, because I've only taught upper
> grades, I think just understanding expectations with students, integrating Common Core
> with the areas with the usage of manipulatives and modeling work. It is something that is
> new to me. So, of course, you know, in the very beginning, in second-grade and in
> kindergarten, it's been one teach, one assist so that I can kind of get an idea and a feel for
> that grade level. I think this year, I would probably say that was the most helpful, just to
> get immersed into the grade level and understand the students and their capabilities. I
> think it's been helpful for me to kind of understand capabilities of students in K-2 for co-
> teaching.

The instructional coach also discussed what she learned about teaching diverse learning from co-

teaching in the upper grades classrooms. She stated,

> I go in her room once a week for math. It's not limited, of course, just to math or
> just to reading, but I'm able to learn a little more about how she's able to handle the wide
> spectrum of learning differences that she has in her room. She has EC and she has up to
> 99th percentile on the CogAT test, so…learning different techniques that she may be
> using to reach a diversified group…areas that I may struggle in math to come up with
> some fun, interesting, neat ideas. Through collaboration, we're able to come up with
> things that help students learn, and they don't even know that they're really learning.

The third-grade teacher confirmed this by saying,

> I think it is a good opportunity for her to be in the classroom and to see, even
> though I know she has been a classroom teacher before. It kinda gives her an opportunity
> to work on small groups with my students, to see where they are, and on a different level
> than just looking at data, which is invaluable, but also, working with the students is
> invaluable. It gives you a different perspective. It gives you the best of both worlds
> because she is able to see them and get to know them and see it in action- see their
> thinking in action when they are explaining to her, 'why did you do that', 'explain your
> thinking', and she sees that. She's working with her groups, so I think it's been a good
> learning experience for both of us.

The instructional coach and the teachers also learned more about the students that they taught

through co-teaching. The third-grade teacher shared,

I think I've learned a little more information about my students through co-teaching. Also, it provides me more time to work with them in small groups, so it has helped me learn more about my students.

Relationship changes.

Theme 1: More trust over time.

At the time of the study, it was the instructional coach's first year working at Albatross Elementary. According to the participants, they had a good relationship with each other from the beginning. However, due to co-teaching, it was found that teachers gained more trust in the instructional coach over time. Their comfort level with one another increased due to the amount of time they spent together planning, analyzing data, and collaborating about students, which helped to align the teaching strategies of the teacher and the instructional coach in the classroom. The principal at Albatross stated,

> I think the teachers are more willing to have her come in and co-teach with them, especially since they've had the co-teaching training at the beginning of the school year. It's become part of our culture here, so she's working with more teachers, for sure, in that capacity. But she is also, of course, planning with them. The interactions seem to be more fluid between the two because they're able to bounce from one to the other with the presentation of the material.

Evidence of relationship changes were found in the additional time the IC and teachers were spending with each other outside of co-teaching and co-planning for the co-teaching lesson(s). The instructional coach supported the principal's response and provided evidence of the relationship changes by stating,

> With the one teacher I have been co-teaching with the majority of the year, she and I have been developing a bit closer relationship with sharing more resources and not just the one day a week that I am able to come to her room. We're discussing other things that can be done in the classroom, and she, in turn, may offer suggestions, so we come up with things together. The newer teacher that I am working with co-teaching- She and I have reached more outside of the one day a week I normally plan with them. We are able to email. I'll come up with something. She says 'can I use that in my room instead of you using it when you come on Friday'. So, we're bouncing ideas and coming up with different things, you know, learning what works and what doesn't work.

The fifth-grade classroom teacher supported the instructional coach's statement by making this

statement at the last interview.

> I feel more comfortable talking to her. I'm asking her about things just because
> I've gotten to know her. I don't think there was any kind of problem, though. I think it's
> always been great. She's always been someone I feel like I can go to for any questions or
> anything like that.

The third-grade classroom teacher explained more about how and why the relationship was

strengthened between her and the instructional coach.

> I think that, when you're co-teaching with someone, you do develop more of a
> relationship because you get to see them in a different setting, and you are allowed to see
> them in their teaching style and their teaching practices, so you get to know them better,
> and you get to learn more from them on a practical level than you would without co-
> teaching together.

Theme 2: Partnership.

Also, over time, the relationship between the instructional coach and the co-teachers

became more of a partnership. This was found to be attributed to the shared ownership of

students that the instructional coach and the teachers co-taught. The instructional coach took the

teachers lead in what needed to be done with the students and provided ideas and resources along

the way. Due to the shared ownership of student learning, the teachers were able to meet more

student needs than what they would have been able to do alone, which made teaching time more

efficient for the teachers. The instructional coach spoke about how she and the classroom

teachers had a partnership.

> We both have a type of ownership and commonality that they are not just her
> students, but they are our students both. We both have invested interest in how they
> performed. During weekly meetings, all data is reviewed, and I am particularly wanting
> to look to see how the students I may have worked with performed on certain tasks.

The fifth-grade classroom teacher supported this sentiment of the instructional coach by saying,

> She came in and helped me pull two students at a time, so she had two students
> and I had two students. We just went over the review questions with the students on

which ones they were struggling with. It was very helpful, because the rest of the week, I
had done it on my own. It is very helpful to have her helping also.

The third-grade classroom teacher expressed how this partnership has benefited her and her
students.

I think it just provides the greater level of teaching for the students. We are able to meet
with the students in small groups, so they are able to work with each other and collaborate
more. They are able to receive instruction based on their individual or that group's needs. It is
easier to differentiate for the teacher, as well as to provide students with the instruction they need
it. It helps the whole class because everyone is getting differentiated instruction based on their
needs and with the instructional coach and I, I think it is good for us because it also encourages
us to collaborate. Even after the groups, usually we'll see each other, even if it's just for 5 or 10
minutes. We can kind of provide feedback to each other for just a shorter or informal kind of
conversation. But it kind of helps guide instruction for the next day or guide instruction for the
next time we collaborate and do small groups together. So I think it's wonderful for the children
because they are getting the instruction they need on their level, and also it helps me because I
get someone else's perspective.

Issues that result from co-teaching.

At the time of this study, Albatross Elementary was in its first year of implementation

with instructional coaching and co-teaching. As mentioned previously, station teaching was

utilized frequently to meet the needs of students with co-teaching, and the instructional coach

and classroom teachers dealt with logistical issues of: (1) scheduling co-teaching, (2) having time

to plan with each other, and (3) figuring out how to work the dynamics of the classroom,

including classroom management, during co-teaching. Each of these issues are illustrated

through the responses of the instructional coach and the classroom teachers.

Scheduling co-teaching.

The instructional coach had the role of working with all of the teachers in the school in

professional learning communities at least once a week, and she also had a regular schedule of

working with advanced students at various grade levels in small groups. In addition, she had

other instructional coaching duties, including attending meetings or trainings, and some things

disrupted her regular schedule for the week. However, she did try to set up a schedule so that co-

teaching could be implemented regularly across several grade levels to align with the goals of the

principal and the district leaders. The day that the instructional coach was scheduled to co-teach

with one teacher was on a Friday, and co-teaching did not go as planned. The instructional coach

said,

> Timing of course is always a factor because the time period that I was put in her classroom was on a Friday. A lot of times they were doing tests, such as the posttest for our data wall just to ensure student mastery, so there have been times that it hasn't gone according to plan.

The fifth-grade classroom teacher concurred, saying,

> Our schedules have just not aligned, or we were testing, or she was on a field trip, things like that.

The fifth-grade teacher expressed the issue that can arise with students when one of the co-

teachers is not able to keep to the schedule, but she also made it clear that the issue was worked

out for the next time co-teaching was going to be implemented in the classroom.

> She came a little bit late, but she kept them a little bit later, which worked out fine. It wasn't really a problem; the time was just off a little bit. It was the first time, and the kids were scattered everywhere because they didn't know. It was going to be the first time they were going to be split up to be with someone else and not just me. So, I think they'll know now…

The duties of the instructional coach often interfered with her ability to implement a

consistent co-teaching schedule in classrooms. These duties were stemming from both school

and district responsibilities, such as attending meetings and leading professional learning

communities in the school for every grade level. Although the fifth-grade teacher, who was a

first-year teacher at the time of the study, expressed acceptance of the changes that could arise in

the instructional coach's schedule, it was also apparent that the changes in her schedule caused

her some frustration and stress. The fifth-grade teacher communicated respect and admiration for

the instructional coach, but she did not offer to change her testing days to accommodate the co-

teaching arrangement. The instructional coach did not discuss any plans to make modifications to her schedule, which may either indicate her lack of interest in co-teaching or her acceptance of the situation as it was. Neither the instructional coach nor the fifth-grade teacher indicated that this problem could be resolved, which reflects a disconnect between how the principal was envisioning co-teaching to be implemented and how it was actually being implemented.

Having time to plan with each other.

Another issue that was of concern was finding the time to collaborate with the instructional coach's tight schedule. Participant surveys reported the various ways that the instructional coach communicated with the classroom teachers: email, conversations before and after school, short conversations in the hallway. The third-grade teacher commented,

> I think just that piece of finding time to collaborate is sometimes a challenge. We have to think about creative ways, even if it is email conversations rather than in face-to-face conversations. I think that is the challenging piece, but there are ways that you can do it without having to sit down face-to-face.

Although the third-grade teacher actively worked to remain positive during the interviews, it was clear that finding time to plan with the instructional coach was difficult, and it caused the teacher additional stress. While the third-grade teacher had planning time, the instructional coach was scheduled to teach in other grade-level classrooms. Hence, the instructional coach's schedule was further not conducive for having the planning time that was needed with the classroom teachers with whom she taught. This problem could possibly have been solved at the school level, if the principal knew of the teachers' and the instructional coach's concerns about planning. However, there was no indication that the principal knew of any issues, which may be due to the co-teachers' acceptance of this situation and/or their fear or apprehension of expressing concern to the administration.

Figuring out the dynamics of the classroom.

The last issue that surfaced for the instructional coach and the teachers during the study at

Albatross Elementary was the instructional coach figuring out how to work the dynamics of the

classroom, including classroom management, during co-teaching. Being new to the school and

new to instructional coaching, collaboration had to take place so that the instructional coach and

the teacher could work out issues of having insufficient space and supplies for station teaching.

The instructional coach said,

> We were working on mass, and you know you can have hands-on interaction with having the balance and the scale. But when you have such a small room, that is one of the downfalls of station teaching in the classroom. In the classrooms that I work with, there's only so much room, and so you have this little bitty table, and you have seven students, and realistically they can't have their Chromebooks. They barely have room for their papers, so you really can't have scales and balances.

The instructional coach had an idea of how to solve this problem, but then she brought out the

problem of classroom management.

> They don't have enough tables. She has a small circular table. I thought about bringing in a larger table. That is an easy fix in the whole spectrum of things- to swap out tables. But too, students are so close that they are easily distracted…

Classroom management became easier for the instructional coach the more she interacted with

students in the classroom and observed how the classroom teachers dealt with student behaviors

during co-teaching. She tried to follow the teacher's lead as much as possible out of respect for

the teacher and consistency for the students. The instructional coach discussed the issue of not

knowing students very well when co-teaching was first being implemented.

> I think it's going into her room where you have to make sure you know the behavior management that goes on-students with lots of different varied abilities. We have students who may have learning differences that I may not have acquired knowledge about and I may not know the appropriate way to handle students. You just use your innate ability as an educator to work with students. So, I think that is the biggest challenge. You don't want to step on any toes of how you should do things and not do things. I am often being accused of being too lenient, not being too tough.

Being the instructional coach's first year of coaching, it was clear that she was learning her role and trying to build a positive working relationship with the teachers. Her lack of experience in the role could have contributed to her sense of insecurity with her role. Although she had communicated that she had received co-teaching training, she may have needed additional training from the district to sharpen her confidence and leadership skills in her new role. Having greater confidence and a sense of leadership may have prompted the instructional coach to take her concerns, including her concerns about her schedule, to her principal earlier in the school year, especially if she had thought of a potential solution.

Resolving issues.

The issues that were brought out during the interviews with the participants included: scheduling co-teaching, having enough time to plan, and the instructional coach figuring out classroom dynamics so that consistency could remain in the classroom during co-teaching. All of the participants expressed how well the instructional coach and the classroom teachers collaborated.

Communication and collaboration between the instructional coach and the teachers.

All issues that were surfaced were resolved through communication and collaboration between the instructional coach and the teachers, with an understanding of each other's position. The teachers knew that the instructional coach had many other duties, and the instructional coach knew that the teachers had busy and tight schedules, too. Therefore, the few issues that were evident were discussed and worked out quickly. When asked about how they have resolved the issue of planning, the third-grade teacher stated,

> By email. We may meet to do a meeting after school or to plan or we communicate through email or create plans through Google docs so that we have communication and a positive relationship.

When the instructional coach was explaining how she and the third-grade teacher collaboratively

worked through setting up the classroom better for co-teaching, the instructional coach said,

> We are coming up with different things. She has a bigger table, so she's doing
> more of the hands-on interaction and then she's able to give ideas to how we could come
> up with other things with the limited space that we have…so we thought about
> rearranging the room just a little bit, just to allow a little more space for station teaching
> opportunities.

The third-grade teacher echoed the collaboration that had been occurring between her and the

instructional coach over a period of time in an effort to benefit the students and their learning.

The third-grade teacher said,

> I think we have kind of changed the way we rotated groups. From the beginning,
> we were planning to meet with four groups. I had four groups. So we tried that. Every
> group would go to her, and every group would come to me. We may have only done that
> once or twice. Because of time, we decided to work with two groups each, and that's what
> we did the majority of the time. She would work with two groups and I would work with
> two groups. As the year progressed, she worked with the higher two, and I worked with
> the lower two. As we saw the need for more differentiated instruction, more support for
> students, we changed to three groups. She works with the high group and the middle
> group, and I work with the low group and the middle group. That way, the middle group
> is seen twice. They have more support. The groups are slightly bigger, but they still are
> able to receive instruction in a small group instruction. In that way, the middle group gets
> extra instruction. This was changed to improve it a little bit.

The instructional coach discussed how she and the fifth-grade teacher resolved the issue of

classroom management.

> We usually talk afterwards. We just reflect 'how do you think things went today?'
> I would think that the class did a pretty good job, and the teachers would say that they
> didn't do their best. She would say 'I am sorry that they didn't do what they should've
> done for you.' I think they're more critical of their students, but making sure that they
> are being on their best behavior. Sometimes we're a little too hard on ourselves. We have
> high expectations of our students, so when the students don't quite perform to our
> expectations, we, of course, immediately apologize. So the next time we co-taught, we
> had talked about different things that we would set in place to make sure, and the
> subsequent lesson went a lot better.

During the last interview, the fifth-grade teacher concurred what the instructional coach had said about being more aligned with the classroom expectations. The instructional coach was co-teaching in her classroom when there were behavior issues. The fifth-grade teacher said,

> A few of my students have some behavior issues, so it was nice because Ms. (instructional coach) was able to be in there with me when I was working with a student. I didn't have to look up and deal with the behavior. She was right there dealing with that behavior. It was nice to have like "double-team" in the classroom, definitely…She had been in a few other times before, so we had talked. She knew what my expectations were and what students are expected to do and things like that so we are on the same page, for sure.

In their first year of implementing instructional coaching and co-teaching, the instructional coach and teachers at Albatross Elementary School collaborated with one another frequently and were all open to sharing resources and trying out new ideas in the classroom. It was a learning year for all involved, but the collaboration and shared ownership of student success increased the trust between participants over time.

About Brant Elementary School

Brant Elementary School has a population of 469 students and serves students in pre-kindergarten through fifth grade. The demographics of the population are 3.8% African American, 67.8% Caucasian, 23% Hispanic, 4% two or more races, and less than 2% of the students are of other races. The average class size in the third through fifth grade classrooms is 22, and the school includes 27 classroom teachers. All of the teachers are certified to teach their respective grade levels. In regards to the academic achievement of students, in the 2016-2017 school year, 55% of the students in grades 3-5 were reported as being proficient in reading and 70% of the students were reported as being proficient in mathematics at those grade levels.

About the participants.

At the time of the study, Brant Elementary School was in its first year of implementation with instructional coaching and co-teaching. The instructional coach had 23 years of experience as an educator, and she had been working as an instructional coach at Brant Elementary for 8 years. She reported adequate training and some experience with co-teaching before this school year started. In addition, two fourth grade teachers participated in the study. One fourth-grade teacher, referred to as Teacher A in this paper, had 15 years of experience as an educator, and she had taught at this school for six years. Teacher A reported an adequate level of training by the instructional coach on the co-teaching models, and expressed that a variety of the models had been utilized since the beginning of the school year. On the other hand, the other fourth-grade teacher, referred to as Teacher B in this paper, reported that she had no prior training with co-teaching. Teacher B had been an educator for 12 years, and she had taught at this school for 12 years. The principal at Brant Elementary had been an educator for 20 years, and he had worked at Brant for two years as a principal. He participated in the co-teaching training with the other administrators in the district prior to and during the start of implementation. The principal at Brant greatly supported the co-teaching model and also expressed how beneficial it would be for all of his teachers to have some experience with it. When pairing up the instructional coach with teachers for co-teaching, he considered what teachers had prior experience with co-teaching in the past, who was receptive to it, and he looked at what grade levels could use some extra support in the area mathematics.

Planning for co-teaching.

At Brant, there were varied times when the instructional coach would meet with the classroom teachers for planning. The teachers regularly met with the instructional coach during

their professional learning community weekly for 45 minutes to discuss student data and progress and to create common grade-level assessments. The common assessments were used to inform what student learning needs needed to be addressed during small group instruction, when they implemented station teaching. Also, the teachers regularly posted their lesson plans via an online lesson planning platform for the school, planbook.com, so the instructional coach and teachers had access to lesson plans at all times. However, most planning for co-teaching was done via email or meeting informally for short periods of time, such as in the hallway or before or after school. During these times, the instructional coach and the teachers developed and shared activities with one another that addressed student needs to ensure that their instruction was aligned to the learning targets. They each planned for how their own groups would be assessed, but the instructional coach and the classroom teachers regularly shared information from these assessments with one another. The teachers also were supplied with two extended planning sessions annually, where they have the opportunity to work with the instructional coach for an extended period of time to create common assessments, plan for co-teaching, and/or determine pacing of teaching the standards.

Co-teaching models utilized.

Time spent co-teaching varied, depending on the schedule for the week. At the time of the study, the instructional coach was able to consistently co-teach with Teacher A for about 1.5 hours a week during mathematics instruction, and she was able to co-teach with Teacher B for about 2.5 hours a week during mathematics instruction. They were able to keep with that schedule most weeks. However, if the instructional coach was not available to co-teach, she still provided the teachers with activities and assignments that could be used in her absence. The most common models of co-teaching used were station teaching and parallel teaching, where the

instructional coach and the classroom teacher both worked with groups of students at the same time. The groups were based on the needs of the students, so both of the co-teachers had time to interact with all of the students through co-teaching. The instructional coach also utilized team teaching and alternative teaching at various times throughout the week with different teachers.

Within Case Analysis for Brant Elementary School

Experiences that result from co-teaching.

At the time of this study, Brant Elementary School was in its first year of implementation with instructional coaching and co-teaching. The instructional coach had worked at Brant Elementary School for a number of years and had already established a strong working relationship with the teachers before co-teaching became a part of the culture of the school. In this case study, there were three themes found in regards to the experiences that resulted from co-teaching. These themes are: (1) collaboration to impact student achievement, (2) engagement of students, and (3) learning experiences for the instructional coach and the teachers.

Theme 1: Collaboration to impact student achievement.

All participants indicated that there was collaboration which focused on improving student learning and achievement. There was a lot of collaboration around student progress and what various resources and strategies could be used to reach all of the students, including the advanced students. The instructional coach regularly helped teachers analyze their data from common assessments and create small groups for instruction, based on the data. The principal at Brant Elementary discussed how the instructional coach and teachers collaborated to share ideas with one another, for which he demonstrated support.

> Having more of an open perspective, I guess, in terms of sharing ideas with each other. I see them talking in the hallway, co-planning together on their lesson plans. They indicate to me when they're talking with each other. You know that they're going to be

doing a co-teaching lesson, so that's easy for me to spot, you know, when I'm completing my learning walks or walkthroughs throughout the day.

Teacher A elaborated on how she collaborates and then co-teaches with the instructional coach.

> …We plan together. We communicate, not just weekly. Sometimes it's every day, or every other day. I tell her what curriculum aspect we're focusing on at the time, and then I talk to her about her students in particular. 'Do they seem to be grasping that, or are they going above and beyond?' Then she will plan something that's enriching. She comes into my class where we are co-teaching. She has a group over to the side. I'll have different groups rotating through, and sometimes we'll be teaching at the same time also… so planning together and reporting to her what I'm seeing. There is a child in my class that I think at times needs to be with her group. We talk about that too.

The instructional coach reflected this open collaboration as she explained how she and one of the teachers plan together based on student needs.

> …she and I really discuss about what's going to happen. …with one teacher, the station teaching really is where we collaborate to determine what each of us will do in those stations, and she offers a lot of input in terms of what she has seen daily, which helps guide my ideas for the group that I serve…the groups are more flexible, and I'm often pulling in other students…

Teacher B explained how she and the instructional coach would meet briefly after the lessons to discuss student learning from an assessment and make plans for the next co-teaching opportunity. She said,

> With our math groups, she has an assessment that is targeted for the skill they were working on, and I have one with my group. Before she leaves, they are usually really quick, like a ticket out the door or something like that. She also takes notes authentically as they are working and so do I, so we can compare what they're doing and what group we need to work with the next day.

Teacher A discussed how the instructional coach brought in additional ideas and resources, beyond the activities that would meet the students' learning needs. Any resources that the instructional coach thought might be beneficial in some way were brought to the teachers for their acceptance before putting the resources into use.

> She had made this progress report to send home to let parents know how things are going. We sat down together and looked at the progress and it was like a rating scale. We talked about it, and she asked me how I felt about it. We both had some insight into

it. Before she even gave that out, she let us see a draft of it to see if we wanted to add anything or if we wanted to change anything about the language because the parents will be reading this and the students would be too.

