

A PHENOMENOLOGICAL INVESTIGATION INTO THE SELF-EFFICACY OF SPECIAL
EDUCATION TEAM TEACHERS WITH REGARD TO THEIR
MATHEMATICS CONTENT KNOWLEDGE

by

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Liberty University

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Of the Requirements for the Degree

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ABSTRACT

The purpose of this transcendental phenomenological study was to examine the teacher self-efficacy of high school special education mathematics inclusion teachers with regard to their content knowledge in Long State Independent School District (pseudonym). The central question that guided this study was as follows: What are the perceptions of special education mathematics teachers in the inclusion classroom in regard to their mathematical content knowledge? The research was conducted using a school district located in Southeast, Texas. The research is grounded in Bandura's social cognitive theory which suggests that through cognitive self-guidance humans can evaluate and modify courses of actions that override human influence. The research is also grounded by Lev Vygotsky's zone of proximal development that proposes that teachers are important in student development. To collect data, participants engaged in an interview, participated in a focus group interview, and took a self-efficacy survey. Data were analyzed to find codes and themes about the lived experiences of the participants. All the participants in this study believed that they were competent enough to provide an adequate level of instruction to all students. However, the extent to which they were confident varied greatly. Most of the participants noted that their ability to deliver effective instruction in the inclusion classroom was because they were good mathematics students in high school and they could help others. The participants who did not have math classes in college wished they had and believed it would have made them better co-teachers. However, they also pointed to organizational constraints as impeding their abilities to be successful.

Keywords: self-efficacy, content knowledge, co-teaching, team teaching, mathematics

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List of Abbreviations

Adequate Yearly Progress (AYP)

Behavior Intervention Classroom (BIC)

Elementary and Secondary Education Act (ESEA)

End of Course Exam (EOC)

Every Student Succeeds Act (ESSA)

Higher Education Consortium for Special Education (HECSE)

Individuals with Disabilities Education Act (IDEA)

Least Restrict Environment (LRE)

Long State Independent School District (LSISD)

Mathematical Knowledge for Teaching (MKT)

No Child Left Behind (NCLB)

Social Cognitive Theory (SCT)

Students with Disabilities (SWD)

Teachers' Sense of Efficacy Scale (TSES)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this transcendental phenomenological study was to examine the teacher self-efficacy of high school special education mathematics inclusion teachers with regard to their content knowledge. The No Child Left Behind Act (NCLB, 2002) and the reauthorized law Every Student Succeeds Act (ESSA, 2015) mandated schools improve the educational outcomes of students with disabilities (SWD). Moreover, the Individuals with Disabilities Education Act (IDEA, 2004) mandates that schools ensure that students with disabilities are educated in the least restrict environment (LRE) to maximum extent available. The evolution of the way that SWD receive instruction serves as the backdrop for this study. One of the ways that schools have addressed the law is to use an inclusive approach where students with disabilities receive instruction in the general education classroom. The shift in the setting of SWD has impacted the roles, services, and instructional practices of special education teachers.

In this chapter, a background on teacher self-efficacy, team teaching, and teacher content knowledge is presented. The problem that this study addressed is the ability of teachers to deliver instruction in mathematics despite having little to no training. The purpose of this study is to examine special education teachers' voice in relation to their self-efficacy. This study contributes to the body of knowledge on teacher self-efficacy and helps to fill a void in the research on special education.

Background

How SWD are to be educated has been a controversial and deeply emotional topic in the United States for a very long time. Educating the young of any society is a priority; however, how a society chooses to educate the most vulnerable of its young says a lot about its moral

standing. In this section special education is discussed from a historical, societal, and theoretical viewpoint.

Historical Context

Special education law dates back to 1873 where the Massachusetts Supreme Court ruled in favor of a school that expelled a low performing student from school (Smith, 2004). Since that time there have been numerous court cases and legislation that has shaped the societal view of how American schools educate SWD. Some of the court cases include *Brown v. Board of Education* (1954), the Elementary and Secondary Education Act of 1965 (ESEA), Public Law 94-142: The Education for All Handicapped Children Act of 1975, No Child Left Behind Act (2002) and the reauthorization of the Individuals with Disabilities Education Act (2004). *Brown v. Board of Education* is a landmark case that has affected the way students are educated on many levels by mandating that all children receive a free and appropriate public education.