Teacher B shared how she worked with the instructional coach to find out where the breakdown in student learning had taken place. Teacher B expressed how having the instructional coach in the room helped her meet the needs of students faster. She said,

It was something with multiplication. I couldn't figure out what the student was doing. We were working with multiplication, but it was all also part of the task involving prime and composite numbers. She was making very careless errors. I think the instructional coach pulled her and did a probe on prime and composite. That's where the issue was. It wasn't necessarily that she didn't understand multiplication. It was because the task also included prime and composite; that was the piece that she wasn't getting. Having that person be able to come in and pull her and do a probe on the side was something that I would've done, but it may have not been until the next day. There were other students who were struggling with that same thing. The next day we were able to form groups, so those kinds of things have been really helpful.

Theme 2: Engagement of students.

All participants indicated that there was also an increased engagement of students because of instructional coaching and co-teaching. The principal at Brant Elementary proudly described specific examples of what he was seeing in classrooms in regards to this. He shared,

I see the engagement. I see project-based learning that is taking place with the students…Students are making choices…They are engaged and they are smiling, and they are enthusiastic about learning. It's easy to walk in a classroom and spot one or two kids who are not engaged or who are staring off. Really, when these teachers are working together, and I am in that classroom, I don't see a lot of that…One of the examples that I can think of that they have been doing recently is the mystery boxes where they have these boxes and they are all locked. They have these clues that they have to solve, whether they are around math or reading clues. Whatever it is they are working with, they together work as a group. They are paired together as a group, and they have like three teams and were racing to see who can unlock those mystery boxes the fastest. And so, when you go into a classroom and you see those kids working together in collaborative groups and still learning and talking, having conversations about what to do next, that is the excitement piece for me.

The instructional coach was able to do some team teaching with the teachers, which required more planning but allowed the instructional coach an opportunity to model and encourage the

teachers to try new things in the classroom. Teacher B gave more detail about the significance of

co-teaching in engaging students. She said,

> I think that kids are definitely more engaged because another person is in the room. If she's teaching, and I'm going around the room facilitating the lesson with the kids, then they are just more engaged because there is actually someone coming around. I may be going around asking questions while she doing something in front, so I think student engagement has definitely increased, for sure.

Students were also more engaged in the mathematical ideas and concepts because they were able

to share their thinking and make sense of problems. The instructional coach discussed how co-

teaching was fostering the development of more engaging lessons. The instructional coach

explained how one of the teachers was changing some of her instructional practices, which was

engaging more students. The instructional coach commented,

> …she tends to like to lead students and provide algorithms and steps and procedures versus letting them generate those things and discover some things on their own. I see that she has made a shift there. She is handing more responsibility to students in terms of problem solving and sharing their thinking.

The instructional coach provided another example, which linked the increased student

engagement to co-teaching. She said,

> She would tend to take control over the number line and place the numbers and model for students where they would go, and now she's inviting students to do more of that and to make sense of numbers on a number line themselves. Those are little things, but things that I've noticed that I think are a result of co-teaching.

Teacher B supported what the instructional coach said, stating how the instructional coach brings

in research that highlights how to engage students in mathematical concepts. She said,

> We try to find games that hit specific needs of students because we have all kinds of data…We really looked at research and how important it is for kids to discuss what they're learning. They come up and develop a strategy instead of us saying this is how you do this problem.

All of the participants expressed that the collaboration was impacting how students were

engaged in the classroom. There was some acknowledgement that co-teaching even impacted

student learning, as shown on the most recent Benchmark test at the time of the study. The

principal shared,

> …we have actually analyzed our Benchmark data and I'm thinking back to the teachers we have seen more co-teaching with our instructional coach in that classroom. We have probably had some higher scores with some of those students in those classes and more growth in those classes using that co-teaching model than in the classrooms who have not used it this year.

Theme 3: Learning experiences for the Instructional Coach and the Teachers.

Along with the collaboration and engagement of students, the instructional coach and co-

teachers benefitted from learning experiences. Being the first year that they were implementing

instructional coaching and co-teaching, the instructional coach and classroom teachers

experimented with the various models of co-teaching to see which models would benefit the

students and how the students would benefit from using the various models. From observing

each other in practice, the instructional coach and the teachers were able to increase their

professional learning, and they were willing to try out new, more creative instructional practices

because they had each other there for support. The principal's perspective was that the changes

in lessons were due to co-teaching because he had not seen that type of engagement from

students prior to having a co-teacher in one particular classroom. He said,

> The lessons and the activities have been catchier…They have been more pleasing to the students and more creative. You see more creative type activities than just 'open your book to such and such page and let's talk about these problems and how we're going to solve these problems'. It's been 'we're going to go outside, and we're going to do an Easter egg hunt, and we're going to use fractions, and each egg you find is going to have fractions in it'. They're partnered up in co-teaching, so I think it has been more creative and more outside of the box this year. I'm hoping that's going to be more helpful for both our students and our teachers.

Teacher A supported what the principal said, emphasizing how the instructional coach did a lot

of the planning, but the instructional coach would ask for input and collaborative ideas from the

teacher. Teacher A described how the instructional coach showed her something new. The teacher's respect and admiration of the instructional coach showed when she said,

> We have done some tasks where we were together, and she showed me something new. It's the lockboxes. She sent it to me, and we went through it and talked about it. She had already done it and wanted to know if there was anything that I wanted to add or change. We wanted to plan together, but it was already wonderful because it was (IC's name). But usually, she will plan something that is enriching what I am doing.

Teacher A also discussed how the instructional coach helped her become more comfortable with using mathematical tasks in the classroom for learning and conducting small math groups. She shared,

> I feel more comfortable with tasks because (IC's name) is really good at being a model for that. I do feel that tasks take a long time, and you have to give up some control when you are doing that, but (IC's name) is a great model for that. She was last year, as well, but this year, I've seen it more, and I would say that has changed as far as groups, like the way I conduct my groups has changed a little bit too. I do more this year with groups than I did last year.

Teacher B brought out how the instructional coach bringing in new ideas that were ready to use helped save her time and taught her new instructional strategies that could be used. She said,

> I think there've been some technology things that she's brought. It's really nice to have somebody else bring it in. I wanted to use it, but it wouldn't work for what I needed it to. I needed more information to be able to go in the site, and she went in and found something and prepared it and brought it in. I didn't have to fuss with putting in the information and figure out if this is going to work. She did that and brought it, and so now I use that often because it was so great.

Being the first year of implementing instructional coaching and co-teaching at Brant, the instructional coach expressed how much she was learning about students, their learning needs, and the instructional resources that would target their learning needs in mathematics. Teacher A highlighted how the instructional coach likely learned a lot, just by being back in the regular classroom after so many years. Teacher A expressed that the instructional coach had greater understanding now by saying,

Well, I think she hasn't had a classroom in a long time. She's always pulled small groups or been with small groups. Coming back into the classroom, I think that it is giving her a view of a bigger picture, because sometimes if you're only doing your job, and that's it, you miss out on all the chaos that can be going on in the classroom at once… I think that that has put her more in tune with how it can be.

The instructional coach acknowledged the learning that she and the teachers had acquired through co-teaching. Due to the nature of the co-teaching situation at Brant as a way to meet the needs of all students, including advanced students, the instructional coach was able to come into classrooms and co-teach in a non-threatening way to teachers. The instructional coach explained,

This role has required that I am co-teaching with classroom teachers in classrooms, so there's a common reason that I'm in all of those classrooms. I think that, in itself, makes teachers more responsive to the natural suggestions and conversations that come up versus as an instructional coach going in...in this case, the reason I'm in there is students, and then whatever happens beyond that is a natural gift… I think, I learn from them and they learn from me. I can also more easily say 'across the hall in so-and-sos classroom, we tried this and it worked really, really, well'. It's amazing how much more open to those kinds of suggestions the teachers seem to be. They don't want to miss out on something that their colleague is doing that is helping students.

Relationship Changes.

As mentioned before, the instructional coach had already been at Brant Elementary several years as the instructional coach before instructional coaching and co-teaching became part of the culture. This is significant because the instructional coach and teachers already had a level of trust in their relationship before this study began. Due to this existing relationship, and the coach's prior experience with instructional coaching, the teachers and the instructional coach already knew each other's personalities well, and they were used to collaborating with one another. However, it was found that the relationship between the instructional coach and the classroom teachers with whom she co-taught became more of an open partnership, which promoted more excitement and satisfaction for the instructional coach and the classroom teachers. The themes in this open partnership include: (1) sharing the responsibility of students, (2) having greater confidence in the instructional coach's ability, and (3) more trust.

Theme 1: Partnership – Sharing the responsibility of students.

At Brant Elementary, the instructional coach shared the responsibility of students with the classroom teachers. Through talking with all of the participants, teamwork was evident. The instructional coach felt comfortable going to the teachers with suggestions and advice, and the teachers were comfortable coming to the instructional coach with questions. However, the instructional coach provided teachers with easy ways to use resources, or she set up the resources in such ways that they were easy for teachers to use. The teachers were very receptive because the instructional coach did a lot of things for them that they did not always feel like they had the time to do. By sharing the responsibility of coming up with resources for students, especially the advanced students in the grade level, the instructional coach demonstrated that she was a partner with the teachers. The principal indicated that the teachers were collaborating more with each other than they had in the past. He also expressed the excitement that has resulted from co-teaching. The principal explained,

> I think that the experiences themselves, seeing the rich lessons that have come out of working together and collaborating together, and seeing the experiences of the children- the students in the classroom has been eye-opening to all parties. You know, when I'm going to the classroom and seeing the two of them work together, and I think they're excited because they've been working together, and they want to tell me all about it or tell other teachers all about it. Even the kids have been excited. For me, as one of the instructional leaders here at the school, seeing the kids excited and seeing the teachers excited is one of the greatest benefits of the program.

The instructional coach expressed enjoyment in having the opportunity to be back in the classroom on a regular basis. Through co-teaching, she has been able to look at student needs and try various instructional strategies out that she may not have been able to do in a previous role. She also explained how the partnership has grown over time because of the collaborative discussions that she has had with the classroom teachers about various learners. She said,

> It's opened the door to better collaboration for sure. I think teachers are more willing to have me come in. And I just think the relationships that I've developed,

particularly with those teachers where we have a cluster of gifted learners has grown enormously. There has to be some intentional time to talk about those learners, instruction for those learners, and because we are making that time, relationships have grown for sure.

Teacher B spoke to how the partnership has made her job easier. She said,

… just having that extra support and those ideas. I think, to be honest, I feel really lucky to have the instructional coach that we have because she is so knowledgeable about things, and with her, our thinking is alike in many ways on how to reach students, and that really helps. It's just having that support of someone else. Just hearing somebody else's perspective has really been beneficial to me.

Theme 2: Partnership- Greater confidence in instructional coach's ability.

Although the instructional coach worked at Brant for many years, it had been a while since she had a classroom of her own. It was found that relationships were able to increase due to an increased credibility of instructional coach. Due to co-teaching, the teachers got to see the instructional coach in action, which solidified their perceptions of her competence. Teacher A and Teacher B explained how the openness and respectfulness of the instructional coach increased the coach's credibility to where the teachers were comfortable and confident with the instructional coach and co-teaching. Teacher A said,

I can't imagine anybody doing a better job. I haven't seen any, that I can say that still with confidence because she sits down with us. She talks to us about what could co-teaching is supposed to look like, the different options. She went to our training with us. We knew what to expect. We know what to expect all the time. If she's ever not going to be here, we know it. If something comes up, she lets us know. She has a plan for students when she is not here.

Additionally, Teacher B discussed the respect that the instructional coach has for teachers and students when she said,

I think that she's always respectful in ways that she respects your time. If she wants to plan right now, and you say "I can't", she totally understands that. I know that when my students go with her, if I'm not in that group, that they will get quality instruction. And I think just the way that she deals with students. She's always so respectful. What I appreciate about her is she does try to know them, and she does things that connect or align with their interests. I don't think she is just thinking about the

standard. She is thinking about the whole child. I've been really grateful to work with her.

The instructional coach explained how she feels more confident, due to her increased credibility and her new role through co-teaching, to openly discuss new instructional practices with teachers. She revealed,

> I feel like I have the freedom and the encouragement almost to share what I'm gleaning through those co-teaching opportunities in other ways. For example, we have weekly meetings with each grade level and that's another piece of my role-to facilitate talking about instruction and ways to address student needs - I feel more able and freer to say, 'you know when I was in another classroom last week, we did this and we found it was effective'. Because everybody knows that's my role, and it is more clearly defined, I think folks are more open to both my sharing and on things that I'm learning from other teachers in our school. They are open to my sharing that as the teacher with whom I've collaborated, and they're opening to hearing that as teachers who might benefit from something that I've learned in another classroom or something we've learned together.

Theme 3: Partnership- More trust.

Due to the increased collaboration and greater confidence in the instructional coach's ability, more trust has resulted between the classroom teachers and the instructional coach. The instructional coach reflected on changes in the relationship between her and the classrooms and said,

> …I think the evolution of trust across this year. I can really see how they became, by mid-year, much more trusting. The conversation was much more open, and they were much more willing to collaborate in the classroom and much more comfortable with whatever I might choose to do with students…I would definitely say that trust has evolved across the year to the point that, in the end, I would hope that they had great confidence, and I have learned so much from them. Our relationship improved a lot so there were lots more dialogue, lots more willingness to take risks and try new things…

Teacher B supported what the instructional coach said by saying,

> The instructional coach is really great about seeing what the students in her group need for the next day and planning that without me. We don't always have to talk about it because I trust that she knows what her group needed that day. We touch base about it, so I can do some other things when she's not in here. But, that's been extremely helpful because planning lessons for four or five different groups is quite a task when you are doing it on your own. If you have someone else who's going in searching for things and creating things, it makes that so much easier.

Teacher B stressed her confidence and trust in the instructional coach when she later said,

> It's really fun to have somebody else in the room, honestly, doing math groups. I used to do math groups alone, but I feel more confident with it now because there is another adult in the room doing a group at the same time that I am doing a group. I think that's what I've enjoyed. It makes me a little more confident with what's actually going on in those groups when I am not there.

At Brant Elementary School, instructional coaching and co-teaching allowed for the teachers to see the instructional coach in action, working with their students on a regular basis. The relationship became more of a partnership where the teachers could count on the instructional coach to make a positive impact on their students' learning, and the teachers looked to the instructional coach for leadership. Having the instructional coach as a co-teacher made the teacher's job easier, in a sense, which strengthened the partnership. Although the instructional coach had an existing, positive relationship with the teachers at Brant, co-teaching allowed for a relationship that impacted teacher practices in the classroom.

Issues that result from co-teaching.

The instructional coach and classroom teachers at Brant regularly communicated and collaborated via email and short face-to-face sessions, either in the hall throughout the day or before or after school in the classrooms. This regular communication and the relationship that had been established and strengthened throughout their time working together allowed for them to work through any issues that came up along the way. The two issues that were found at the time of this study included: (1) finding time for intentional planning, and (2) working through the logistics of co-teaching.

Finding time for intentional planning.

Finding time for intentional planning was an issue that the instructional coach and the teachers tried to work through during their first year of implementation. According to the

instructional coach, it was hard for the teachers to commit to one planning block a week because they had so many other things to do during that time. Yet, the teachers and the instructional coach expressed their interest in having more planning time together. The instructional coach was concerned about how the teachers felt when she said,

> …the daily interactions are just in passing in and out of their classroom door, a quick note, and in the more intentional conversation is often through email and sometimes scheduled time to sit down together. We started the year with a very scheduled block of time to meet and plan…That block of time, well initially, I think it felt like a burden to them. On a weekly basis, they were going to have to allot to block of time to planning for co-teaching. There were other things that needed that block of time and so we forfeited it and decided that we would flexibly try to meet. That is really hard to do. It is just hard to find a common block of time and especially if you are looking at planning time. I have students during their planning time. I would say once or twice a month, I try to sit down with each of them in the afternoons and look ahead. Beyond that, I would say there are weekly emails ahead of the week. Sometimes the response to those emails is in person and sometimes it's an email back, but trying to say 'this is what I'm seeing. Is this what you're seeing? Is this what you're thinking for the week ahead?' That's a place where we definitely need to improve- to have more intentional, scheduled time for planning and dialogue.

Teacher B showed agreement with the instructional coach, but she also discussed the many roles of the instructional coach when she said,

> The only concern or issue that I have is probably time- time to get together and time to plan. I don't think that really offers her the time that she would like or we would like to sit down and talk and sit down. I think that is my largest concern, really being able to do all that you would like to do just because there are so many jobs that our instructional coach is required to do.

The instructional coach had worked at Brant for several years before the additional responsibilities of co-teaching and serving advanced students were added to her role. As a well-respected member of her school community, the instructional coach strived to do all of her responsibilities well and to the best of her ability. However, it was clear that she was frustrated and felt helpless that she couldn't plan with the teachers for co-teaching like she wanted or needed to. Similar to the instructional coach at Albatross, there were conflicts with the instructional coach's schedule at Brant, and the principal did not mention that scheduling a

problem. Furthermore, as with the situation at Albatross, the participants likely accepted the

situation the way it was because co-teaching and instructional coaching were being implemented

at the district level. The participants may have felt that they did not have a voice in the decisions

that were being made or did not believe that bringing up their concerns would have an impact on

decision-making processes in the district.

Working through the logistics of co-teaching.

Due to the varied roles of the instructional coach, working through the logistics of co-

teaching was also an issue that is found with instructional coaching and co-teaching. The

logistics of when the instructional coach would be able to come in and co-teach had to be worked

out, because often the instructional coach had meetings or trainings to attend on days when she

was scheduled to co-teach. The instructional coach expressed her feelings about not being able to

follow the schedule.

> I think teachers sometimes get frustrated in my role, as a dual role, when there's a plan in place and that has to change at the last minute. I know that can be frustrating. It's frustrating to me. Even if it's not the last minute, every single week, my schedule looks different because whether it's in a meeting at the central office one day that calls me away, or a meeting here. There's no such thing as a normal week, and I think that's a frustration. It's a frustration for me because I think I'm very sensitive to students' need for structure and predictability and in scheduling.

Teacher A worked with several co-teachers during this first year of co-teaching and instructional

coaching implementation. She described how difficult it is to align everyone's schedule to ensure

that every group of students had extra support. Teacher A concurred with the instructional coach

when she said,

> … sometimes the scheduling is hard because if one comes in 10 minutes late or if one comes in five minutes early, you know, you're not starting the groups when you want to. If they get pulled, then they're not available for you. (IC's name) is always good about sending out an email at the beginning of the week telling us if there's a change, like that she has a meeting, so that we can plan accordingly.

From talking with Brant's instructional coach and the teachers, it was clear that frequent

schedule changes were a frustration for them. Their concerns, however, were justly tied to the academic, social, and emotional needs of the students in the classroom. The students looked forward to having another teacher in the classroom, and the teachers shared how the students often asked if the instructional coach was going to be in the classroom on a particular day. For the instructional coach, although she enjoyed co-teaching and working with the students as well as the teachers, she seemed to have added the new responsibilities of co-teaching without having any release of responsibility from other things she had previously done. This may be a concern for district leaders who may be interested in knowing what affects job satisfaction and implementation of instructional programs, such as instructional coaching and co-teaching.

Coordinating groups during co-teaching was another logistical issue that was found at Brant. In addition to sticking to the allotted time for each group, the teachers and instructional coach had to find ways to deal with extra noise in the classroom from various groups going on at one time. There was also the issue of deciding the groups to put students in, which were not always clearly defined. The instructional coach regularly assisted with and provided instruction for the advanced students in the class. However, if there was an advanced math student who was struggling in a particular area, she and the classroom teacher would need to work through where the student's needs would be best met. Teacher A explained,

> I could say to her, I've noticed this person is not really grasping this. I would like for them to be in my group this time for this week. Sometimes transitioning from there to here, she might lose some instructional minutes. And right here, towards the end, that is a little stressful for me because I want them. But I think she wants and needs them for what she's doing.

Resolving issues.

The instructional coach and the classroom teachers worked to resolve any issues that came up through regular communication and ongoing collaboration.

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Regular communication.

Although the issue of finding time for intentional planning was not resolved by the end of the study, the instructional coach and the teachers had worked out a way to keep in constant communication, whether it be via email, talking in the hallway, talking before or after school, or talking right after a lesson for a couple of minutes during transition. Teacher B commented,

> Well, in the past, a lot of times the instructional coach would come in and do lessons as far as the whole group. If they did things out of the room, it would sometimes take a little longer to get some feedback. We would have to wait when we would have time to meet and talk about it. But now, we can just have a few words before she leaves the room. 'I noticed that so and so is struggling with this, so let's make a group around it'. Because we don't have that time at other times, even those few moments that you have at the end of the lesson is really beneficial.

Ongoing collaboration.

The other logistical issues of co-teaching were worked out as the instructional coach and teachers collaborated and experimented with different things to cut down on noise in the classroom and keep to a schedule. One teacher utilized Class Dojo to keep her students' noise level down, and the co-teachers became more aware of the time so they wouldn't get the class off of schedule. The instructional coach was very respectful of the teachers, which promoted the opening of their classrooms to the instructional coach. She made sure that the teachers had the instructional materials that they would need for the students if she had to go to a meeting. It also helped establish a strong working relationship between the instructional coach and the teachers. Teacher B discussed how she and the instructional coach worked together to form groups that were appropriate to the needs of the students. She said,

> I think we both started to realize after we were looking at the assessment data that there were some other kids that would work well in those groups, so we've made our groups a little more flexible. And I think that's really helped a lot of the students, and it's helped me be able to make the groups a little more appropriate. We started forming groups a little differently.

About Calliope Elementary School

Calliope Elementary School has a diverse population of 291 students and serves students in pre-kindergarten through fifth grade. The demographics of the population are 21.3% African American, 56% Caucasian, 14.1% Hispanic, 7.2% two or more races, less than 1% Asian, and less than 1% other races. The average class size in the third through fifth grade classrooms is 20, and the school includes 22 classroom teachers. All of the teachers are certified to teach their respective grade levels. In regards to the academic achievement of students, in the 2016-2017 school year, 55% of the students in grades 3-5 were reported as being proficient in reading and 65% of the students were reported as being proficient in mathematics at those grade levels.

About the participants.

At the time of the study, Calliope Elementary School was in its second year of implementation with instructional coaching and co-teaching. The instructional coach had 11 years of experience as an educator, and she had worked as the instructional coach at Calliope for 4 years. She reported adequate training on co-teaching, and she had one year of experience with co-teaching and instructional coaching. In addition, one fourth grade teacher and one fifth grade teacher participated in the study. The fourth-grade teacher had 28 years of experience as an educator, and she had taught at this school for seven years in this role. She reported an adequate level of experience with co-teaching. On the other hand, the fifth-grade teacher had 10 years of experience as an educator, and she reported that she had no prior experience or training with co-teaching. The principal at Calliope Elementary had been an educator for 15 years, and it was her first year as a principal at Calliope at the time of the study. She did not receive the initial principal training with the other administrators in the district during the start of implementation, but she reported adequate training in previous years as a teacher. The principal at Calliope

expressed great support for the co-teaching model, and she was especially fond of it because she had prior experience as an instructional coach and felt that it was especially beneficial in changing teachers' practices and providing them with instructional support. When pairing up the instructional coach with teachers for co-teaching, she considered what teachers needed additional support and what teachers had expressed the need for additional support.

Planning for co-teaching.

At Calliope, there were scheduled times when the instructional coach would meet with the classroom teachers to discuss data in professional learning communities. However, due to the teachers' and the instructional coach's schedule, planning for co-teaching in classrooms could not be implemented face-to-face on a regular schedule. Most of the planning was done via email, Google Drive, Google Classroom, or a quick conversation when possible. For the most part, the teachers planned all of the lessons, and the instructional coach provided ideas and resources that were occasionally added to lessons to meet the needs of the advanced students in the classroom.

Co-teaching models utilized.

Time spent co-teaching varied, depending on the instructional coach's schedule for the week and how often she had administrative duties to do, such as dealing with behavior issues or filling in as a substitute in another classroom. In the fifth-grade classroom, the most common model of co-teaching used was station teaching, where the instructional coach and the classroom teacher both worked with small groups of students at the same time when another group worked independently at their seats. In the fourth-grade classroom, team teaching was occasionally implemented, but the most common form of co-teaching was the one-teach, one assist model. Due to the instructional coach's schedule and the qualifications of the fourth-grade teacher to teach advanced students, the instructional coach spent more time in the fifth-grade teacher's

classroom than in the fourth-grade teacher's classroom. The instructional coach also utilized some alternative teaching, where students were pulled out of classrooms in small groups for instruction on their level. At the time of the study, the instructional coach and the classroom teachers had worked with each other for four years, so they had already built a working relationship with one another before the study began. The instructional coach also had known the fourth-grade teacher several years before they started working together at Calliope, so they were comfortable with each other at the start of the study.

Within Case Analysis for Calliope Elementary School

Experiences that result from co-teaching.

At the time of this study, Calliope Elementary School was in its second year of implementation with instructional coaching and co-teaching. The instructional coach had worked at Calliope Elementary School for a few years and had already established a strong working relationship with the teachers before co-teaching became a part of the culture of the school. In this case study, there were three themes found in regards to the experiences that resulted from co-teaching. These themes are: (1) collaboration to meet students' needs, (2) impact on students, and (3) changes in teachers' practices.

Theme 1: Collaboration to meet students' needs.

All participants indicated that there was collaboration which focused on improving student learning and achievement. There was a lot of collaboration around student progress and what various resources and strategies could be used to reach all of the students, including the advanced students. Problem-based learning was utilized often to meet the needs of the advanced students, but the teachers and instructional coach often shared strategies and methods for solving mathematical problems. The instructional coach regularly helped teachers analyze their data

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from common assessments. The principal at Calliope Elementary discussed how the instructional coach and teachers collaborate to share ideas with one another, for which she demonstrated support.

> We don't know it all, I always say. All the problems we have as an individual…there's someone else in the building that can answer that. They actually have the answer to that issue… so just having an extra skill when we collaborate, just us bouncing things off of each other sometimes collectively…

The instructional coach also discussed how a teacher and her collaborated after co-teaching to meet specific needs of students. Due to the instructional coach being in the classroom during the lesson, the teacher was in a better position to reflect with the instructional coach and make decisions that would benefit the learning of students. The instructional coach said,

> After all the rotations were done, we reflected and she said, 'you know this group of kids are still really struggling', and wondered if I saw the same thing. We decided that we were going to review during the intervention/enrichment time during that day.

Teacher A, who had the most experience as an educator, highlighted how the instructional coach collaborated with her on choosing the most appropriate resources to use in the classroom. This was especially useful to the teacher since there are so many options available. She admitted that it's easy to forget all of the resources that can be used, and sometimes the instructional coach is more familiar with certain resources more than she is. Teacher A communicated how this collaboration benefits the learning of students when she said,

> I think, anytime, two heads are better than one. Even though I've been teaching for a long time, I'm always open to new ideas. I don't think it's good to always do planned lessons from the past. No two classes are ever alike, and this year, especially. This year's class is extremely different from last year's class. I'm having to think outside the box and do a lot of different kinds of planning to meet the needs of the children. Having the help of the instructional coach there is always better, because it's not necessarily what's best for me, it's what's best for the children- to make sure they're successful.

Teacher B also expressed how the collaboration positively impacted student learning. It was often that teacher B and the instructional coach would discuss gaps in students' learning,

especially if there was an advanced student who was not performing as well as expected with a mathematical concept. The instructional coach and teacher collaborated to make decisions about what group the student should be in on a certain day, in consideration of the student's needs. The teacher communicated that the PBLs that the instructional coach had supplied were very used in filling in the gap areas. Teacher B further communicated to the coach her concerns about gaps in student learning due to a lack of preparation in the previous grade. Through this communication, the instructional coach could work with other grade levels to ensure that students were adequately prepared for what they would be asked to do in later grades. Teacher B said,

> There are things that we've talked about, such as the strategies that I would like to see them coming in with. I think it's good that she's been in here monitoring data, knowing if these were strategies that they should've learned in fourth grade. For example, with division, they're coming in knowing how to do a standard algorithm, and that is not what they needed to be doing. They needed to have been doing just partial quotients and doing that partitioning. They have no idea how to do it. She's been taking that back and going into fourth grade class with that, and making sure that that's happening now. That's been a positive thing we've been able to work on.

Theme 2: Impact on students.

Another theme found was the impact that co-teaching and instructional coaching had on students in those classrooms. Teacher B felt that students were positively impacted because groups could be flexibly created to meet the needs of her students, and students who were not identified as advanced could receive instruction on a higher level because they could be included in the instructional coach's station during co-teaching. Teacher A expressed how it's always good to have another set of hands and another set of eyes when helping the children. She also talked about how she and her students enjoyed working with the instructional coach when she commented,

> I do enjoy working with our instructional coach. She is always enthusiastic; the children love it when she comes in. When we have our math classes, …it's getting close to the middle of the day. My stamina may not be as high as it was at the beginning of the day,

so it's always good for me because she brings lots of positive energy into the room, not just knowledge and help. I like the positive energy that she brings in, and I think I feed off her energy…I think the children pick up on that, when you enjoy what you're doing and what you're teaching. I think that they know that our instructional coach enjoys what she's doing, and I think they appreciate the positive impact that she's having in our room.

Theme 3: Changes in teachers' practices.

The last theme found was the positive impact that instructional coaching and co-teaching had on teachers' instructional practices. The principal communicated the importance of teachers seeing the modeling of best instructional practices in mathematics and learning from each other. She brought out that classroom teachers are limited in what they learn from others because they are usually in their classrooms all day. She said,

> As classroom teachers, you're in your four walls all day long. You don't get a chance to see what someone else is doing. So you're kind of bringing that extra person in with you and learn from each other.

The instructional coach discussed how she was changing the instructional strategies of teachers with mathematics by encouraging them and making arrangements for the teachers to observe other teachers in the building. One teacher was interested in learning how to implement guided math stations, but she needed some ideas on what different stations she could do. The teacher was spending a lot of time trying to create all of the stations. The instructional coach talked to her about how this could be implemented much easier through using technology apps on the Chromebook that were aligned with the math curriculum. The instructional coach expressed the importance of helping teachers change to more effective instructional practices when she said,

> If we don't build the teachers' capacity, they'll get stagnant. If we don't try new things that are research-based, then they will. I have to increase their knowledge so that they can help the students grow, and so that they can push themselves professionally also.

Teacher B expressed how trying out new things through co-teaching helped her think about instruction differently. She said,

Today we did a lesson together on division. It was a fourth-grade division review, and I took a step back to see if she wanted to do a demonstration. She and I were doing a small group together…She was going through her method… I was just kind of standing back and assisting, sort of, and just stepping in. It was almost like, by the end of the lesson, we were almost tag teaming, you know, and it was nice! It was like synchronized teaching.

Relationship changes.

The instructional coach had worked with the teachers at this school for four years prior to the study, which allowed her to form relationships with the teachers before the co-teaching experiences started. Due to this, the researcher found that the relationship mainly changed in that it grew into more of a partnership instead of just a collaboration between the teachers and the instructional coach. Prior to the addition of the co-teaching role, the instructional coach had only been in classrooms to model lessons for the teacher or to conduct administrative tasks, such as with routine walkthroughs, with the principal. With the addition of a co-teaching partnership in the schedule, the researcher found two themes in regards to relationship changes: (1) teachers became more trusting of the instructional coach, and (2) teachers felt that they had more support and help with students.

Theme 1: Teachers became more trusting of the instructional coach.

Due to the regular interactions and communication with the instructional coach about students, the researcher found that teachers became more trusting of the instructional coach over time. It was well-established that the instructional coach was a non-evaluator, so the teachers were also comfortable asking the instructional coach questions about lessons or standards because they knew the instructional coach was an instructional expert who was there to help them. However, co-teaching provided a means for them be connected to discuss common student needs and curriculum. When asked about changes in the relationship between the instructional coach and the teachers, the principal said,

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I would say an even more stronger working relationship and academic sharing between the two. Even beyond them planning for their co-teaching lessons, there has been an increase of 'when I'm not using you for math instruction or ELA, what do you think about this idea and so forth?' That communication has been opened, so they have a greater trust with each other…When you don't feel like you're being judged, you can ask anything.

The instructional coach also felt that more trust had developed between her and the classroom teachers, due to co-teaching together. She expressed that she had always had a good relationship with the teachers, but the teachers seem more open to come up to her and address other things that she might need to talk about, unrelated to the classroom, students, or curriculum. The teachers seem to be less reluctant to ask questions, and the instructional coach felt it was due to getting to know the teachers' teaching styles and planning more together instead of just observing them. The instructional expressed how the relationship was more open when she said,

They are more open to have the real conversations about their data. They know you're in there. You see what is going on. It's more of a real trusting relationship, I think, and more open. You know, if you're not co-teaching with somebody, honestly, you might talk to them in CASA once a week. If you're co-teaching with them, you're talking to them daily, even if it's just through email.

Teacher B demonstrated her trust and comfort in going to the instructional coach when she had an issue that needed to be resolved in the classroom. She was referring to the instructional coach's role when she said,

… to help me when I'm just not sure how I'm going to address this issue. I've already tried it this way. I tried it this way, and now I'm looking for another strategy and for her to bring that to me, and help me with some materials…to also step in …and say 'maybe we could have done it this way' or 'maybe this would be a better alternative to present this'...

Theme 2: More support and help with students.

The relationship also changed to more of a partnership because the teachers felt that they had more instructional support and help with students. The principal discussed how the

instructional coach and a teacher planned a lesson together and how the teacher was asking for

input from the instructional coach. It was often that the instructional coach would help the

teacher add an extra layer of rigor on an activity, which the principal described as the teacher's

"aha moment" of learning. She said,

> And I see the classroom teacher having an "aha" moment- 'I've never thought of doing that'. It was still the classroom teacher's idea, but just with a little tweak. They were able to take an already good lesson, but just bump it up, rigor-wise, to make it a better lesson.

The instructional coach supported what the principal said, discussing the community of

collaboration that made teachers feel supported. She said,

> I think it just brings you closer together. Instead of just going in your room and shutting the door, and teaching by yourself, it creates a community of collaboration between you and the teacher. The teachers don't feel like they're all alone, trying to carry out and teach all the curriculum.

The teachers expressed how helpful it was to have someone else in the classroom working with

students while she worked with students. Teacher A expressed how helpful it was when the

instructional coach was in the classroom walking around and meeting with students, especially

since she knew the students so well and knew what their needs were from data discussions and

co-teaching in the classroom. She expressed how hard it was to meet the needs of diverse

students by herself when she said,

> I think definitely the resources from the just the extra set of eyes and hands coming in and helping the children…it's always good to have somebody else there to make sure that I'm giving the rigorous challenging work …so I can make sure that I'm challenging them and helping them to reach their full potential…It's hard for one person to balance all that, so mainly just having another a co-teacher in there to be able to help reach everybody…

The teacher explained that the instructional coach challenged individual students by asking them

to explain their thinking, which was something that the teacher would not have been able to do as

much with so many students in the classroom who had so many diverse needs. Teacher B

supported what Teacher A said about the help from the instructional coach in meeting the needs

of the advanced students in her classroom. Similarly, to Teacher A, she expressed how the

instructional coach keeps her on track, too. Referring to the advanced students, Teacher B said,

> …the kids need somebody with them. A lot of times, if I'm having to work with another group, I'm thinking, that will be fine, give them instructions and leave them be. I'll come back, but they haven't accomplished the things I thought they would have accomplished. Maybe they didn't understand what they were supposed to be doing. I think that having someone here to help them stay focused on what they need to do and keep them on track is very helpful. I think that's helpful to have someone in here to maybe keep me on track too.

Teacher A also described how the coach being in the classroom helped her with confidence,

especially when communicating with parents.

> I think it's not just more confidence in her ability. It's more confidence in my ability, as well. …you know most of the time parents are supportive, but if anyone ever has a concern about whether we are teaching what were supposed to do, she's able to say 'I'm in the classroom. I'm observing. We're definitely covering what we're supposed to do. We're using all these strategies. Your child is having interventions. Your child is having enrichment'. It's nice to have a backup saying, 'yes, what's going on in the classroom is indeed what is supposed to be happening'.

Issues that result from co-teaching.

The instructional coach and classroom teachers at Calliope who participated in this study

enjoyed the co-teaching role of the instructional coach. Although the instructional coach

provided resources and helped with the instruction of students, especially advanced students,

several issues resulted from co-teaching that were due to the dual role of the instructional coach.

These three issues included (1) the instructional coach not being able to follow the co-teaching

schedule, (2) limited planning time for the instructional coach and the classroom teacher, and (3)

teachers being reluctant to share classroom responsibility with the instructional coach. These

three issues are tightly related due to the likelihood that the teachers are reluctant to share their

classroom with the instructional because of the inconsistency of the co-teaching schedule and the

limited planning time that they have together. The classroom teachers and the instructional coach shared that these factors are important, yet they all expressed their understanding that the situation likely couldn't be any different. The instructional coach even expressed her guilt that oftentimes her schedule would limit her time in the classroom for co-teaching.

Inability to follow the regular co-teaching schedule.

The instructional coach often was not able to follow the regular co-teaching schedule. There were either scheduled instructional coach trainings or meetings off campus or administrative tasks came up throughout the school day, which became the priority. She regularly met face-to-face with all the teachers at Calliope one day a week in professional learning communities, where they looked at and discussed student data. Although this time was deemed as important by the principal and the teachers, it still limited the amount of time that the instructional coach could be in classrooms and support teachers and students. The instructional coach described this situation and how she felt when she said,

> I had to be a substitute today because nobody picked the job up. I might have to sub, or I might have a district training or district meeting or district testing. They all act very understanding, but I feel guilty because I want to be there.

The participating classroom teachers expressed the coach's schedule as a challenge that couldn't be helped. Teacher A, who is licensed to teach advanced students, discussed how she didn't get to interact with the instructional coach as much as she wanted, but she communicated that she had to be flexible because the IC was needed to help in other areas of the building, with other teachers who needed help more than she did. Teacher A shared how co-teaching worked most of the time when she said,

> We do well. I take the lead in the planning, and I send the plans to her, and she reads it. When she can be in here, she comes in and pitches in.

Teacher B concurred with Teacher A about not being able to rely on the instructional coach to come in on a regular schedule for co-teaching. With frustration in her voice, she said,

> I think what has been a challenge for both of us has been that time to come in and do this. …she's pulled out more often that she's in here, and that's not her fault. …if the principal is out of the building, …she's dealing with administrative things. She'll walk in, and we're trying to teach, and then she's out of here. She'll have to go do other things…But it does interrupt the ability to co-teach and for me to be able to count on her… to know that she's definitely going to be in here. There are days when she shows up, and I'm like 'oh! She's here today'. I just never know. She gives me her schedule for the week, but that does not guarantee. This week, she's supposed to be here three days, but that doesn't mean that she'll be here for all three days. It's hard for me to plan around when I'm not sure if that's definitely going to happen.

The instructional coach at Calliope and the teachers expressed strong frustration about the varied roles of the instructional coach and the inability to plan on co-teaching to be implemented, as scheduled. At Calliope, the instructional coach was often treated as an administrator, for she regularly dealt with discipline problems and transportation issues. All of the participants at Calliope openly expressed their concerns about this to the researcher, which indicated that they wanted their voices heard about this issue. The principal at Calliope did not indicate that this was an issue. As with the participants at Albatross and Brant, the participants must not have felt empowered to express their true concerns about instructional coaching and co-teaching with the principal, either due to it being a district initiative or it may be possible that the co-teachers were not comfortable expressing their concerns to the principal since the principal was in her first year at that school.

Limited planning time.

Another issue found was the limited planning time that the instructional coach had with the classroom teachers. Because of the instructional coach's schedule, she often could not plan with teachers during their planning time, which limited the amount of impact she would have on

lesson planning and activities during co-teaching. Teacher A showed she recognized the need to plan with the teacher when she said,

It's not necessarily the thing that I enjoy the least. It's the biggest struggle or biggest challenge. It's finding the time to sit down and prepare for all of the lessons together. It definitely is time consuming, and in order to be able to do it appropriately, there needs to be a lot of lead-in time leading up to the lessons, and so I think time is always a challenge.

Teacher B also emphasized the need to plan co-teaching lessons with the instructional coach. During an interview, she expressed recognition that co-planning went along with co-teaching, if co-teaching is going to be a true partnership where both co-teachers have an equal role in educating students. She said,

I know we're co-teaching, but I'm doing the planning right now, and I'm doing the coming up with the resources, and we just haven't had that time to co-plan in addition to co-teaching. I think that will come into it, if we are actually going to do this together. To me, we are going to need that time together.

She expressed her preferences in a planning time when she said,

Trying to sit down during planning whenever possible because lots of times things happen after school with meetings, with different duties, with things, workshops that the instructional coach or I have to attend, and so trying to utilize that planning time as much as possible… but then that's a challenge also because during my planning time, she might need to be with someone else, so there is no easy answer, but I think the best time is during my planning time.

As other co-teaching research has indicated, when one teacher has to do all of the planning and most of the leading with the execution of the plan, co-teaching may be less effective, and this situation can cause some resentment and frustration for that teacher. At Calliope, the teachers were dissatisfied that they did not have time to plan with the instructional coach for co-teaching. However, the principal did not indicate that scheduling was an issue; she indicated on her survey that the instructional coach could meet with the teachers four days a week, as needed. As with the other schools in the study, it would be important for the principal to

know how planning is being implemented and to ensure a planning time during the school day, preferably during the teachers' planning time, for the instructional coach to be able to meet with the teachers.

Teachers were reluctant to share their classroom responsibility with the coach.

The third issue was related to the scheduling and planning issues. The teachers were reluctant to share their classroom responsibilities with the instructional coach, which then limited what the instructional coach was able to do to impact instruction and teacher learning. Both classroom teachers had full responsibility of the planning, and they did not feel that the instructional coach could keep on a regular schedule to be in their classrooms. Because of that, team teaching was not implemented regularly, and the instructional coach mostly was in their classrooms for the co-teaching models of station teaching or one-teach, one assist. The instructional coach described how the two classrooms were different when she said,

> Right now, one of the situations has more of a partnership, I would say, where … I can bring items in and run a station. The other situation is more of …she's doing all the direct instruction and I am there to help keep students on task. Now, in that situation, I do go to a couple of students…and try to get them to work ahead, because I know they can.

Considering that the instructional coach did not have sufficient planning time with the co-teachers and could not keep a consistent co-teaching schedule, it is not surprising that teachers were reluctant to share their classroom responsibility with the coach. At Calliope, this situation limited the extent to which the instructional coach could positively impact the teachers' instructional practices. The participating teachers indicated that most of the changes in their instruction was due to their own interest in changing and their own research. The situation may have been different if the instructional coach could have kept a consistent planning and co-teaching schedule at Calliope.

Resolving issues.

As mentioned previously, the classroom teachers and the instructional coach at Calliope had a good working relationship with one another prior to the start of implementing instructional coaching and co-teaching in the school. The teachers expressed their understanding of the limitations of the instructional coach, and both of the teachers worked well with the instructional coach on a regular basis due to regular communication, collaboration, and reflection.

Communication.

Although the issues of time for planning and scheduling were not resolved by the end of the study, it was found that the instructional coach lessened the chance of other potential issues by keeping in close contact with the teachers regularly. The instructional coach utilized email and face-to-face opportunities to let the teachers know if there was a change in her schedule, and she regularly provided them with resources via email or discussions at data meetings. In regard to this, the instructional coach said,

> I know more of what's going on in their room. They know when to expect me to be there or not to be there and what I'll be doing.