The laws in of themselves do not guarantee that SWD will be successful because there are many factors that influence the success of students. A major factor that impacts student learning is the readiness of the teacher (Matsumura, Wang, & Correnti, 2016). Readiness as it relates to teachers denotes that the teacher has the ability to deliver effective instruction (Williford, Maier, Downer, Pianta, & Howes, 2013). The importance of teacher readiness was addressed in Title II of NCLB (2002). Under Title II, schools became responsible for improving academic achievement by ensuring that educators were certified and met necessary qualifications. It is in NCLB that the term *highly qualified* teacher was introduced into law and changed society irreversibly. According to the law, a teacher is deemed highly qualified if they have an undergraduate degree and have passed a standardized test from a state licensing organization. The term is not included in ESSA (2015), but the law does make provisions that

require states to hire competent teachers and provide ongoing training to ensure that students receive rigorous instruction.

Both NCLB (2002) and ESSA (2015) have changed to provide a more inclusive environment for SWD and this shift has changed the role of the special education teacher. Traditionally the special education teacher concentrated on focused instruction, student evaluations, and behavior modifications (Batsche, 2014; National Assessment Governing Board, 2016). The co-teaching model and emphasis on providing all students with a rigorous high-quality education has brought into focus the academic competency and pedagogy of special education teachers. There are five different models of co-teaching: team teaching, parallel teaching, station teaching, one teach-one observe, and one teach-one assist (Cook & Friend, 1995). For the purposes of this study, the focus will be on participants that teach using the team-teaching model.

Now, all teachers must have the content knowledge and necessary skills that improve the educational outcomes of all students (ESSA, 2015; Fisher & Frey, 2014; Jones, 2009). Teacher must now take a test in order to be considered highly qualified in their content area. Despite having educational credentials in a subject area, teachers are not considered highly qualified unless they pass a state certification test (ESSA, 2015). Further, teachers must have mature epistemological beliefs that are necessary to adequately deliver instruction that challenges all students (Qian & Alyermann, 1995). These beliefs, according to Qian and Alyermann (1995), come with experience and exposure to students with disabilities.

Societal Impact

Educating SWD has been an evolving practice over the last 100 years and has had a major societal impact in the United States. The movement has gone from every student in

special education being serviced at institutions to separate schools or separate classrooms to fully including them in the mainstream in a less restrictive environment (Hornby, 2015). The education of SWD in the least restrict environment (LRE) requires that extra supports be put in place such as an additional teacher in the classroom who is certified in special education. Despite being certified in special education, teachers may or may not have the background to service SWD in a specific content area (Hornby, 2015).

In the inclusive classroom SWD are educated alongside their non-disabled peers. The co-teaching model is where a general education teacher and special education teacher collaborate to meet the needs of all students in the general education classroom and has become widespread in the inclusive classroom (Villa, Thousand, & Nevin, 2004). Team teaching is an approach of the co-teaching model that schools have implemented. Team teaching can be described as a teaching model where two teachers are equally responsible for instruction in the classroom. Both teachers are also responsible for students meeting their learning intentions (Bess, 2000). High school mathematics can be a difficult subject to both teach and learn. In high schools the importance of content knowledge, increased pace of instruction, graduation requirements, and state testing present different challenges for teachers (Mastropieri & Scruggs, 2001). Student achievement in high school mathematics affects students in many ways including student ranking, graduation, college acceptance, and readiness. Student achievement in high school mathematics also affects the school and district when considering adequate yearly progress (AYP) and school rankings.