Collaboration.

Aware of the need to plan, the instructional coach attempted to make more time for planning with the teacher for co-teaching, but she also communicated with the teacher in other ways. She described how the teacher and her planned for a fourth-grade multiplication unit and adjusted instruction to meet the needs of the students. She said,

> …the teacher had picked out a whole unit that went day-by-day on how to do the math that came with guided instruction and then practice instruction. We picked out and planned some things that we use in Google classroom that they could go to different links to be able to practice those same skills. One day we worked on 2-by-1 and then 3-by-1 and 4-by-1. The teacher moved a little bit quicker in her groups. You saw you could move quicker, but we formally planned by meeting together and laying it all out-what we wanted to do on the timeline of having eight days to do it, last week and this week, before

the nine weeks ended. Throughout the week, we were emailing back and forth and texting back and forth to make adjustments.

Reflection.

At the time of the study, the researcher found that the teachers were reluctant to share classroom responsibilities with the instructional coach. The teachers felt that the planning was their sole responsibility, and because they felt the instructional coach's schedule was inconsistent, they did not feel that they could have any expectation of the instructional coach coming in their classroom for co-teaching. This complicated the instructional coach's goal of helping the teachers change their instructional practices. However, the instructional coach expressed how, when teachers feel the need to make a change in their classroom, in reflection, they will seek out the instructional coach for co-teaching, and the instructional coach can have a greater impact on their instructional practices. The instructional coach explained the difference between two of the teachers with whom she co-taught.

> I think once you're in the routine of being there, it becomes more natural, and I've learned that it seems to work best with teachers that are trying to make a change in their room, like the fourth-grade teacher. She was wanting to use guided math groups. She reached out to me and asked me to come in, whereas maybe another fourth-grade teacher…seems to just be still doing it the way she's always done it. She's fine with me being in there, and she likes the help, but it's more of observing and assisting students type help, instead of leading.

Teacher B recognized, through reflection, the need for her to relinquish some of the control of the classroom instruction to the instructional coach, but she admitted how hard it was to do this. She said,

> She and I need to work together on the plans and it is not just me telling her what I want her to do…That's been more of a challenge for us right now and something that we're working on, the co-planning in addition to the co-teaching. I think she's more used to this, where I am used to be like the planner. I don't mind co-teaching, but I'll still make the plans. We should be co-planning also.

The instructional coach also discussed this change that she was seeing in Teacher B's mindset in regards to co-teaching. She described how she and Teacher B usually co-teach and how they recently had been trying out new roles during co-teaching. She said,

> We did something a little bit different in the fifth-grade math class…She tries to do the stations three days a week, and that is when I'm in there, usually…they are either working with me on a PBL or they work with her, and if they finish up with the PBL, we move on to the other stations that are assigned. But today, we switched roles. We started division, and I led that group in reviewing division, seeing what they knew and what strategies they used. While we were working on that, the teacher…did circulate to the other groups… to see how the other students were doing. That's a flip-flop, cause she's always led that small group with direct instruction.

Teacher B concurred with the instructional coach about this situation, and she discussed how she was trying to relinquish some control of the classroom instruction to the instructional coach. When she described this same situation, Teacher B called it "synchronized teaching" and was very excited about sharing the responsibility of the classroom with the instructional coach. Over time, Teacher B became more willing to share her classroom and try out new instructional practices with the instructional coach, which worked to benefit all of the students in the classroom.

About Dunlin Elementary School

Dunlin Elementary School has a population of 419 students and serves students in kindergarten through fifth grade. The demographics of the population are 20% African American, 62% Caucasian, 13% Hispanic, 4.5% two or more races, and less than 1% of the students are of other races. The average class size in the third through fifth grade classrooms is 21, and the school includes 26 classroom teachers. 96.2% of the teachers are certified to teach their respective grade levels. In regards to the academic achievement of students, in the 2016-2017 school year, 63% of the students in grades 3-5 were reported as being proficient in reading and 72% of the students were reported as being proficient in mathematics at those grade levels.

About the participants.

At the time of the study, Dunlin Elementary School was in its second year of implementation with instructional coaching and co-teaching. The instructional coach had 18 years of experience as an educator, and she had been working as an instructional coach at Dunlin Elementary for 7 years. She reported adequate training the first year that instructional coaching and co-teaching was implemented in the school. In addition, one fourth grade teacher and one fifth grade teacher participated in the study. The fourth-grade teacher, referred to as Teacher A in this paper, had ten years of experience as an educator, and she had taught at this school for ten years. Teacher A reported that she had received no training on the co-teaching models. On the other hand, the fifth-grade teacher, referred to as Teacher B in this paper, reported that she had adequate training on co-teaching. Teacher B had been an educator for 16 years, and she had taught at this school for 13 years. The principal at Dunlin Elementary had been an educator for 20 years, and she had worked at Dunlin for two years as a principal. She participated in the co-teaching training with the other administrators in the district prior to and during the start of implementation. The principal at Dunlin greatly supported the co-teaching model and also expressed how beneficial it would be for all of her teachers to have some experience with it. When pairing up the instructional coach with teachers for co-teaching, she considered student data first and what teachers had positive results working with students of advanced capabilities. The principal also considered the needs of the classroom teacher and if they needed some support teaching a subject, especially if the grade level was different from the grade level the teacher had taught the year before. The principal at Dunlin acknowledged the benefit that instructional coaching and co-teaching can positively serve students and teachers at the same time. Since it was her second year of utilizing this instructional approach in her school, she had

already seen growth in teachers and students, and she had belief that the growth was, at least partially, due to the co-teaching model. Because of this, she supported instructional coaching and co-teaching through making regular observations of it and supplying resources, as long as the resources could benefit all of the students in the classroom.

Planning for co-teaching.

At Dunlin, there were varied times when the instructional coach would meet with the classroom teachers for planning. The teachers regularly met with the instructional coach during their professional learning community weekly for 40 minutes to discuss student data and progress. However, most planning for co-teaching was done via email, Google Classroom, or Google Drive. Occasionally, there would be quick interactions between the instructional coach and the classroom teachers in the hallway or before or after school. During these times, the instructional coach and the teachers developed and shared activities with one another that addressed student needs to ensure that their instruction was aligned to the learning targets.

Co-teaching models utilized.

Time spent co-teaching varied, depending on the schedule for the week. At the time of the study, the instructional coach was able to consistently co-teach with Teacher A for about 1-2 hours a week during mathematics instruction, and she was able to co-teach with Teacher B for about 1.5 hours a week during mathematics instruction. They were able to keep with that schedule most weeks. However, if the instructional coach was not available to co-teach, she still provided the teachers with activities and assignments that could be used in her absence. The most common models of co-teaching used were station teaching and team teaching, where the instructional coach and the classroom teacher shared the leading of classroom instruction and

both of the co-teachers had time to interact with all of the students. The instructional coach also utilized alternative teaching at various times throughout the week with different teachers.

Within Case Analysis for Dunlin Elementary School

Experiences that result from co-teaching.

At the time of this study, Dunlin Elementary School was in its second year of implementation with instructional coaching and co-teaching. The instructional coach had worked at Dunlin Elementary School for a number of years and had already established a strong working relationship with the teachers before co-teaching became a part of the culture of the school. In this case study, there were four themes found in regards to the experiences that resulted from co-teaching. These themes are: (1) collaboration to impact student achievement, (2) differentiated instruction to meet students' needs, (3) the changing of instructional practices in mathematics, and (4) a feeling of partnership between the instructional coach and the teachers.

Theme 1: Collaboration to impact student achievement.

All participants indicated that there was collaboration, which focused on improving student learning and achievement. There was a lot of collaboration around what various resources and strategies could be used to reach all of the students, including the advanced students. Teacher A reported that she and the instructional coach tried to "touch base with each other on a weekly basis" so the instructional coach could get some ideas for instructional based on the standard or goal for the lesson. Although the instructional coach had some face-to-face time with the teachers throughout the school day, most communication was accomplished via email or text.

The instructional coach described how she planned with teachers, which included how they decided on the co-teaching model that would be used for the lessons. With awareness that

classroom teachers have different comfort levels when it comes to co-teaching, the instructional

coach worked hard to build a relationship with the teachers so that they would trust her to plan

and work with all of students in the teacher's class. The instructional coach described,

> I talk with the classroom teacher and we decide what fits best with our personalities and what they're comfortable with. We look at what we're going to be working on, and then decide, 'Okay, this would work. Where you do your half of the class with this, I will do half of the class with this'. There are interactive notebooks that they might be doing in the classroom. We flip-flop. We just discuss it with each other. Some teachers are more comfortable with station teaching, where I found that some, one in particular that I work with, is more comfortable with just bouncing off. Hopefully, we will get to the point where we can do more station type things, but she is just not ready for that yet.

Teacher B supported what the instructional coach said about the importance of communicating

before a co-teaching lesson. As the classroom teacher, she felt that preplanning prepared both co-

teachers for the lesson and ensured an alignment between the goals that both co-teachers had.

Teacher B explained how co-teachers knowing their role and the other co-teacher's expectations

ensured that the lesson was going to benefit student learning. She said,

> If we can meet beforehand and we're comfortable with what's going on, then, as we work together in front of the students, we are going to bring out the lesson better. The kids are going to understand it better...

Teacher B was an experienced teacher with National Board Certification and a record of

effective teaching. In the past, Teacher B had not worked this closely with the instructional

coach because the instructional coach was tasked to work with new teachers or teachers who

were struggling with instruction. Due to the instructional coach and Teacher B serving the same

students in the classroom through co-teaching, an opportunity to work with the instructional

coach opened up for Teacher B. She looked forward to collaborating with the instructional

coach on lessons and content in mathematics because she was the only fifth grade math teacher

at Dunlin at the time, which made her feel like a "loner". Until she started co-teaching with the

instructional coach, she didn't have another math teacher to collaborate with. She said,

> I'm enjoying having another body to bounce ideas off with because the past few years, I've just been by myself. Co-teaching has given me an opportunity to meet with my instructional coach, and we're planning together and having instructional conversations over email during the week. We meet face-to-face, and I'm enjoying that. I don't feel by myself.

Teacher B explained that her interaction over the computer and over email with the instructional

coach had increased due to co-teaching together. Due to the instructional coach's schedule, face-

to-face meetings were not as common.

Theme 2: Differentiated instruction to meet students' needs.

Another theme found at Dunlin with instructional coaching and co-teaching was the focus

on differentiated instruction to meet diverse students' needs. Since it was Dunlin's second year

of implementing instructional coaching and co-teaching, the principal had seen the difference

that co-teaching made the previous year. She expressed strongly that all of the students in the

classroom, because of co-teaching and more differentiated instruction, received extra attention

and support, which made the students listen better in class and work harder. On several

occasions, the principal mentioned use of the breakout boxes to engage the students in critical

thinking, and these were used primarily in the classrooms during co-teaching. The principal also

discussed how the instructional coach had modeled higher order thinking questions during co-

teaching, and the principal has seen the teachers starting to also integrate the higher order

questioning into their lessons and writing activities, even when the coach was not present. The

principal said,

> One particular grade level, I know, is implementing more differentiated instruction. They have been more aware of their higher learners and are doing some things that have been suggested or they have seen the coach doing. I think that's helped, because I think seeing it in practice and having somebody support you through that gets

your feet underneath you…and you have more confidence in it. I feel like teachers have more confidence in implementing somethings that might've been scary before, that they might not have been willing to try because it wasn't comfortable…but having somebody else in there is like a safety net.

The instructional coach also emphasized how co-teaching had increased the amount of differentiation in the math classrooms. At the time of the study, she was co-teaching in three of the four fourth grade classrooms and in one fifth grade classroom. The instructional coach reported that teachers were able to see strategies for developing the higher-level thinking skills modeled during co-teaching, which was especially useful since teachers often have a hard time understanding the importance of allowing students to have a "productive struggle" with a mathematical task. The instructional coach described a co-teaching lesson where a performance task had been used and how the teacher reacted to it. The instructional coach said,

> We did a performance task based on long division that they have been doing where they really had to think through the course, like a marathon. They had to equally place restrooms and water bottle rest stops in those things. When we finished, I asked the teacher, 'well, how did you feel about that?' She said, 'I felt like I was a failure because they struggled.' So I think trying to help teachers see, especially with…kids, if they're never challenged and they never struggle, they are not going to grow.

The instructional coach also reported that teachers she co-taught with were looking for higher level mathematics tasks because the teachers had seen them modeled during co-teaching and recognized the value in utilizing them. The instructional coach described how Teacher A was looking for these tasks and had brought the instructional coach some tasks to review and choose from for an upcoming lesson. In addition, the instructional coach discussed the progress one fourth grade math teacher had made with regards to differentiating instruction for the advanced students in her class. She said,

> The fourth grade math teacher… has actually created tasks. I think she's realizing the need for that for those students, even when I'm not going to be in there.

Theme 3: Changing of instructional practices in mathematics.

A third theme found at Dunlin in regards to instructional coaching and co-teaching was was the changing of teachers' instructional practices in mathematics. The teachers received hands-on, relevant training on differentiated instruction, just by observing the instructional coach model in the classroom during co-teaching. They could see how their students reacted to the instruction and how the instruction impacted their students' learning. The principal discussed how co-teaching has encouraged some to the teachers to consider instructing in ways that they had not thought of before. She said,

> …It's making them bridge out into some areas and try some new things that are more challenging for their students and more challenging for them. But they feel safer doing it because of that co-teaching model.

The instructional coach concurred with the principal and described the various learning experiences that the teachers were receiving through looking at resources and the modeling of instruction from the instructional coach. The coach explained,

> …I think the variety of resources that you bring, maybe things they didn't think about doing or sites that you share that they've never used before. I think it's just really opened their eyes to see 'I do need to up the rigor for these kids and just let the kids feel their way through the math sometimes, rather, because they don't need just an algorithm. They need a concept and build that conceptual understanding and be challenged. It's okay for them to struggle.' That's been probably the hardest thing to try to get through to them.

Teacher A expressed how often she does "too much explaining" when she is teaching a new concept to her students because she wants to ensure that the students understand the concept well. She admitted that providing too much explanation likely caused her to lose the attention of the advanced students because those students did not need all of the explanations and the examples in comparison to other students. Teacher A demonstrated learning and interest in the way that the instructional coach facilitated instruction when she said,

> If she's working with the kids and I'm listening to her, I think, 'yeah, that's probably how I would have done it too'. Sometimes, I'll say, 'wow, that is a good way to present it', so I'm learning stuff like that from her.

Although Teacher B was confident in her ability to teach 5th grade math, she admitted that she tended to teach at the whiteboard and often utilizing the "drill and kill" method of instruction. She shared how the instructional coach had gotten her to look "outside the box" with more project-based learning activities through co-teaching together. Teacher B shared,

> She's definitely brought some new ideas in, and we've been talking about using some rubrics and things like that. Normally, I would have to say I don't spend a lot of time doing that...I don't do a lot of worksheets, but I think she's bringing some newer ideas in. She has some time to look at those things, whereas I'm dealing with students all day long. I've enjoyed that.

Due to the instructional coach finding the resources that align with best practices in mathematics, the teachers were able to save time, learn about some new resources that they didn't know about, and observe how their students reacted to the new resources during co-teaching. At the time of the study, both participating co-teachers had started reaching out to find higher order mathematical tasks on their own, or they were creating some for their students, which stressed their new learning and changes in their instructional practices due to co-teaching with the instructional coach.

Theme 4: A feeling of partnership between the instructional coach and the teachers.

The fourth theme found was that the instructional coach and classroom teachers experienced a feeling of partnership in meeting the needs of all students in the classroom. The instructional coach respected the classroom teachers as the leaders in the classroom, and one of her foci was to help the teachers grow as educators. Rather than dictating anything, the instructional coach asked the teachers about what their goals were for the lessons, and she expressed how co-teaching with the teachers allowed her to do that more often. The instructional coach took on a role of servitude for the teachers, and she supplied the teachers with whatever

they needed to support their instruction with the diverse learners in their classrooms. This perspective helped to foster the partnership and make the teachers more receptive to the instructional coach's ideas, as well. The instructional coach shared,

> …The fifth grade teacher that I work with…I might be at the active board. She might have a group at the back. Another group might be on their computers…she's been very receptive and she's actually trying to find performance tasks for the kids. When I show up with stuff, she's like "I found these."

Teacher B expressed how working with the instructional coach in partnership was easy because the instructional coach knows the curriculum in the upper grades because she was once a fourth-grade teacher. She explained this partnership when she said,

> I feel like that there doesn't have to be a whole lot of teaching on my end to the instructional coach about the curriculum or about this math skill about how we do this math skill in fifth grade. She already knows that; she's taught it before, and I just enjoy it because we have a good rapport with one another, and we can read each other. We don't have to say it. We already know how to feed off each other and how to help each other in front of the kids. I really enjoy it.

During one interview, Teacher B gave a detailed account of one lesson and how she and the instructional coach partnered during co-teaching to benefit all of the students' learning. The students were given tasks in groups at the start of the lesson. Teacher B described how they both walked around and listened to the conversations that were going on to find out which students understood the concept and which students needed more help. During this time, Teacher B also placed the students into three leveled groups, based on their responses and their perceived understanding of the mathematical ideas. Because the instructional coach and the teacher had planned out their roles, Teacher B showed the instructional coach the names to see if she agreed with the student groupings. From there, the students were informed to start at certain stations. The students rotated between the three groups, but the instructional coach and the teacher were able to work with every student in the classroom during that time. The instructional coach and

Teacher B had a system established to where the students who needed a challenge went to the instructional coach first, and the students who needed the most scaffolded support went to the classroom teacher first. The other group worked on activities posted in Google Classroom until the groups rotated. Teacher B expressed how the students could tell that she and the instructional coach had a partnership when she shared,

> That was our lesson, and we always pull back and reflect with the kids, too, at the end. We allow them to communicate back with us about what they liked and didn't like. The kids are becoming more used to (IC's name) being in the room now. You can tell that, when they see her in the hall, they are saying, "Are you coming? Will we see you this week?" I think they are really beginning to enjoy having both of us together. So that was the latest lesson that we did together. It worked really well.

Teacher B also shared how obvious it was that the instructional coach enjoyed being in the classroom and working with students in partnership with her. She highlighted the instructional coach's enthusiasm and excitement when the coach was pleased with how well the students worked in her group. Teacher B said,

> I always can tell when (IC's name) pulls a group. Sometimes she pulls them in the back of the room. Sometimes she pulls them out in the hall. Sometimes, she'll bring a group in the library. You can always tell when she comes back and she has that big smile. She's always telling me about "…even Boy A did this activity today, and they've never done something like that before." I can always tell with her excitement that somebody has done something that has surprised her or shocked her. We always try to celebrate those students at the end of class if we notice something like that.

At the time of the interviews, Teacher B collaborated a lot with the instructional coach in partnership to meet the learning needs of an advanced student who was twice-exceptional. Teacher B and the instructional coach worked together to modify work for the student and to place the student on a plan for success. Teacher B discussed this partnership and how the instructional coach was an important part of the plan for the student's success. Their partnership was clear when she described,

…still dealing with the student that we spoke about in our last interview that struggles to get anything done. We're still trying to work through those issues with him, but they are getting better. We set some checkpoints up between me and (IC's name), so not just on Monday and Wednesday do we check on him. She tries to check on him at least once a day on Tuesday and Thursday to keep him accountable…Is he completing things? Is he finishing things she leaves him with? I think that is helping some, that there is some daily contact between me and her about that student, and even some face-to-face contact with him, too, on the days that she doesn't serve in the classroom. That seems to be helping.

Relationship Changes.

The instructional coach had worked with the teachers at this school for seven years prior to the study, which allowed her to form relationships with the teachers before the co-teaching experiences started. Due to this, the researcher found that the relationship mainly changed in that it grew into more of a partnership instead of just a collaboration between the teachers and the instructional coach. With the addition of a co-teaching partnership in the schedule, the researcher found two themes in regards to relationship changes: (1) the instructional coach and the teachers mutually helped each other to meet the needs of students, and (2) the teachers reflected more with the instructional coach.

Theme 1: Mutual help to meet the needs of students.

One theme found was that the instructional coach and the teachers mutually helped each other to meet the needs of students. The instructional coach felt that she could serve the teachers best by providing them with the materials and resources to meet the needs of their advanced learners in the classroom. Through offering instructional materials that align with the standards that the teacher was working on and being willing to teach the teacher's students in stations, the instructional coach aimed to lessen the amount of work that teachers had to do so that they would be more accepting of co-teaching and be more willing to try new instructional practices. The

instructional coach described how she had designed a lesson to go along with area and perimeter in the fourth-grade classroom. She explained,

> …she was doing area and perimeter, so I designed a thing with different sizes of wrapping paper and stuff, where the kids went around. I had thrown some irregular shapes in there, where they had to divide it up into different rectangles and find the missing dimensions... When she saw them, after I put them up around the room, she said "oh yeah".

Teacher A concurred with the instructional coach that the materials that the instructional coach brought in were helpful and benefitted her students. She said,

> I think it's helped me a lot because this is one of the first years in a while that I've worked with a whole class of higher-level students all at once…having somebody else to rely on to help me come up with ideas and take part of the responsibility, so that I am making sure that the students are being enriched further in their math activities…

Teacher B also expressed that the extension activities the instructional coach brought in helped save her time and challenged her students, while also causing her to think differently about instruction. She found that she was doing things that she normally didn't do in the classroom, which she accredited to working with the instructional coach and co-teaching with her. However, Teacher B further emphasized that the instructional coach and her had to help each other to meet the needs of the students, especially the advanced students. Although the instructional coach brought in the challenging extension activities, Teacher B knew the students and their needs better because she had them in her classroom every day. Teacher B said, "I think a true understanding of the kids and how we can meet their needs comes from both of us working together and putting our thoughts together." The instructional coach, who referred to the teachers as "the expert in the grade level material", acknowledged that working with the teachers so closely helped her with understanding the mathematical content knowledge and learning a new way to present the material. This was especially true in the fifth-grade class since she had not previously taught fifth grade.

Theme 2: Teachers reflected more with the instructional coach.

The second theme found was that the teachers reflected more with the instructional coach because of co-teaching with her. They shared data and information about student learning and student learning needs regularly in the professional learning community, but they were also sharing information via email, text, and during face-to-face opportunities, such as in the hall. The instructional coach communicated that, through co-teaching together, she and the classroom teacher had opportunities to discuss how lessons went and how teachers felt about the use of mathematical tasks in the classroom that they had not previously been using. The instructional coach discussed how the fifth-grade math teacher reflected on a challenging math activity that she had recently given her students.

> I was walking by the fifth-grade room that I'm working in. They were switching classes, so she was out the door. She showed me an activity with volume that she had done with the Sears Tower. She was talking about how much they were challenged by it and how they had to struggle, work through it, talk, and have that discourse. You could tell she was excited about it rather than just doing the regular word problems or getting on IXL.

By bringing in tasks and modeling how to implement them in the classroom with the teacher's students, the instructional coach hoped that the teacher would see the benefit of letting their students struggle some. The instructional coach shared how she reflected with a teacher. She said,

> She worries…when the kids struggle because they're high. We've talked about, …, 'if none of us ever struggle, we're not going to grow. You've got to be challenged in order to continue to grow'.

The instructional coach aimed to help teachers see, through reflection, that the advanced students needed to do mathematical tasks instead of just practicing an algorithm or doing a basic word problem. She explained how she planned to get a teacher to do some reflection on utilizing small guided math groups in the classroom. The instructional coach said,

I'm hoping that once we do stations or something, and then we can come back together and talk…I'm hoping she will realize that you get a better insight to where the student is and can see quickly who's ready to move on. I can offer some little extra things for those kids that are ready to move on. I think that's what it would take…me stepping it up and saying "okay, I don't mind having something else for this child to do", rather than her feeling like she needs to plan a lot of different activities.

Issues that result from co-teaching.

At the time of the study, Dunlin Elementary was in its second year of implementation with instructional coaching and co-teaching. It had become a part of the culture in the school, and the classroom teachers who co-taught with the instructional coach found co-teaching to be useful and supportive in meeting the various instructional needs of students. However, there were several issues that resulted from co-teaching in which the participants of the study worked to resolve. The three main issues found were: (1) there was not enough time to plan for co-teaching, (2) there was a lack of communication and a misalignment of lesson goals between the instructional coach and the classroom teachers, and (3) the varied roles of the instructional coach interfered with her co-teaching schedule.

Not enough time to plan for co-teaching and lack of communication.

Similar to the situations at the other schools, some participants at Dunlin felt that not having more time to plan for co-teaching was an issue. Although they communicated often through email or Google Drive to share ideas and resources, the instructional coach and teachers did not have a lot of time to sit down and plan together or filter through resources together, face-to-face. This became a common theme across all of the cases, which indicates a serious need for principals and district leaders to consider the repercussions of the instructional coach's schedule on the implementation of instructional coaching and co-teaching. The instructional coach explained why it was difficult to plan with the teachers on a regular basis.

…If it's their planning time, I may be at another classroom…That's the biggest issue, I guess, is the time to plan…the time to really sit down and talk about the kids…a lot of times, it's just touching base real quickly right afterward or catching them in the hall. It's hard to have a meaningful conversation when you just have a few minutes to talk.

Co-teaching in the classroom was utilized to ensure that the advanced students at Dunlin were receiving appropriate, differentiated instruction in the regular classroom setting. One of the instructional coach's roles was to help serve the advanced students, but she also was aiming to help the teacher utilize more appropriate, rigorous tasks for all students in the class on a regular basis. Due to a lack of planning time with one another, there often was a lack of communication and a misalignment of lesson goals between the instructional coach and the classroom teachers because of this. Even though all students could benefit from solving a challenging mathematical task, there were times when the instructional coach brought in a particular mathematical task that was only intended for the advanced students to complete. When students besides the advanced students were placed in the instructional coach's group, it was often that they struggled more with the task and needed a lot of scaffolding from the instructional coach. The coach explained,

I was in the…classroom this week, and I had taken an activity for the standard that the teacher was teaching...She ended up wanting me to do my station with all of the students, and it was a little hard. It was too hard for some of the kids. They just needed a lot more guidance from me…I felt like they would be able to feel their way through it and get through the problem successfully…I wasn't really planning on doing it with all the kids.

Teacher B supported what the instructional coach said about not all activities being appropriate for all students. She even reported that some activities that the instructional coach brought in were too difficult for even the advanced students in the classroom. Teacher B explained how station teaching could be complicated at times because the co-teachers have to ensure that station tasks take about the same amount of time to complete for things to move smoothly. Teacher B added,

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What we're finding, though, is the activity that she plans that pushes them along is very, very hard for our lower kids…the activities are great, and they're pushing the higher ones along. We're going to have to figure out a way that we can take that same puzzle or same critical thinking piece and level it down a little bit. We're seeing that our lower kids are really struggling at her station…In every group, we have to be prepared for three levels of students…I think that that is one of the things that we are beginning to talk about between our communication with each other. That is just one of the challenges I think we face, but we're getting better as we go.

There was also a lack of communication and a misalignment of lesson goals between the

instructional coach and a classroom teacher when the instructional coach was not notified about

changes that needed to be made to a lesson plan for an upcoming lesson. The instructional coach

explained how she and the teacher, via email, had planned to focus on a certain standard during

co-teaching. However, the grade level schedule changed during the week, which slowed down

the pacing of the teacher. The instructional coach brought in an activity that correlated with a

standard and content that the students were not prepared for because of the schedule change. The

instructional coach explained how that one lesson didn't go very well because of the lack of

communication.

We had corresponded the week before, and she was going to be doing OA.1 on Monday, and then when I go back on Wednesday, she was going to be doing OA.3. When I went in Wednesday, we had a two-hour delay on that Monday, so I didn't get to go in there. On Wednesday, when I went in there, they weren't at OA.3, and I had materials for that. She said it was fine, it could be a little pre-assessment …to see where the kids were…it worked out okay… I was…exposing them to an enrichment activity, and they hadn't even been really introduced to the concept yet. We muddled through it. It was a struggle for the students and me, but…

Teacher A also implied how there was a lack of communication and a misalignment of lesson

goals between the instructional coach and her. The teacher described how she and the coach had

both brought in a different activity for a co-teaching lesson. However, she did not understand the

coach's activity because there had not been time for much communication about it, so the

activity that the instructional coach brought in was not used. Teacher A said, "I really didn't

know what her activity was, so we stopped for a little bit and she showed it to me. But I still wasn't a 100% sure." When Teacher A described a differentiated activity that the instructional coach had brought in a different day that was used, another example when there was a lack of communication and a misalignment of lesson goals was shared. Teacher A explained,

She came up with the lesson this time, so she included those irregular shapes, which I had not taught yet…If I had made it, I probably would not have included it, but it was good for them, because they did it last year so they were able to refresh their memory fairly quickly. But just not knowing all the little details that goes on in the class makes it a little hard for her to come up with the activity.

An additional example of a misalignment of goals came from the instructional coach. She shared during an interview that she would like to do more station teaching with one of the classroom teachers, but the teacher preferred whole group. The instructional coach said,

I would like to be doing some group-type things rather than everybody doing the same thing all the time. But it's just her teaching style, you know. When you're going in somebody else's classroom, you have to respect their wishes. But I am hoping that we can start doing more station kinds of things … I think you get a better feel for where the kids are rather than going around, trying to facilitate, when they're whole group, doing the same thing.

At Dunlin, the instructional coach and the teachers tried to communicate as much as possible. However, due to the lack of planning time, there was a lack of communication, and some of the co-teaching lessons did not go as well as planned. Either the instructional coach or the classroom teacher had different expectations, which created a learning situation for students that was not always optimal. In alignment with the participants at Albatross, Brant, and Calliope, the participants at Dunlin expressed frustration regarding the instructional coach's schedule and the lack of planning time that they had together to plan for co-teaching. The situation at Dunlin shows the extent to which teachers can find ways to communicate, but it also illustrates some valid concerns in regards to teacher satisfaction, collaborative relationships in the workplace, and environments that have the capacity to increase student learning. As in the other school sites, the

principal at Dunlin expressed no issues with the amount and the means of collaboration that the instructional coach kept with the classroom teachers. It appeared that she had not been informed of any such issues, which may be a reflection of the co-teachers feeling that expressing their concerns would not make a difference in the work environment. The co-teachers may feel that nothing can be done to resolve the issues, for the district had initiated the additional roles of the instructional coach, not the principal or school improvement team.

Interruptions to the co-teaching schedule.

The instructional coach enjoyed being in the classroom and serving teachers and students at the same time. However, the researcher found that the third issue related to how the varied roles of the instructional coach interfered with her co-teaching schedule. Other obligations occasionally, and sometimes even unexpectedly, pulled her from being able to execute planned lessons. The instructional coach and the classroom teachers emphasized how they communicated regularly, especially via email, but the instructional coach's schedule often left the teachers with doubt that she would even be able to come in for co-teaching. Teacher A explained,

> I think the biggest problem comes into is she for sure going to be there. Cause at any given time, she might have to go do something else, or she might be at a workshop or a meeting, so you just don't know. It can't always be counted on that she's there, through no fault of her own…Like today, I was going "I hope she's going to be here because she planned the activity." There is always that thought in the back of your head…she's not going to be here today.

Teacher B concurred with what Teacher A said about the problem with the instructional coach's schedule. She said,

> I think my biggest struggle with co-teaching is scheduling. It's easy to come up with a schedule of when we're going to do that, but it's also outside influences and outside meetings that effect that. I can have things and we can have things planned out, but when your instructional coach is the one co-teaching with you, we don't always know when she's going to be pulled to do type administrative type things here or discipline type things. She's going to have a meeting at central office. I think that's my biggest struggle with it. It's just not knowing that every time we set these times that she can be

able to be there every time. That's not our instructional coach's fault, but her primary role here is not just co-teaching…I get an email that says, "I can't come today. This has happened today."

The issue found at Albatross, Brant, and Calliope of an inconsistent and indefinite co-teaching schedule was echoed at Dunlin. At Dunlin, the classroom teachers often utilized what the instructional coach had offered and planned with them, even when the instructional coach was not available for co-teaching for one reason or another, but this was not always common in the other schools. When teachers did use the resources that the instructional coach offered them, it was most often due to their interest in learning new approaches or meeting the needs of all of their students in a new way. Therefore, in these situations, if the teachers are not interested in or not comfortable with trying new approaches, it is likely that resources from the instructional coach will not be regularly utilized or that students will not receive follow-up assistance for the resources because the teachers would not know how to use the resources effectively.

Resolving Issues.

Due to the instructional coach's role at Dunlin in serving teachers and students, she often had a packed schedule with trainings, meetings, professional development, and teaching students. The participants admitted that the issues of not having enough time to plan and co-teach were hard to resolve. However, the researcher found that the participants tried to lessen the impact of those issues through (1) communicating more with each other on a regular basis and (2) the instructional coach providing appropriate resources and activities that could be used with the advanced students if she had to be absent.

Communication and provision of resources and activities for advanced students.

The instructional coach expressed how she tried to resolve the issues through those two means when she said,

We touch base a few times a week, but probably not every day. I have a Google classroom set up for those kids, so I still offer to put things in the Google classroom for the students to work on during the days when I'm not available to be in there.

During one interview, the instructional coach admitted that she likely needed to touch base daily with the two co-teachers, just to make sure that their co-teaching lesson that was planned would still be on schedule. Teacher B expressed how she had worked with the instructional coach to improve their communication, in efforts to resolve the issues. She said,

I always know she's not coming or if she's going to get to come. Anytime that she's not, she's always communicated with me over email. We talked about an activity. We always do centers, and so we always plan a center with an extension activity that we had planned together, even if she's not there.

The instructional coach also discussed how she tried to let the teachers know how their students performed with tasks she brought in on a regular basis. She recognized that some of the tasks were difficult for some of the students, so she discussed this concern with one of the classroom teachers to come to the resolution of creating three leveled tasks for each station to meet the needs of all of the students.

About Eastern Towhee Elementary School

Eastern Towhee Elementary School has a population of 473 students and serves students in pre-kindergarten through fifth grade. The demographics of the population are 22.7% African American, 54.1% Caucasian, 18% Hispanic, 3.7% two or more races, and 1.5% of the students are Asian. The average class size in the third through fifth grade classrooms is 25, and the school includes 31 classroom teachers. 96.8% of the teachers are certified to teach their respective grade levels. In regards to the academic achievement of students, in the 2016-2017 school year, 54% of the students in grades 3-5 were reported as being proficient in reading and 48% of the students were reported as being proficient in mathematics at those grade levels.

About the participants.

At the time of the study, Eastern Towhee Elementary School was in its second year of implementation with instructional coaching and co-teaching. The instructional coach had 18 years of experience as an educator, and she had been working as an instructional coach at Eastern Towhee Elementary for 2 years. She reported adequate training the first year that instructional coaching and co-teaching was implemented in the school. In addition, one fourth grade teacher and one fifth grade teacher participated in the study. The fourth-grade teacher, referred to as Teacher B in this paper, had 26 years of experience as an educator, and she had taught at this school for 15 years. Teacher B reported that she had received little training on the co-teaching models. On the other hand, the fifth-grade teacher, referred to as Teacher A in this paper, reported that she had adequate training on co-teaching. Teacher A had been an educator for 15 years, and she had taught at this school for 3 years. The principal at Eastern Towhee Elementary had been an educator for 9 years, and she had worked at Eastern Towhee for one year as a principal. Being new to the district at the start of the school year, the principal had no formal training on co-teaching. However, the principal at Eastern Towhee greatly supported the co-teaching models and also expressed how beneficial it would be for all of her teachers to have some experience with it because the instructional coach was the elementary expert in the building. When pairing up the instructional coach with teachers for co-teaching, she considered teachers' interest in co-teaching and their personalities. The principal acknowledged the benefit that instructional coaching and co-teaching can positively serve students and teachers at the same time.

Planning for co-teaching.

At Eastern Towhee Elementary, there were limited times when the instructional coach could meet with the classroom teachers for planning. The teachers met with the instructional coach during their professional learning communities weekly to discuss student data and progress. However, most planning for co-teaching was done individually; they would discuss ideas and topics briefly and then each gather something for the lesson to do for a small group during station teaching. The instructional coach primarily gathered activities appropriate for the advanced students in the classroom to assist the teachers with differentiation. Sometimes the instructional coach and the teachers were not able to plan at all because of their differences in schedules.

Co-teaching models utilized.

Time spent co-teaching varied, depending on the schedule for the week. At the time of the study, the instructional coach was able to consistently co-teach with each teacher for about 45 minutes each week during mathematics instruction. However, if the instructional coach was not available to co-teach, she still provided the teachers with activities and assignments that could be used in her absence. The most common models of co-teaching used were station teaching and team teaching. The instructional coach also occasionally utilized alternative teaching.

Within Case Analysis for Eastern Towhee Elementary School

Experiences that result from co-teaching.

At the time of this study, Eastern Towhee Elementary School was in its second year of implementation with instructional coaching and co-teaching. The instructional coach was in her second year of instructional coaching, but she had worked with many of the teachers at the school a couple years previously in a different role. In this case study, there were three themes

found in regards to the experiences that resulted from co-teaching. These themes are: (1) professional development support for teachers, (2) differentiated support for students, and (3) an acclimation to co-teaching for all participants.

Theme 1: Professional development support for teachers.

All participants at Eastern Towhee indicated that there was professional development support for teachers due to the opportunity to co-teach with the instructional coach. The instructional coach provided ideas for teaching practices in mathematics and resources that were appropriate for the advanced learners in the classrooms. If the teacher and the instructional coach were team teaching, they would often bounce ideas and varying strategies back and forth to meet the needs of every student in the classroom. Through modeling and the sharing of resources and strategies, the teachers were able to receive relevant professional development when it was needed.

One example of professional development at the time of the study was Eastern Towhee's implementation of guided math groups. The teachers had recently received professional development on utilizing guided math groups during instruction, and the principal and instructional coach were focused on providing support for the teachers in implementation. The principal acknowledged the value of co-teaching when she discussed how the teachers working with the coach were having the most success with implementation of small guided math groups. She said,

> We are moving to guided math, school-wide, this year, and so that was something that was new, in general, for teachers that were not even co-teaching. We have been doing instructional walk-throughs just on guided math and giving feedback on guided math…I know with the teachers that she's working with, specifically, she's focusing more on content and how that's being delivered and strategies for meeting needs of students individually in guided math groups. She's kind of able to dig deeper with teachers that she's co-teaching with in regards to that aspect. It would be impossible to

get with every teacher in the school and really buckle down like that…They're moving forward a little bit faster, I think, than some of the other teachers.

The instructional coach supported what the principal said, talking about how she's worked with one of the teachers that she was co-teaching with on implementing the guided math groups. She shared,

> This year, we are getting small guided math groups going. That's a big change for teachers, so I was in one of the teacher's classrooms the other day, and it was the first day of guided math groups. The teacher and I were both roaming, making sure students were on task, but also talking, in the meantime, about changes that could be made to make things better, for ways to differentiate for different students.

The instructional coach discussed the value of co-teaching with classroom teachers when she said, "the more you learn about what the other person does or doesn't know, you can help with that." From talking with Teacher A, the instructional coach learned that Teacher A wasn't taught conceptually as a student herself, and Teacher A needed support with teaching her students conceptually rather than procedurally. The instructional coach described how she supported her teachers. She said,

> …that's something that I try to foster in little increments. I try to be an example. If that teacher gives an example on the board, I'll give a different kind of example on another board.

The instructional coach emphasized how she supports teachers in other ways. Because she has been in the classroom co-teaching with teachers, she has been able to help certain teachers with using more word problems instead of just "naked problems" that do not include context for the problem solving. At the time of the study, one of the coach's co-teachers needed something easier for group work and as a way to acquire grades for students. The coach suggested a technology resource that would automatically grade things for the teacher, but was also word problem-related. Since the classroom teacher had a need to solve a problem in the classroom, it was a good time for the instructional coach to make a suggestion that would

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instructionally benefit the teacher and the students' learning. Teacher A described the instructional coach as a "deep thinker" who helped the teacher reflect about her practice by asking if the teacher had considered other ways of teaching a concept. Teacher A expressed how the instructional coach had made her think in a different way and concurred with the instructional coach when she said,

> This is my third year back in the classroom, and I feel like I've learned a lot from her... I've had to totally change the way that I'm presenting the information to the kids, compared to how it used to be. It used to be more procedures and steps, and now it seems like you're teaching deeper, conceptually-based and hands-on… She gives me ideas and ways to implement them in my classroom and has helped me with technology. She's more computer savvy, and she's helped me with some technology ideas and things that I can implement.

Teacher B, who had been a fourth-grade teacher for many years, shared how the instructional coach helped her find and learn how to use other resources for teaching different concepts. The instructional coach got the teacher interested in utilizing more mathematics games in the classroom that correlated with different concepts. The coach also gave the teacher some multiplication and division higher order thinking activities for the advanced students in the class that the teacher had not been using. The instructional coach helped the teachers think "out of the box" with using different manipulatives or engaging the students in other ways. Teacher B said,

> I had a manipulative that I had over in the cabinet and we'd been doing groups. She brought it out and…they were just dice…but…she came up with an idea to use them for math, and I thought this is great because we're doing rounding in place value…and it just worked out perfect. I had not even thought about using that manipulative for that.

Theme 2: Differentiated support for students.

Another theme found with the experiences that result from co-teaching was the differentiated support for students in mathematics. The instructional coach and the two classroom teachers participated in the study acknowledged that co-teaching helped them meet the needs of the diverse learners in the classroom. During team teaching, the instructional coach

would share ideas with the students that the classroom teacher had not thought of, which helped some of the students understand the concept better by hearing and seeing a different way of thinking about the concept. Teacher A explained,

> I know it broadened my thinking in some areas, so I feel like it did help reach some of my kids that I may not have reached otherwise.

Teacher B supported what Teacher A said about the instructional coach's ability to ensure that all students were understanding the mathematical ideas in the lesson. Teacher B discussed how the instructional coach supported students during a lesson on multiplication. She said,

> She was able to get some of the children that I had not been able to reach…she has a relationship with some of them that I don't have, and I think it is probably from coming in and not being in here with them all the time…especially with the multiplication and the different steps. She just made them see it in a different way that I didn't.

The instructional coach provided activities regularly for the teachers to help the teachers meet the needs of the advanced students in the classroom. Teacher A shared how the instructional coach aligned her differentiated activities with the skills on which the teacher was focusing at the time. The instructional coach regularly fixed the advanced students a packet of enrichment work that the students worked on throughout the week when the instructional coach could not be in the classroom with them, but when the teacher was pulling other students in the small guided math groups. In support of the students, the instructional coach and Teacher A communicated to ensure that the advanced students were doing the differentiated work instead of the work that other students were having to do in the classroom. Teacher A explained,

> …we worked that out because she brought it to my attention that they were doing extra work instead of more enrichment work. We decided that the best thing to do would be to let them do her packet because it was more on their level, then to let them, on the choice board, take off some of the things that they already knew how to do that really

wouldn't benefit them anyway. That was a good suggestion that she made that we've implemented in the last several months.

In addition, due to the instructional coach being in classrooms for co-teaching, she was able to see and compare instructional techniques across classrooms and even grade levels. She was able to notice how teachers taught concepts differently, from fourth to fifth grade, for example, and see how students may be confused by the differences in procedures that teachers used from one grade level to the next. By bringing circumstances like this to the teachers' attention, the instructional coach was providing more support for students. The instructional coach explained how rounding was being taught different ways in fourth and fifth grade at the school, but her communication with the teachers about this helped lessen the confusion of the students. She said,

> …the (fifth grade) teacher showed a video of how to mark up the number to do rounding, …and we figured out that in fourth grade, they were…underlining the target number…on the video, it was the other way around…That was confusing for the kids because they had done that the year before, and now we are doing it the opposite way in fifth grade. If I had not been in there, the teacher might not have known that that is where the problem was with the kids…I'm really trying to work hard this year on listening and watching what teachers are doing, so that I can communicate with the grade levels before them…

Theme 3: An acclimation to co-teaching for all participants.