In high schools the importance of content knowledge, increased pace of instruction, graduation requirements, and state testing present different challenges for high school teachers (Mastropieri & Scruggs, 2001). It is for this reason that it is important to evaluate special

education teachers who are charged with delivering rigorous instruction to students (National Mathematics Advisory Panel, 2008). The National Assessment of Educational Progress (NAEP), a project founded by the United States government, found that only 25% of high school seniors scored at the proficient or advanced level in the area of mathematics (National Assessment Governing Board, 2016). The study also found that 38% of high school seniors scored at the lowest achievement level mathematics. In the state of Texas students take end of course (EOC) exams which determine if students graduate. In the area of mathematics, high school students take the Algebra I EOC. In 2017, only 30% of students passed the test. The dismal number of students who met the standards requires schools to look at teacher practices.

The National Council of Teachers of Mathematics' (NCTM, 2000) *Principles and Standards for School Mathematics* asserts that “student learning of mathematics is a direct reflection of teacher practice and experiences” (p. 16). Mathematics can be a difficult subject to teach, and the practice and competencies of the teacher have been the subject of debate over the past few decades (Reid & Reid, 2017). The research on mathematics knowledge has increased in recent years and the finding of the research has varied. The research on teacher knowledge extends back to Shulman (1986) who researched *pedagogical content knowledge*. He described the connection between content specific knowledge and practice of teaching. According the Shulman (1986), the greater the amount of content knowledge a teacher possess, the higher their level of self-efficacy.

Since Shulman's (1986) work, researchers have tried to clarify and conclude what constructs exist regarding content knowledge. Hill, Rowan, and Ball (2005) conceptualized the essence of teacher content knowledge and coined the phrase mathematical knowledge for

teaching (MKT). By MKT the researchers mean the mathematical knowledge used to carry out the work of teaching mathematics (Hill et al., 2005.)

Hill et al. (2005) concluded that teachers MKT is positively correlated with student achievement. Hill, Ball, & Schilling (2008) created a framework to describe and differentiate the types of constructs relevant to mathematics content knowledge. The researchers divided their model into two parts that include subject matter and pedagogical content knowledge. Subject matter relates to specialized content knowledge, and knowledge on the mathematical horizon. The research is clear that the teacher's mathematics content knowledge is pivotal if students are to be successful in mathematics (Ball, Thames, & Phelps, 2008; Thames & Ball, 2010). Further, the content knowledge of the teacher and its effects are highlighted in mathematics where concentrating on students' mathematic competencies and understanding is of the utmost importance (Lachner & Nückles, 2014). A synthesis of the research reveals that teaching mathematics requires not just a teacher's ability to solve mathematical questions. Rather, it is about the teacher having a deep conceptual knowledge of mathematics and the skills to use that knowledge in their instructional practices (NCTM, 2000).

High school mathematics is much more than carrying out a predetermined set of steps or delineating facts and strategies. High school mathematics entails a range of interconnected mathematical conceptions with various ways to symbolize and express the concepts (Jacobson & Kilpatrick, 2015). Jacobson and Kilpatrick (2015) asserted that high school mathematics requires cognitive reasoning that requires resourcefulness, skills, and logical reasoning that lead to students learning mathematical competences that pave the way for higher level studies.

Theoretical Basis

Bandura's (1986) social cognitive theory (SCT) and Vygotsky's (1998) zone of proximal development (ZPD) are used in this study to examine the role of the special education teaching in the inclusive mathematics setting. SCT is related to how individuals think and behave in light of social interactions, experiences, and outside influences. Zone of proximal development defines the area in which maximum student learning can take place if assisted by a capable other. The major part of this theory is the "capable other" being a teacher with a high level of self-efficacy. Understanding that mathematics is a difficult subject to teach makes it important to understand teacher self-efficacy with regard to their capability (Karimi-Aghdam, 2017). Teacher self-efficacy is concerned with a teacher's confidence in his or her ability to provide instruction to students (Aldridge & Fraser, 2015). There has been substantial research on teacher self-efficacy and its impact on learning (Klassen, Tze, Betts, & Gordon, 2011; Tschannen-Moran & Woolfolk Hoy, 2001); it has concluded that teachers who feel prepared as a result of schooling and/or professional development have a higher sense of self-efficacy than teachers who do not.