Even though it was Eastern Towhee's second year of implementing instructional coaching and co-teaching, the participants in the study were still getting acclimated to co-teaching. Teacher A described how she got used to team teaching and working with the instructional coach in the classroom. She said,

> …I feel like I am flexible, and I don't mind someone, not really taking over, but interjecting, when they feel comfortable, when they have something to say, bouncing off each other. At first, I know when we started…I wasn't used to it at first, you know, so it took a little bit of time to get used to, but once we got into the hang of it, it went smooth.

Teacher B also discussed how it took time to get used to having someone else in the room, teaching her students. She shared,

> Not that I don't like this, but I think it takes away a little of my grasp of the classroom. Sometimes, you know, I don't have that tight little ship that I want to run …Sometimes, it just gets out of hand, but that's okay. Because I'm learning from that also. Different people do different things in different ways, and you just have to learn from each other.

The instructional coach emphasized that she was trying to work through making sure that she and the teachers were on the same page with the direction of student learning. For co-teaching to work for the students, the instructional coach felt that she and the teachers needed to work towards aligning their instruction more, where the focus would be more on concepts rather than procedures. The teachers were making some shifts in their instruction due to co-teaching, but it was taking time and experience with co-teaching for this to happen.

Relationship changes.

The instructional coach and the participating classroom teacher had a good working relationship with one another before they started co-teaching with each other because they knew each other before the instructional coach was the instructional coach at the school. The researcher found that the only relationship change was that the instructional coach and classroom teachers got more comfortable with sharing the classroom and student concerns with one another, which opened up the opportunities for the instructional coach to help the teachers in other ways, unrelated to specific co-teaching lessons.

Theme: More open relationship.

The principal discussed how the teachers trust the instructional coach and were comfortable coming to her with concerns. She said,

> I think it's very important because what we don't see this year is the teachers feeling threatened or defensive about their data. We're not getting a lot of excuses about

students and what students can't do. The teachers really take ownership, but I think it's because they have trust with her, and they don't feel that she is evaluating or feel that she's insinuating they're not doing their jobs, or whatever it may be. I think they have that relationship where it's okay just to talk about what we're really seeing and how to respond to that.

The instructional coach also emphasized how the teachers and her are comfortable with each other. She expressed how she really felt her relationship had grown with one of the teachers because the teacher seemed to value her opinions and her suggestions. When asked how one of the teachers responded to her interjecting during a co-teaching lesson, the instructional coach said,

> She (teacher) wants to tell them (students) the right thing, and she knows that I love her. You know, I mean we have a good relationship, and I don't come in there and try to act like I know more than she does, cause I don't. I have a different perspective on some things, and she has a different perspective on some things. I appreciate the fact that she's been teaching that grade level for a long time and really knows a lot about it. But I think she has respect for me knowing that I think about things a little differently than she does…

Teacher A supported what the instructional coach and the principal said about the instructional coach and the teachers having an open relationship. When the researcher asked Teacher A if she would have come to the instructional coach with her concerns if she had not been co-teaching with the instructional coach, the teacher replied, "No, because we just would not have had that time to plan and talk about the activities and the students." Teacher A explained how having the instructional coach accessible made talking to her about issues easier. She said,

> It's just like a sounding board, like if I run into a problem with students. We're talking about what we're doing the next week, and she mentions something. If I said I've had a problem with that, she's quick to give suggestions and ideas of other ways she might've seen in another classroom or something she might've already experienced, so it helps to know, you know, that something she was doing in another classroom might work for us in here.

Teacher B also supported that she had a comfortable working relationship with the instructional coach. She discussed how the lesson goes when she and the instructional coach team-teach together. Teacher B described,

> I really like, if you're in the middle of a lesson and something dawns on you, you can bounce it off of each other. We have our aha moments in the middle of things, you know. I'm thinking of something and she's thinking of something. It's so easy to…we've worked together. It's okay to say, "Can I share this now?" It's okay to share in the middle of it. I think that's important to be able to stop in the middle of that lesson and share.

Issues that result from co-teaching.

At the time of the study, Eastern Towhee Elementary School was in its second year of implementing instructional coaching and co-teaching. The school had a new, first-year principal who was getting to the know the staff, and the instructional coach was in her second year of coaching. The instructional coach expressed how she still needed to learn a lot about how to be an effective instructional coach, and during the last interview, she informed the researcher that she and the principal had a meeting scheduled to discuss some of the issues that were involved with co-teaching. Three themes were found in regards to issues that result from co-teaching: (1) the need for the instructional coach to have planning time with teachers, (2) the need for the instructional coach to remain consistent with a co-teaching schedule, and (3) the concern over utilizing appropriate materials and activities with students in the classroom.

The need for the instructional coach to have planning time with teachers.

One issue found was the need for the instructional coach to have planning time with teachers. One classroom teacher could not meet for planning after school because she had young children to pick up, and the other classroom teacher was often involved in the afternoons in committee meetings. Because of the instructional coach's schedule, she could not meet with the teachers often during their planning times. Hence, although resources were shared, planning was

not executed very often. The principal at Eastern Towhee recognized the importance of the

teachers and instructional coach having that time to plan, as well as to debrief after a lesson.

However, she also expressed how difficult the time factor was to resolve. She said,

> Time and finding time. I think with co-teaching, I think it's very important that teachers not only have an opportunity to work together, but they have time to plan together, to debrief together, even outside of the classroom. Especially, in kind of seeing all of the different roles that my instructional coach has to take on every single day, just having the time for them to be able to really get the most out of that partnership- to have the time to plan together, to teach together, to debrief together. That can be time-consuming, and sometimes that's a challenge. I think just even finding that common time for them.

The instructional coach supported what the principal said when she said,

> … In order to do the co-teaching well, you've got to plan together… While I don't prefer to come in cold turkey and co-teach, that's what it is a lot of times because if we don't get that planning time together, I've got other things in my schedule and other things on my plate…

Teacher B also recognized that planning time was necessary for her and the instructional coach.

She said,

> I think we both know that we would like to have more time, and I know we have good intentions of trying to plan together. I think we have good intentions. I think we have ideas of what we want to do. I think there's things that we'd like to start and finish it in a timely manner, but I just don't think that time is there. We have a good relationship, and I really hate that we can't spend more of that time together…

The need for the instructional coach to keep a consistent co-teaching schedule.

The second issue found was the need for the instructional coach to remain consistent with

a co-teaching schedule. Because of the instructional coach's meetings and trainings off campus,

her co-teaching schedule was often interrupted, by no fault of her own. The principal recognized

that the instructional coach had a lot of duties within the school and for the school district, for

she had recently been assigned an additional district duty at the time of the study. The principal

explained how the inconsistent schedule could lead to some frustration for the instructional

coach. She said,

I think it is still the same issue that we have had all along, just time…she's been pulled into an additional role since we last spoken. That is now taking up more of her time on a district level with some obligations that they are asking her to fulfill. It's frustrating for her because she wants to be in the classrooms and working with teachers more than she is…I think she's being pulled in a lot of different directions so...it's an ongoing challenge because she wears so many hats.

Teacher A expressed how the inconsistent schedule of the instructional coach was somewhat of

an issue, but the packets of differentiated work that the instructional coach created for the

advanced students were very helpful if the instructional coach was not available. Teacher A said,

The whole time we work together, it's just been time constraints on her schedule that…has impacted her time in the classroom. But with the packets, even if she can't be here, they (advanced students) had that to work on, and that helps me to be able to spend my time with the others. Then when I do pull their group (advanced students), I can answer their questions about their packet. If there's something that I don't know, I can ask her (instructional coach) after school…and then share that information with them (advanced students) the next day.

The instructional coach also described an example of when her schedule interfered with co-

teaching in classrooms. She said,

If it's on my schedule, I try to do what's on my schedule. But if we have somebody come in for outside professional development, and they're going to be here all day, and I'm expected to be with that person all day…then I can't go in that day. I try to let people know ahead of time. Occasionally, I forget, but I do try to let them know ahead of time.

The concern over utilizing appropriate materials and activities with students.

The last issue found was the concern over utilizing appropriate materials and activities

with students in the classroom. The instructional coach was more knowledgeable and

comfortable with using more conceptually-based instructional strategies in the mathematics

classroom than the two co-teachers were. This difference was likely due to the training and

experience teaching that the two classroom teachers had prior to the co-teaching experiences

with the instructional coach. Hence, the instructional coach often brought to light the

conceptually-based strategies during co-teaching and included more rigorous, higher order

thinking activities in which the students were not often exposed. The instructional coach would

also provide additional materials for the teachers to use, especially for the advanced students, but

she was not always sure if the teachers utilized the resources she gave them, which concerned

her. The instructional coach explained,

> One issue here for me is giving teachers things. Typically, with one teacher, she
> uses the stuff I give her for the gifted kids. I'll give her math problems that are more
> difficult on whatever skill they're working on. The one teacher will use it, and the other
> teacher doesn't really use them as much, unless I give the students the papers directly. I
> tell them to pull them out if they are finished with something and the teacher's going over
> it and they have already checked it off and know the answer…just the issue of wanting
> them (teachers) to differentiate more, but it being a very slow process. And not just for
> the gifted kids, but for the other kids, you know. But in one classroom, I feel like things
> are going well with the kids who struggle more as far as them getting differentiation. It is
> the gifted kids I worry about the most.

Although the instructional coach felt that the teachers needed to utilize some differentiated

resources, especially for the advanced students, the teachers did not always understand the

activities that the coach wanted the students to do. The teachers also expressed concern over

some activities not being appropriate for all of their students receiving the instruction from the

coach. Teacher B had specific concerns over activities that the instructional coach brought in

during co-teaching, which were used with the entire class. She shared,

> Sometimes when she's doing things, …I think some of the children get
> confused...That seems to be a little bit of a problem, because I see them veering away
> from the lesson, or veering away from what we're doing, or getting sidetracked, and
> they're doing other things because…sometimes she can be a little over their heads.

In correlation with Albatross, Brant, Calliope, and Dunlin, these three themes stem from

the varied roles of the instructional coach and how the instructional coach's schedule includes

the availability of planning time and co-teaching time. An instructional coach's schedule dictates

his/her opportunities to plan and co-teach with teachers. As shown in these cases, if planning time is not implemented regularly, instruction will often be impacted in a negative way for students. The principal at Eastern Towhee was a first-year principal, just like the principals at Albatross and Calliope during their participation in the study. Their lack of experience with instructional coaching, co-teaching, administration, and the staffs at their schools may likely have been factors in how the schedule for their instructional coaches were created, but it is likely that pressures from the district leadership also impacted the schedules of the instructional coaches and how they were utilized in buildings across the district.

Resolving issues.

At the time of the study, it was the first few months of the school year, and the new principal had just recently gotten to know her instructional coach and the teaching staff. To resolve the described issues, the participants explained how they would need to collaborate and cooperate with each other to find solutions to the problems. The instructional coach and the teachers worked out a way to ensure that students received appropriate differentiated activities, even when the instructional coach was not available to come in the classroom.

Collaboration.

As mentioned before, the principal knew that more time needed to be allotted for the instructional coach to plan with teachers, but the instructional coach also had district duties that she had been assigned. The principal shared how she was planning on creating a more effective planning schedule with and for the coach because she recognized that a lack of planning time together was a problem. She said,

> My instructional coach and I've been talking a lot lately about how we can better work her schedule, starting and especially coming up with the new year… and then making sure that we have time in her day where she can actually sit and plan with them during the day because it's very hard after school. I think that's part of the problem…is

that they may not have time to plan every lesson or plan what they're doing together. Sometimes she might have to jump in and just kind of pick-up with whatever's happening in that moment.

Differentiated work for students from the instructional coach.

The instructional coach and the classroom teachers expressed that, since the time factor and scheduling is hard to resolve, they had worked out a way to make co-teaching work in the classrooms. The instructional coach created packets of differentiated work for students in both classrooms, and it was helping the teachers and meeting the needs of the students at the same time. Teacher B stressed how helpful the packets were when she said, "We do try to plan. That is something we try, and I try to carry out those plans, even when she's not here." The instructional coach added that, as long as she is comfortable in a classroom with the teacher and the content being taught, planning was not always necessary before co-teaching. The instructional coach said,

> I've done some great co-teaching when the teacher and I did not plan together. After you've been teaching a subject or grade level for so long, you sort of know the ins and outs. You know, I mean, I don't know it perfectly for fourth grade, but I know where the curriculum goes. I know the vocabulary that needs to be taught. You know, I know what the next step is.

Teacher B expressed the same viewpoint and discussed how this had been implemented with the instructional coach when she said,

> …If we have not had time to plan, she jumps in and goes right on with whatever we're doing…She knows it's okay to go the board and teach or help the children or to stop me and share with them something she knows. We have that kind of relationship.

Cooperation.

The instructional coach and the teachers worked together to meet the needs of all of the students in the classroom. The instructional coach's role was to assist with differentiated instruction for the advanced learners and help the teachers learn how to utilize more

differentiated instruction in the classroom, even when she could not be in there. In one classroom, guided math groups were utilized regularly, so the students received daily instruction on their level. In the other classroom, during direct instruction with the entire class, there were times when the instructional coach was concerned about providing the advanced students with more challenging work. On the other hand, when the instructional coach would bring in a challenging activity for the whole class, the teacher was concerned that the activity was too difficult for others in the class. In both of these cases, the co-teacher who was not directing the lesson scaffolded the lesson for students or added complexity to the lesson to ensure that the lesson was appropriate for all of the students in the classroom. Teacher B explained how she met the needs of students who struggled with certain activities when the instructional coach came in. She said,

> I try to walk around. I try to help the children that I see that are having trouble with...the activity. I'll try to reel them in by maybe taking them a manipulative or showing them a different way in the book, if we are working from a book or a piece of paper. I may…pull them to the side or maybe even work with a peer person that I know that can help them with what they need.

Results of Cross-Case Analysis

The five schools included in this cross-case analysis were either in their first or second year of implementing instructional coaching and co-teaching. The principals, instructional coaches, and teachers in the study had varied levels of experiences with their role at the time and in the school where they were located at the time of the study. There were some similar themes found in all five schools, and there were some differences in regard to each research question.

Experiences that result from co-teaching.

Collaboration to impact student achievement.

One common experience, in at least four out of the five schools, was collaboration to impact student achievement. There was some collaboration in regards to student data and creation of common assessments during professional learning community time, but most of the collaboration for co-teaching that aimed to impact student achievement was done either through quick face-to-face meetings after a lesson or in the hall or via technology, such as through email, Google Drive, or Google Classroom. The instructional coaches and the teachers shared differentiated activities and lessons with each other during this time, but they also discussed the progress of certain students in the classroom and what should be done to meet the students' needs. Through this collaboration, ideas and knowledge were exchanged about the activities and students, and the instructional coaches and the teachers benefited from the exchange.

Learning experiences for the participants.

Another common experience that resulted from co-teaching was learning experiences for the participants. The classroom teachers and the instructional coaches learned continuously from each other through their interactions, shared lessons, and observations during co-teaching. The classroom teachers learned more about utilizing conceptual models in mathematics, how to create and/or find differentiated activities for the advanced students, and new instructional practices, such as implementing tasks in the classroom or implementing guided math groups and running stations. In a couple of the cases, teachers actually were making changes to their teaching practices at the time of the study. The instructional coaches learned more about the students' specific needs in the classrooms, and they learned instructional practices that were shared with other teachers in their school buildings. The classroom teachers and the instructional

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coaches experimented with the different co-teaching models and learned how to match the co-teaching model with their learning objectives for the class. In addition, because the instructional coaches were co-teaching in the classroom to primarily help meet the needs of the advanced students, all of the participants learned about and implemented the utilization of student data to drive their instruction during co-teaching. Overall, because the professional development was embedded in their classroom experiences, it was relevant learning and all of the participants benefited from it.

Impact that co-teaching had on students in the classroom.

The third common experience that resulted from co-teaching was the impact that co-teaching had on students in the classroom. Due to the differentiated activities and having at least two teachers in the classroom at a time, lowering the teacher to student ratio, students were more engaged in most of the cases. The models of co-teaching mostly used were team teaching and station teaching, which provided an opportunity for the teacher and the instructional coach to plan differentiated lessons according to the students' needs. In stations, students often were working on computers while the teacher and instructional coach were instructing other students in small groups, based on their individual needs.

Relationship changes over time.

Partnerships established between teachers and the instructional coach at each school.

At all five sites, the participants reported, from the beginning, that the instructional coach and teachers at the school had a good working relationship with one another. The co-teachers collaborated weekly in professional learning communities and discussed student data from formative assessment. However, before co-teaching became a standard practice at these schools,

the instructional coach did not often have an opportunity to go into the teachers' classrooms on a regular basis to impact instruction and student learning. Due to co-teaching, the instructional coaches worked in partnership with the classroom teachers to meet the needs of the students, which actually fostered more trust between the instructional coaches and the teachers at their schools.

More trust.

The increased trust and opportunities for collaboration allowed the instructional coach to provide more on-time support for teachers, right when the teachers needed it. Since the teachers received the support they needed, they were more likely to reflect with the coach and ask the coach for more support if they needed it. They were also more likely to try new instructional practices since the coach was there for support, which demonstrated an open relationship between the instructional coaches and the teachers they worked with. However, the more time the instructional coach had to plan with the classroom teacher impacted the extent to which the teacher would reflect and make changes in their instructional practices.

Issues that result from co-teaching.

Lack of planning time for co-teaching.

In all five cases, participants reported that the instructional coach and the classroom teacher did not have enough time to plan for co-teaching. In most cases, the teacher planned the learning objectives and the assessment that would be utilized, and the instructional coach planned instruction for a small group of advanced learners. In some cases, the instructional coach brought in materials and plans to be utilized for a whole-class team teaching lesson.

However, it was not often that the instructional coaches and the teachers at their schools got to plan a lesson from beginning-to-end together. This was a concern of the participants; they

expressed the need to know how the lesson was going to be presented to the students, and it was important to them, naturally, that they would be prepared for the lesson or activity that was going to be implemented. Although the participants often sent objectives and activities for a lesson via email, the classroom teachers and the instructional coach often did not have enough time to really analyze the resources together and consider the appropriateness of the resources for students in the classroom. Due to the lack of planning time, it was often that activities were not aligned with all of the students' needs at the time of the lesson, or there was a misunderstanding of who would be receiving a particular activity or how a particular activity was going to be implemented.

Concerns over the co-teaching schedule.

Another issue that was found in all five cases was the concern over the co-teaching schedule and the varied roles of the instructional coach. The instructional coach often had to go to meetings and trainings, which sometimes interrupted her co-teaching schedule. Some of the instructional coaches participating had regular administrative duties, which couldn't be helped, such as taking on the role of the substitute in a classroom or handling a discipline problem because the principal was absent. Although the teachers expressed their recognition that the instructional coach's schedule was not the coach's fault, in some cases, it did affect the extent to which teacher's felt that they could "count on" the coach to be there to work with the class or instruct students in small groups.

Logistics of co-teaching.

The third main issue was that, in each case, there was one issue related to the logistics of co-teaching. Co-teaching had to be planned, from the content of the lesson to the model of co-teaching to the place where co-teaching was going to take place. If station teaching was going to

be utilized, the instructional coach and the classroom teacher had to make decisions about what students were going to be doing in stations if it was not their time to be in a small group. Also, they had to agree on which students would be in certain groups. Usually, the teachers and the instructional coach moved students into small flexible math groups based on the students differentiated needs, and their instruction was based on that. However, there were a couple of instances when both the instructional coach and the teacher wanted a particular student in different groups, such as in the case that a gifted student was not performing well with a certain mathematics skill. At a couple of the schools, the instructional coaches even discussed that they did not always have the materials they needed, such as a whiteboard or appropriate table, for instruction in their small group in the teacher's classroom.

If the instructional coach and the classroom teacher were team teaching, optimally, the co-teachers would be able to plan out their roles to know who was going to lead what part during the lesson. The co-teachers had to decide if the planned lesson was going to be appropriate for all students and decide on how the instruction would be made accessible to all students if it wasn't. However, in a few cases, either the instructional coach or the classroom teacher felt that the instructional activity planned was either too easy or too hard for certain students in the class, which caused some issues that had to be worked out. Most of the logistics of co-teaching could have been worked out and/or avoided if the instructional coach and the classroom teachers had adequate planning time together.

Findings and Implications for Practice

As indicated in the research literature for both instructional coaching and co-teaching, having administrative support is extremely important to a successful implementation. Instructional coaching and co-teaching require that the instructional coach have time in his/her

schedule to plan with the teachers and co-teach with the teachers on a regular schedule. Because it is the principal's role to create the master schedule for the classes in his/her school, time for co-teachers to plan and co-teach together is largely dependent upon the principal's effort in supporting such practices. Hence, if co-teachers are not provided with the time needed for planning and a conducive schedule for co-teaching, principals may be inhibiting these efforts unintentionally.

Within all of the five cases, the issues that resulted from co-teaching included or stemmed from a lack of planning time and a lack of co-teaching time, which was the direct result of the master schedule and the instructional coach's schedule within the school. It may be that the co-teaching training for principals was insufficient, for some of the principals lacked the training, but training likely did not include how to create a co-teaching schedule that would serve to provide both planning time and co-teaching time for the instructional coaches and the teachers.

Since instructional coaching and co-teaching was initiated by the district, it would be important for the district leadership to ensure that principals were adjusting their school schedules, as needed. Also, with all of the district meetings and trainings that the instructional coaches had to attend, it would be important for the district leaders to create a consistent schedule of meetings and trainings at the beginning of the year for instructional coaches so there would be fewer changes throughout the school year with implementation. In addition, district leaders should be cognizant of the extra administrative duties that are placed on instructional coaches in their schools. With the extra role to co-teach and provide services for students, some of the administrative duties that the instructional coach may have been assigned in the past would need to be taken off of his/her workload to ensure successful implementation. Since the

principals were either not aware of or failed to mention the issue of time for planning and co-teaching, it would be important for district leaders and principals to gather anonymous data about how teachers and instructional coaches are feeling about instructional coaching and co-teaching regularly to gauge what changes need to be made in the future and to come up with valid solutions. Overall, instructional coaching and co-teaching will need to become a priority in the district if successful implementation is going to be at the optimal level.

Resolving issues.

The instructional coaches and the classroom teachers who participated in the study worked in partnership to resolve any issues that came up. The issues of having planning time together and having a consistent co-teaching schedule were complicated with the varied roles of the instructional coaches. During the time of the study, these issues were not completely resolved at any of the schools, but a couple of the principals were aware of the problem and were looking at ways to create a better schedule for the instructional coach. In all of the cases, the instructional coach kept the classroom teachers well-informed and communicated with them regularly so that they would know if the coach was going to be able to come in or not. The instructional coaches and the classroom teachers also communicated regularly via email and quick conversations before, during, or after school to ensure that the teachers had what they need to meet the needs of the advanced learners in the classroom. If an instructional coach knew that she was going to be out on a day of co-teaching, it was often that she would give differentiated packets of work to the teachers for their advanced students, or the instructional coaches created lessons or activities on Google Classroom for students to complete during the time that they would have been in the classroom.

Most of the instructional coaches and the classroom teachers worked through the logistical issues through reflecting and collaborating. As concerns were presented, the coaches and teachers reflected on the lesson together as they could, even if it was for a couple of minutes right after the lesson had finished. Due to this continuous collaboration and communication at most of the schools, student and teacher needs could be met through partnership between the classroom teacher and the instructional coach.

Summary of Chapter 4

This chapter presented the data and results from the 20 surveys and 60 interviews that were conducted with the participants. For each school studied, a descriptive, within-case analysis was shared, and a cross-case analysis of all five cases was presented at the end of the chapter. These themes and findings will be further discussed in chapter five, and an alignment to the "legitimate peripheral participation" framework will be described (Lave & Wenger, 1991).

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Chapter five includes an overview of the research study, description of the findings,
implications for practice, recommendations for future research, and a conclusion.

Overview of the Research Study

Previous research indicated that many teachers are ill-prepared to teach mathematics to
students from a variety of skill levels and backgrounds due to a lack of mathematical content
knowledge and pedagogical content knowledge (Ball & Forzani, 2011; Battey, 2013). For
teachers to change and improve their instructional practices, they need sustained support, which
has been provided through the use of instructional coaching (Hull et al., 2009; Mangin &
Dunsmore, 2015). However, one challenge presented by coaching is the reluctance of some
teachers to get help and support (Hull et al., 2009; Sheffield, 2006). These teachers are often
fearful that the new techniques will not actually help their students perform better or that they
may lose teaching time or classroom control if they try out new teaching practices (Hull et al.,
2009). Also, some are often uncomfortable being observed, or they worry about having
problems with the content (Sheffield, 2006).

A solution to this dilemma related to instructional coaching is co-teaching. Although co-
teaching was designed initially to help students with disabilities, it has been utilized in some
instructional coaching contexts, along with demonstrations and observations. Co-teaching
promotes a partnership between the two professionals that includes collaborative decision

making and shared roles in the planning for instruction, but it also supports the learning of all students and the professionals who are working together collaboratively (Friend et al., 2010; Murawski & Hughes, 2009; Pratt, 2014; Ploessl & Rock, 2014; Sileo & van Garderen, 2010; Sutton, Jones, & White, 2008).

Chapter one provided the significance of the study, the problem and purpose statements, the research questions, and the conceptual framework utilized for the study. In this chapter, the problem statement described that few studies have addressed the experiences that result from a co-teaching relationship between instructional coaches and elementary classroom teachers. It is important to analyze how relationships change over time between an instructional coach and a classroom teacher to know the effectiveness of instructional coaching in changing teacher beliefs and practices over time. Knowing what issues may result in a co-teaching relationship between an instructional coach and an elementary classroom teacher may help administrators and district leaders find solutions for dealing with these problems. Furthermore, it would be useful to know how the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship, especially with respect to mathematics instruction.

The purpose of this holistic multiple-case study and comparative cross-case analysis was to illustrate what experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers. This includes relationship changes between an instructional coach and a classroom teacher, issues that come up, and how issues are resolved by the instructional coach and the classroom teacher, especially within the context of mathematics classrooms. In order to understand the professional learning through social

relationships between classroom teachers and the instructional coach, the Lave and Wenger (1991) participation framework was presented as the conceptual framework for the study.

Chapter two reviewed prior research on instructional coaching and co-teaching. In this chapter, the models for coaching, conditions that support coaching, challenges presented by coaching, and outcomes of coaching in relation to student learning were reviewed. In addition, chapter two provided research on co-teaching: the importance of training, importance of mutual planning time for the co-teachers, importance of the co-teachers collaborating about their roles and responsibilities, and how successful co-teaching can be implemented.

Chapter three discussed the methodology for the study and the purpose in utilizing case study methodology. The research questions for this holistic multiple-case study were included, which are:

(1) What experiences result from a co-teaching relationship between instructional coaches and elementary classroom teachers?

(2) How does the relationship between an instructional coach and an elementary classroom teacher change over time through co-teaching interactions?

(3) What issues result from a co-teaching relationship between an instructional coach and an elementary classroom teacher?

(4) With respect to mathematics instruction, how do the instructional coach and the elementary classroom teacher work together to resolve any issues that come up in their relationship?

In this chapter, the following were also described: the context of the study and the site selections, participants, sources of data, and the process for analyzing the data. The role of the researcher and limitations of the study were also shared.

The case study research methodology utilized for this study provided answers to how and why instructional coaching and co-teaching affected the relationship between classroom teachers and instructional coaches. Through collecting interview and survey data from the 20 participants, the researcher was able to understand how instructional coaching and co-teaching worked at each school site in the study. The literature review supported that mutual planning time and collaboration about co-teaching roles were very important to having a successful co-teaching partnership. The literature review section on coaching further supported the importance of trust, reflection, and relationship-building in getting teachers to feel comfortable asking for any advice or assistance from the instructional coach. Due to the nature of co-teaching, it provides the opportunity for teachers and instructional coaches to build a trusting partnership centered around student success. In such cases, the instructional coaches get to know and understand the classroom climate and students, where they can affect instructional practices while also affecting teachers' learning of new instructional practices. In essence, the instructional coach, the classroom teacher, and the students have potential to benefit from the interactions. Therefore, the researcher expected that instructional coaching and co-teaching would positively affect the relationship between instructional coaches and the classroom teachers with whom they co-taught.

Conceptual Framework

During the course of this study, the co-teaching relationship between instructional coaches and the classroom teachers at their schools was analyzed using a *situated learning* lens, which Lave and Wenger (1991) have regarded as *legitimate peripheral participation (LPP)*. Within this view of learning, Lave and Wenger (1991) stress that newcomers, or apprentices, participate with practitioners in the community, and learning is an integral component of this participation. Hence, social co-participation is necessary within the contexts for learning to

result. These authors posit that learning takes place when one person who is less skilled than the other is able to participate within the context of the other's expert performance. Learning is mediated by the varying points of view of the co-participants; therefore, it is distributed among all of the participants to benefit the context in some way. However, the relationship and interactions between a master and an apprentice create opportunities for both of them to learn and change through the co-learning process because experience and understanding are constantly evolving.

Within the context of this study, the instructional coach's role was to work towards improving the instructional practices of teachers, just as a mentor, expert in the field, or as a master to an apprentice. Due to the nature of the instructional coach planning with the teacher and co-teaching within the same environment as the classroom teacher, the classroom teacher, regardless of the amount of his or her experience, is like an apprentice, working towards improving his or her instructional practices with intent. Using an LPP lens, the co-teaching relationship between the instructional coach and the classroom teacher should change over time, through their interactions and discussions to reach the common goal of impacting student learning.

With this conceptual framework in mind, the research questions focused on the experiences that result from co-teaching, how the relationship between the instructional coach and the teachers changed over time due to co-teaching together, and how they resolved issues to reach a common goal. Since co-teaching requires that at least two professionals work together to educate a diverse group of learners in one classroom environment, there is a common goal and a common job that allows both the classroom teacher and the instructional coach to learn from each other. Although it was hard for the participants in this study to have the time to meet and

collaborate face-to-face, their common goal of impacting student achievement in a positive way led them to find a solution to collaborate via technology. The participants in the study utilized various forms of technology to stay connected with each other, and this regular communication, although sometimes insufficient, improved their relationship over time. All of the participants reported that they emailed back and forth with each other, and several of the participants reported that a Google Classroom or Google Drive format was utilized for communicating and sharing ideas and resources. Some of the participants even texted one another in the evenings when they had time or on weekends when they were planning for the next week. Although use of technology was not the participants' preferred method of communication and collaboration, the technological means were social spaces where learning took place for the instructional coaches and the classroom teachers. This finding illustrates the possibilities for planning for co-teaching, as well as the interest that these educators have in collaborating and learning from one another. Hence, situated learning in this environment is extended to other social spaces beyond the classroom for the classroom teachers and the instructional coaches.

Description of the Findings

The purpose of this section is to present the findings from the study in terms of the research questions presented in chapter four. The study focused on the relationship between instructional coaches and classroom teachers within the context of a co-teaching situation. This study indicated that, although a more trusting partnership is built between the instructional coach and classroom teacher due to co-teaching, the amount of planning time they have together and the amount of co-teaching time together can impact the extent to which teachers will change their instructional practices.

Results of Cross-Case Analysis

The five schools included in this cross-case analysis were either in their first or second year of implementing instructional coaching and co-teaching. The principals, instructional coaches, and teachers in the study had varied levels of experiences with their role at the time and in the school where they were located at the time of the study. There were some similar themes found in all five schools, and there were some differences in regard to each research question.

Experiences that result from co-teaching.

Collaboration to impact student achievement.

One common experience, in at least four out of the five schools, was collaboration to impact student achievement. There was some collaboration in regards to student data and creation of common assessments during professional learning community time, but most of the collaboration for co-teaching that aimed to impact student achievement was done either through quick face-to-face meetings after a lesson or in the hall or via technology, such as through email, Google Drive, or Google Classroom. The instructional coaches and the teachers shared differentiated activities and lessons with each other during this time, but they also discussed the progress of certain students in the classroom and what should be done to meet the students' needs. Through this collaboration, ideas and knowledge were exchanged about the activities and students, and the instructional coaches and the teachers benefited from the exchange.

Learning experiences for the participants.

Another common experience that resulted from co-teaching was learning experiences for the participants. The classroom teachers and the instructional coaches learned continuously from each other through their interactions, shared lessons, and observations during co-teaching. The classroom teachers learned more about utilizing conceptual models in mathematics, how to
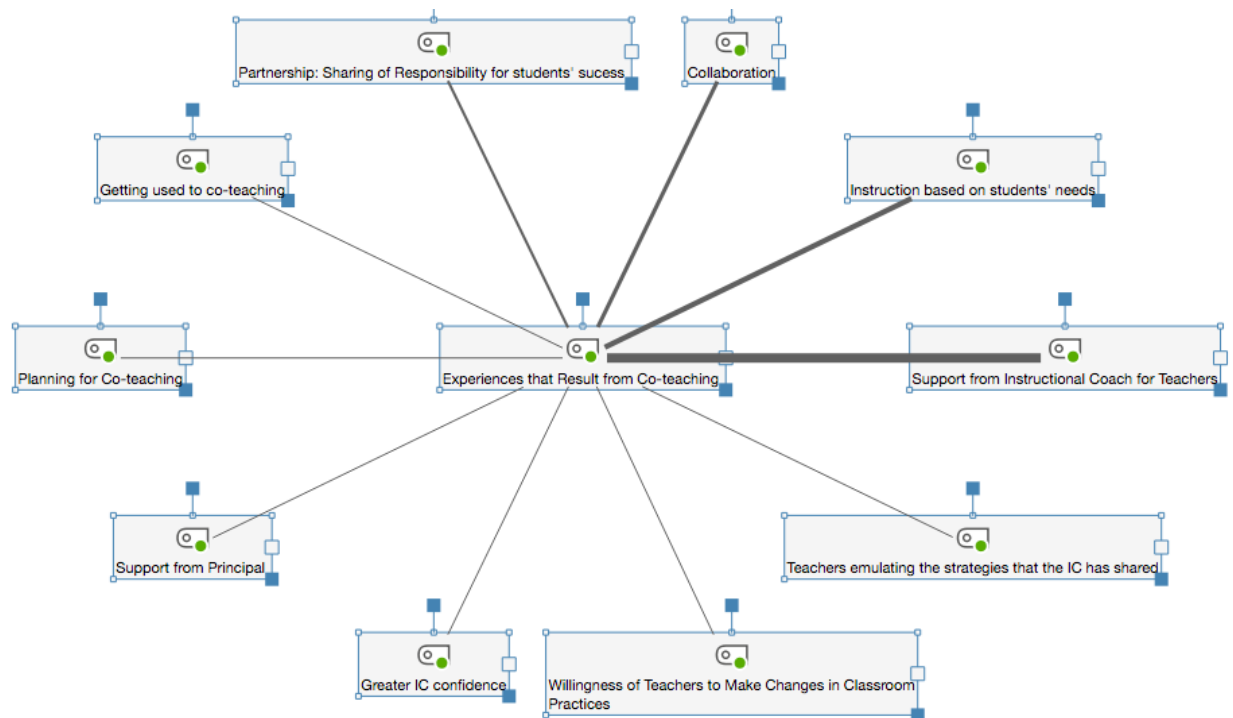
create and/or find differentiated activities for the advanced students, and new instructional practices, such as implementing tasks in the classroom or implementing guided math groups and running stations. In a couple of the cases, teachers actually were making changes to their teaching practices at the time of the study. The instructional coaches learned more about the students' specific needs in the classrooms, and they learned instructional practices that were shared with other teachers in their school buildings. The classroom teachers and the instructional coaches experimented with the different co-teaching models and learned how to match the co-teaching model with their learning objectives for the class. In addition, because the instructional coaches were co-teaching in the classroom to primarily help meet the needs of the advanced students, all of the participants learned about and implemented the utilization of student data to drive their instruction during co-teaching. Overall, because the professional development was embedded in their classroom experiences, it was relevant learning and all of the participants benefited from it.

Impact that co-teaching had on students in the classroom.

The third common experience that resulted from co-teaching was the impact that co-teaching had on students in the classroom. Due to the differentiated activities and having at least two teachers in the classroom at a time, lowering the teacher to student ratio, students were more engaged in most of the cases. The models of co-teaching mostly used were team teaching and station teaching, which provided an opportunity for the teacher and the instructional coach to plan differentiated lessons according to the students' needs. In stations, students often were working on computers while the teacher and instructional coach were instructing other students in small groups, based on their individual needs.

Figure 5.1 below shows the codes and sub-codes that were found in regards to experiences that result from co-teaching. The thickness of the lines shows that the greatest frequencies of experiences are in regards to support from the instructional coach for teachers, instruction based on students' needs, and collaboration. The participants learned mutually from one another because the instructional coaches provided support for the teachers in a variety of ways.

Figure 5.1 Frequency of Subcodes for Experiences that Result from Co-teaching

Relationship changes over time.

Partnerships established between teachers and the instructional coach at each school.

At all five sites, the participants reported, from the beginning, that the instructional coach and teachers at the school had a good working relationship with one another. The co-teachers collaborated weekly in professional learning communities and discussed student data from
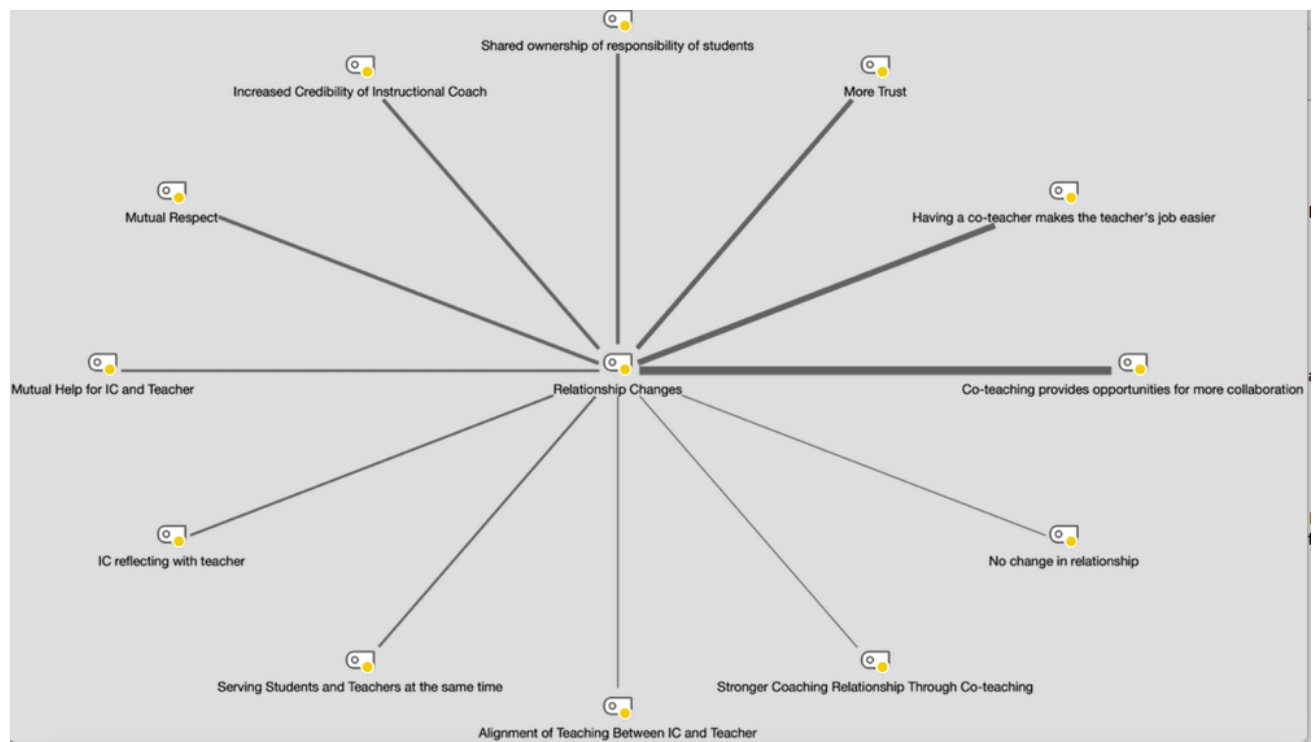
formative assessment. However, before co-teaching became a standard practice at these schools, the instructional coach did not often have an opportunity to go into the teachers' classrooms on a regular basis to impact instruction and student learning. Due to co-teaching, the instructional coaches worked in partnership with the classroom teachers to meet the needs of the students, which actually fostered more trust between the instructional coaches and the teachers at their schools.

More trust.

The increased trust and opportunities for collaboration allowed the instructional coach to provide more on-time support for teachers, right when the teachers needed it. Since the teachers received the support they needed, they were more likely to reflect with the coach and ask the coach for more support if they needed it. They were also more likely to try new instructional practices since the coach was there for support, which demonstrated an open relationship between the instructional coaches and the teachers they worked with. However, the more time the instructional coach had to plan with the classroom teacher impacted the extent to which the teacher would reflect and make changes in their instructional practices.

Figure 5.2 below shows the codes and sub-codes that were found in regards to relationship changes. The thickness of the lines shows that the co-teaching relationship fostered more trust between the teachers and the instructional coaches, and the codes relating to collaboration, shared ownership, and mutual respect are illustrative of the partnership that fostered their relationships over time.

Figure 5.2 Frequency of Subcodes for Relationship Changes

Issues that result from co-teaching.

Lack of planning time for co-teaching.

In all five cases, participants reported that the instructional coach and the classroom teacher did not have enough time to plan for co-teaching. In most cases, the teacher planned the learning objectives and the assessment that would be utilized, and the instructional coach planned instruction for a small group of advanced learners. In some cases, the instructional coach brought in materials and plans to be utilized for a whole-class team teaching lesson.

However, it was not often that the instructional coaches and the teachers at their schools got to plan a lesson from beginning-to-end together. This was a concern of the participants; they expressed the need to know how the lesson was going to be presented to the students, and it was important to them, naturally, that they would be prepared for the lesson or activity that was going to be implemented. Although the participants often sent objectives and activities for a lesson via

email, the classroom teachers and the instructional coach often did not have enough time to really analyze the resources together and consider the appropriateness of the resources for students in the classroom. Due to the lack of planning time, it was often that activities were not aligned with all of the students' needs at the time of the lesson, or there was a misunderstanding of who would be receiving a particular activity or how a particular activity was going to be implemented.

Concerns over the co-teaching schedule.

Another issue that was found in all five cases was the concern over the co-teaching schedule and the varied roles of the instructional coach. The instructional coach often had to go to meetings and trainings, which sometimes interrupted her co-teaching schedule. Some of the instructional coaches participating had regular administrative duties, which couldn't be helped, such as taking on the role of the substitute in a classroom or handling a discipline problem because the principal was absent. Although the teachers expressed their recognition that the instructional coach's schedule was not the coach's fault, in some cases, it did affect the extent to which teacher's felt that they could "count on" the coach to be there to work with the class or instruct students in small groups.
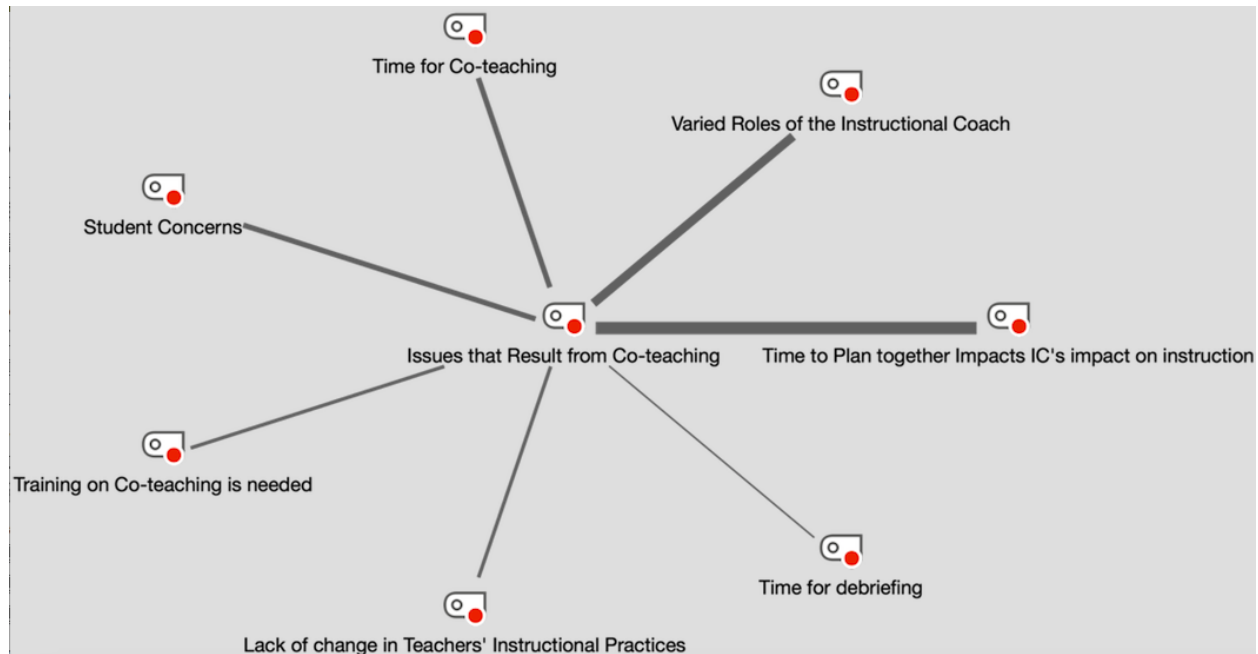
Logistics of co-teaching.

The third main issue was that, in each case, there was one issue related to the logistics of co-teaching. Co-teaching had to be planned, from the content of the lesson to the model of co-teaching to the place where co-teaching was going to take place. If station teaching was going to be utilized, the instructional coach and the classroom teacher had to make decisions about what students were going to be doing in stations if it was not their time to be in a small group. Also, they had to agree on which students would be in certain groups. Usually, the teachers and the

instructional coach moved students into small flexible math groups based on the students differentiated needs, and their instruction was based on that. However, there were a couple of instances when both the instructional coach and the teacher wanted a particular student in different groups, such as in the case that a gifted student was not performing well with a certain mathematics skill. At a couple of the schools, the instructional coaches even discussed that they did not always have the materials they needed, such as a whiteboard or appropriate table, for instruction in their small group in the teacher's classroom.

If the instructional coach and the classroom teacher were team teaching, optimally, the co-teachers would be able to plan out their roles to know who was going to lead what part during the lesson. The co-teachers had to decide if the planned lesson was going to be appropriate for all students and decide on how the instruction would be made accessible to all students if it wasn't. However, in a few cases, either the instructional coach or the classroom teacher felt that the instructional activity planned was either too easy or too hard for certain students in the class, which caused some issues that had to be worked out. Most of the logistics of co-teaching could have been worked out and/or avoided if the instructional coach and the classroom teachers had adequate planning time together.

Figure 5.2 below illustrates subcodes for the issues that resulted from co-teaching in the study. A lack of planning time, the varied roles that go with the instructional coach's schedule, and logistical aspects, such as time for co-teaching and student concerns were shown to occur most frequently in the data.

Figure 5.3 Frequency of Subcodes for Issues that Result from Co-teaching


Resolving issues.

The instructional coaches and the classroom teachers who participated in the study worked in partnership to resolve any issues that came up. The issues of having planning time together and having a consistent co-teaching schedule were complicated with the varied roles of the instructional coaches. During the time of the study, these issues were not completely resolved at any of the schools, but a couple of the principals were aware of the problem and were looking at ways to create a better schedule for the instructional coach. In all of the cases, the instructional coach kept the classroom teachers well-informed and communicated with them regularly so that they would know if the coach was going to be able to come in or not. The instructional coaches and the classroom teachers also communicated regularly via email and quick conversations before, during, or after school to ensure that the teachers had what they need to meet the needs of the advanced learners in the classroom. If an instructional coach knew that she was going to be out on a day of co-teaching, it was often that she would give differentiated packets of work to the

teachers for their advanced students, or the instructional coaches created lessons or activities on Google Classroom for students to complete during the time that they would have been in the classroom.

Most of the instructional coaches and the classroom teachers worked through the logistical issues through reflecting and collaborating. As concerns were presented, the coaches and teachers reflected on the lesson together as they could, even if it was for a couple of minutes right after the lesson had finished. Due to this continuous collaboration and communication at most of the schools, student and teacher needs could be met through partnership between the classroom teacher and the instructional coach.

Figure 5.4 below shows the subcodes for how the instructional coach and classroom teachers resolved issues. Communication, collaboration, and cooperation were found to be the most frequent occurring codes.

Figure 5.4 Frequency of Subcodes for How Issues Were Resolved
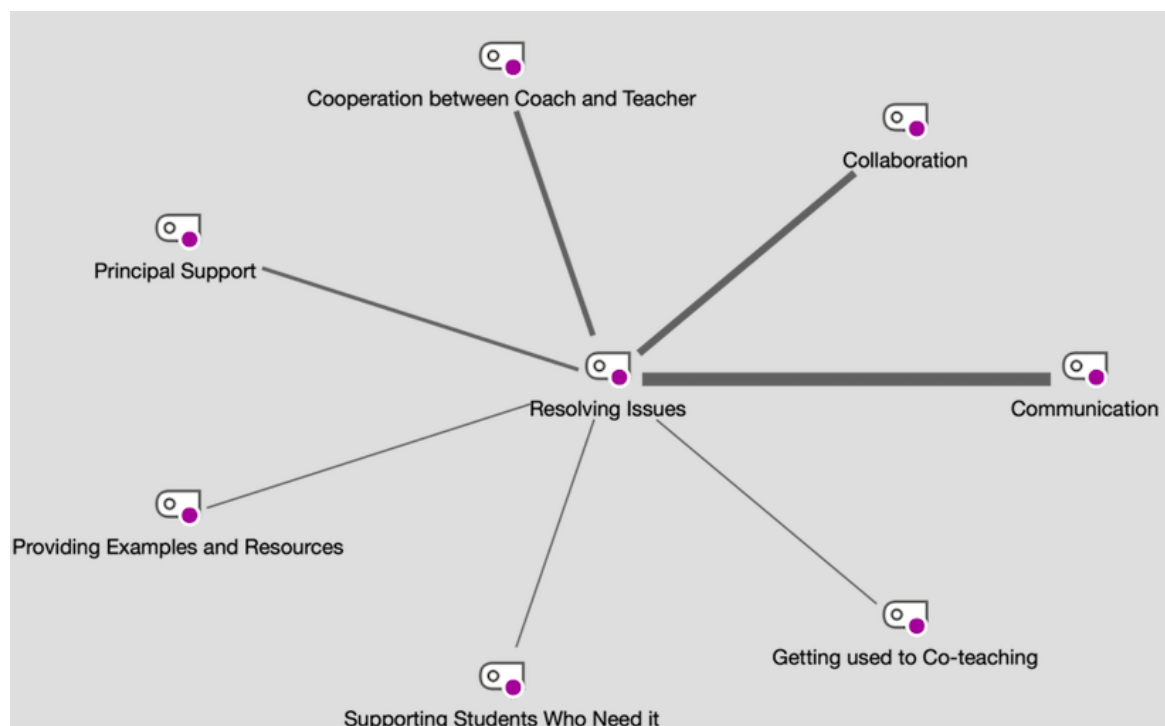
Implications for Policy

Due to the positive impact that instructional coaching and co-teaching could have on changing teachers' instructional practices and improving student learning outcomes, it would be important for a school that is implementing this type of programming to have policies in place that would support implementation of it. Schools implementing this model should have clear expectations in their policies for instructional coaches and a limit on the administrative duties that instructional coaches have. For example, it is important to communicate, through policy, that instructional coaches are not to be serving as assistant principals who deal with discipline issues or as substitute teachers when teachers are out, unless it is absolutely necessary. Policy should also limit the number of committees and programs that instructional coaches lead, for schools have a great opportunity to build teacher capacity for leadership and have more distributive leadership. Furthermore, the instructional coach's schedule should strategically include a time to plan and co-teach with the classroom teachers regularly, which can only be enforced through policy and principal understanding of how to construct a viable schedule. There should also be a limit on how many hours per week that the instructional coach will be co-teaching so that intentional planning time can also be built in.

The results of the study also inform how district policies can support the effective implementation of instructional coaching and co-teaching in their schools. District policies should include effective training on co-teaching for all personnel involved in co-teaching, and training should be on-going so that new personnel, including principals, will be able to stay abreast of district initiatives. Along with training, there should be a way to regularly evaluate the success of instructional coaching and co-teaching, including the completion of reflective surveys. Due to the staff needed to conduct the trainings and the evaluations, the district would

need to have the financial support within the budget to cover personnel and other expenses related to instructional coaching and co-teaching. Because all students are supported, financial support could come from a variety of federal and state resources, including academically gifted funding and Title 1 funding.

Implications for Practice

Instructional coaching and co-teaching as a practice in a school has the potential to change a school's culture to a culture of learning and growth. It can position instructional coaches to be in classrooms regularly with teachers in a non-threatening partnership while also learning about instructional practices that are observed in the classroom environment. Although instructional coaching can be effective without co-teaching, the results from this study demonstrate that instructional coaching with co-teaching has the potential to make a greater difference in teachers' instructional practices because they have on-going support with instruction in their classroom and learning while they are working with students. Discussions are focused on instructional practices, but the guiding factor is student learning and student data that is guiding the instruction. Through co-teaching, instructional coaches are able to model this process because they are collaborating with the teachers about how to meet the needs of the students. With this, utilizing data to inform instruction becomes part of the work of the workplace. As teachers focus on data and student learning, student achievement will also include. Hence, the utilization of instructional coaching and co-teaching can be an optimal solution for school improvement.

The researcher suggests that the findings of this study support previous research on instructional coaching and co-teaching as they have previously been studied as separate concepts. At the intersection of instructional coaching, co-teaching, and mathematics

instruction, the findings imply that the principal of the school needs to be actively involved in ensuring that the instructional coach and classroom teachers have adequate time to plan for co-teaching. The partners need to have time to decide on the co-teaching model, based on the needs of students, and they need to decide on how each partner will contribute as equals in instruction and assessment. The co-teachers also need to have time to de-brief and reflect on how the lesson went and make decisions for the next instruction, based on student data and student needs during the lesson.

The findings also imply that principal support is needed to ensure that co-teaching for the instructional coach and the classroom is able to take place as scheduled. When instructional coach duties interfere with a co-teaching lesson that was scheduled, it causes the coach and the classroom teacher frustration, which causes stress to the relationship. The teacher participants in the study were understanding about why the instructional coach had to cancel being part of a co-teaching lesson, but the partnership was often affected through the teacher reverting back to previous instructional practices or not involving the instructional coach as much in instructional concerns.

Based on the findings, the researcher concluded that the more administrative and district support there is for instructional coaching and co-teaching, the more the instructional coach will be able to plan and co-teach with the teacher, the more confidence the teacher will have in the instructional coach, and the more willing and able that the teacher will be to change his/her instructional practices, with the instructional coach's support. In cases where the instructional coach could not often meet to plan or had to cancel classes because of other responsibilities, the teachers reverted to their usual instructional practices, which may not have been conceptually-based. The teachers also felt that they were doing most of the work because they were having to

do all of the planning and assessing, which did not make the co-teaching relationship equal, as the literature suggests that it should be. On the other hand, when the instructional coach was able to find a way to meet and plan with teachers, even if it was through technological means, the teachers reflected more on their instructional practices and were confident to try new instructional practices that were more student-centered and conceptually-based.

Recommendations for Future Research

In this study, five school sites and 20 educators were part of the study. All five sites were within their first or second year of implementing instructional coaching and co-teaching, and the participants were experimenting with the co-teaching models while also learning how to mediate the classroom with two teachers to meet the needs of diverse learners. It would be beneficial to see how participants in other settings, such as in an urban school setting, experience instructional coaching and co-teaching. It would also be useful to know how the amount of time that co-teaches affects teacher changes in instructional practices, especially in mathematics. School systems are utilizing mathematics coaches more, so this information would be useful in planning how many schools a mathematics coach would serve and how often the coach would work with teachers.

Future research could also include a longitudinal study where the instructional coaching and co-teaching within a school was studied over a period of time. This study lasted four or five months for each school, and it is anticipated that relationships and co-teaching arrangements would look different in these schools over time. Also, in this study, the participants were co-teaching together as a means to serve students, especially advanced students, in the area of mathematics. However, other models of instructional coaching and co-teaching may be implemented as a new-teacher requirement or as a strategy to support teachers who need the

support, according to local teacher evaluation instruments or teachers who have requested the support.

Lastly, future research could analyze how instructional coaching and co-teaching impacts student achievement on formative and/or summative assessment data. This study reflected the potential that instructional coaching and co-teaching has to positively impact student achievement, especially in the area of mathematics. It would be essential for school leaders to understand the impact that instructional coaching and co-teaching could have on achievement, even for a couple of years after the instructional coach worked with a teacher. If school leaders found a positive correlation between the implementation of instructional coaching and co-teaching and high test scores, this may be a solution to changing teachers' practices and a way to plan for professional development within the context of teachers' classrooms.

Conclusion

Instructional coaching and co-teaching together is a fairly new concept, but those two concepts complement each other well in practice. With instructional coaching and co-teaching, no longer are teachers feeling alone in their practice. They have another educator to reflect with, get suggestions from, and learn from. Instructional coaches benefit too, for they are in the social situation where they are learning from the teachers all of the time, through observing, reflecting, and planning. Although co-teaching was initiated as a means to serve students with special needs, it has great potential in today's classrooms to benefit all students, if it is implemented to ensure that the instructional coach and the classroom teacher can be instructional partners.

APPENDIX A: INITIAL SURVEY QUESTIONS

Appendix A1: Instructional Coach Survey Questions

1) For how many years have you been an educator in North Carolina?

2) For how many years have you been an instructional coach at this school?

3) Describe any training that you have had on co-teaching. Explain why the training you received was adequate or not, in your opinion.

4) For what subjects do you co-teach with the classroom teacher?

5) In regards to planning, about how much time weekly do you have to plan with the teachers with whom you co-teach?

6) Describe how you and the 4th and 5th grade teachers plan for co-teaching.

7) Describe how you and the 4th and 5th grade teachers plan for co-assessing.

8) About how many hours a week do you spend co-teaching with fourth and fifth grade teachers in their classrooms?

9) What co-teaching models do you utilize during this time?

Appendix A2: Classroom Teacher Survey Questions

1) What grade level do you teach?

2) For how many years have you been an educator in North Carolina?

3) For how many years have you been a classroom teacher at this school?

4) For what subjects do you co-teach with the instructional coach?

5) Describe any training that you have had on co-teaching. Explain why the training you received was adequate or not, in your opinion.

6) In regards to planning, about how much time weekly do you have to plan with the instructional coach with whom you co-teach?

7) Describe how you and the instructional coach plan for co-teaching.

8) Describe how you and the instructional coach plan for co-assessing.

9) About how many hours a week do you spend co-teaching with the instructional coach in your classroom?

10) What co-teaching models do you utilize during this time?

Appendix A3: Principal Survey Questions

1) For how many years have you been an educator in North Carolina?

2) For how many years have you been an administrator at this school?

3) Describe any administrator training that you have had on co-teaching. Explain why the training you received was adequate or not.

4) In regards to planning, about how much time weekly do the classroom teachers and instructional coach have to plan for co-teaching?

5) Describe how the classroom teachers and the instructional coach plan for co-teaching.

6) Describe how the classroom teachers and the instructional coach plan for co-assessing.

7) About how many hours a week does the instructional coach spend co-teaching with the fourth and fifth grade teachers in their classrooms?

8) What co-teaching models do they utilize during this time?

APPENDIX B

INTERVIEW QUESTIONS

Appendix B1: Instructional Coach Interview Questions For First Interview

1) As the instructional coach in this school, what do you feel is your primary role? Why is that role so important?

2) How do you define co-teaching?

3) How does co-teaching fit into your role as the instructional coach at this school?

4) What do you see as the benefits of co-teaching with classroom teachers?

5) What do you enjoy most about co-teaching?

6) What issues or concerns come with co-teaching?

7) What do you enjoy the least about co-teaching?

8) How does your principal show support of co-teaching?

9) How do you and the classroom teacher grade the performance of students?

Appendix B2: Classroom Teacher Interview Questions For First Interview

1) As the classroom teacher and the co-teacher in the classroom, what do you feel is your primary role? Why is that role so important?

2) What is the primary role of the instructional coach? Why is that role important?

3) How do you define co-teaching?

4) What do you see as the benefits of co-teaching with the instructional coach?

5) What do you enjoy the most about co-teaching?

6) What issues or concerns come with co-teaching?

7) What do you enjoy the least about co-teaching?

8) How does your principal show support of co-teaching?

9) How do you and the instructional coach grade the performance of students?

Appendix B3: Principal Interview Questions For First Interview

1) As the elementary principal with co-teaching as a service delivery model for students in your school, what do you feel is your primary role? Why is that role so important?

2) What is the primary role of the instructional coach? Why is that role important?

3) How do you define co-teaching?

4) What considerations, if any, did you have to make when pairing up the instructional coach with a classroom teacher for co-teaching?

5) What do you see as the benefits of classroom teachers co-teaching with the instructional coach? Which do you consider to be the greatest benefit?

6) What issues or concerns have you had to deal with in regards to co-teaching?

7) How do you resolve issues or concerns that teachers and instructional coaches have to deal with in regards to co-teaching?

8) What issues or concerns have the teachers and instructional coach had to deal with in regards to co-teaching?

9) How do you show support of co-teaching here at your school?

10) How does instructional coaching and co-teaching fit into your vision and mission for your school?

Appendix B4: Instructional Coach Interview Questions for Second and Third Interviews

1) Please describe your relationship with the classroom teachers with whom you co-teach?

2) What are your daily interactions with the classroom teachers with whom you co-teach?

3) How have these daily interactions changed over time?

4) What issues have resulted from co-teaching?

5) Describe how you and a classroom teacher have resolved an issue that arose from co-teaching?

6) What issues are hardest to resolve? Why?

7) What learning experiences for you and the classroom teacher have come out of co-teaching? Can you tell me about them?

8) From interacting with the classroom teacher, what knowledge or skills have you gained?

9) From the classroom teacher working with you, what knowledge or skills do you think that he or she has gained?

10) With respect to mathematics instruction specifically, what issues have come up?

11) With respect to mathematics instruction specifically, how have you worked with the classroom teacher to resolve the issues?

12) With respect to mathematics instruction specifically, what changes, if any, do you see in the classroom teachers' instructional practices since you have been co-teaching with them?

13) How do you help classroom teachers improve their instructional practices in mathematics?

14) What issues, if any, result from you helping to build the capacity of teachers?

15) How does co-teaching in the mathematics classroom help you build the capacity of teachers? Please describe your experiences.

Appendix B5: Classroom Teacher Interview Questions for Second and Third Interviews

1) Please describe your relationship with the instructional coach with whom you co-teach?

2) What are your daily interactions with the instructional coach with whom you co-teach?

3) How have these daily interactions changed over time?

4) What issues have resulted from co-teaching?

5) Describe how you and the instructional coach have resolved an issue that arose from co-teaching?

6) What issues are hardest to resolve? Why?

7) What learning experiences for you and the instructional coach have come out of co-teaching? Can you tell me about them?

8) From interacting with the instructional coach, what knowledge or skills have you gained?

9) From the instructional coach working with you, what knowledge or skills do you think that she has gained?

10) With respect to mathematics instruction specifically, what different issues have come up?

11) With respect to mathematics instruction specifically, how have you worked with the instructional coach to resolve the issues?

12) With respect to mathematics instruction specifically, what changes, if any, have you made to your instructional practices since you have been co-teaching with the instructional coach?

13) To what extent is the instructional coach a valuable resource in helping you improve your instructional practices in mathematics? Please describe your experiences.

Appendix B6: Principal Interview Questions for Second and Third Interviews

1) Please describe the relationship that the instructional coach at your school has with the classroom teachers with whom she co-teaches.

2) What daily interactions occur between the instructional coach and the classroom teachers with whom she co-teaches?

3) To what extent have these daily interactions changed over time? Please explain.

4) What issues have resulted from co-teaching?

5) Describe how a classroom teacher and an instructional coach have resolved an issue that arose from co-teaching?

6) What issues are hardest to resolve? Why?

7) What learning experiences for you, the instructional coach, and/or the classroom teacher have come out of co-teaching? Can you tell me about them?

8) From interacting with each other, what knowledge or skills do you think the instructional coach and/or the classroom teachers who co-teach with her have gained?

9) With respect to mathematics instruction and co-teaching specifically, what issues have come up?

10) With respect to mathematics instruction and co-teaching specifically, how has the instructional coach worked with the classroom teacher to resolve the issues?

11) With respect to mathematics instruction specifically, what changes, if any, do you see in the classroom teachers' instructional practices since the instructional coach has been co-teaching with them?

12) How does the instructional coach, through co-teaching, help the classroom teachers improve their instructional practices in mathematics?

13) What factors do you feel affect the outcome of the coaching and co-teaching experience?

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