The idea of self-efficacy is a critical component of Bandura's (1986) SCT. SCT seeks to explain human behavior from a perspective of social, personal, and environmental factors (Bandura, 1986). The theory promotes the concept of reciprocal causation where individuals are influenced by the environment and they influence their environment. Previous research suggests that teacher self-efficacy is a predictor of student success (Urduan & Pajares, 2006). The research on self-efficacy is vast (Aldridge & Fraser, 2015; Klassen et al., 2011; Tschannen-Moran & Woolfolk Hoy, 2001). However, research is lacking in the domain of self-efficacy of teachers, especially special education teachers in specific content areas. Yoo (2016) suggested that it is necessary to continue research on teacher self-efficacy because of the important information

gleaned and because the research focuses on teacher quality. Specifically, it is important to research teacher self-efficacy of high special education mathematics teachers using the team-teaching approach in the general education classroom because of the high level of mathematics involved and the increasing standards of achievement for all students.

The Challenges of Team Teaching

Team teaching is a challenging proposition that presents major implications for both regular education and special education stakeholders. Pre-service teachers are traditionally prepared through coursework that discusses methods and delivery of instruction. These teacher preparatory programs typically include an internship and/or practicum experience course in which they are observed working with students by a university professor (Tschannen-Moran & Woolfolk Hoy, 2001).

The course scope fails to prepare pre-service teachers for the realities of team teaching in that they are not normally placed in a team-teaching situation when being instructed at the university. Students who become professional educators are left to learn on the job (Aldridge & Fraser, 2015). Students who feel prepared at the university level tend to have a higher level of self-efficacy. Also, teachers who have an aptitude and interest in mathematics rate their own self-efficacy higher.

However, teachers find on the job that they must coordinate and collaborate with other professionals in the planning and delivery of instruction. Added to this are the everyday stressors of the job in dealing with students, parents, and the demands of administration (Hornby, 2015). Teachers who rate their self-efficacy high tend to have a higher level of job satisfaction and less stress.

Situation to Self

My motivation for choosing to examine special education teacher efficacy is rooted in my background in education and the challenges I faced as a special education teacher. Because of my experiences, I want to shed light on the problem of teachers being underprepared to meet the needs of all students in the special education team teaching environment. My career in education started as a special education teacher in the behavior intervention classroom (BIC) where I taught students with severe behavior challenges for over 10 years. In the BIC, I was responsible for teaching students the core subjects of mathematics, English, science, and social studies. Unfortunately, the district had low expectations for student achievement in this setting.

My only responsibility as the classroom teacher as stated by one of the assistant principals was to “keep the students from tearing up school.” Those words still ring loud in my head. Ensuring that students with disabilities receive a free and appropriate public education (FAPE), mandated by law (IDEA, 2004), has become part of my mission as a school educator. This study was born after careful consideration of my content knowledge, or better stated, my inadequate content knowledge.

The research paradigm for this study is grounded in Vygotsky’s (2012) social constructivism and Bandura’s (1986) social cognitive theory. Social constructivism holds that humans are inter-connected, and they justify their experiences by creating meaning of their world and the way it works. In social cognitive theory there is an understanding that language is the essential way that humans conceptualize their reality (Leeds-Hurwitz, 2012). I chose a qualitative study because of the nature of my philosophical assumptions. I believe that if teachers are prepared to teach a subject such as mathematics, they will have a higher level of self-efficacy and therefore be more successful at teaching students who are exceptional.

Ontology is concerned with the nature of being (Grix, 2004). Ontologically speaking, this study seeks to understand the reality and nature of special education teachers who team teach in the high school mathematics general education classroom. Epistemology refers to knowledge especially knowledge with regard to scope, validity, and bases (Brundrett, Rhodes, & Gkolia, 2013). Considering my own knowledge as a former special education teacher, I am concerned about the outcomes of future students and the degree of mathematics content that they are receiving. My experiences as a special education teacher, coupled with the fact that I believe all students can learn and teachers are an important element of student learning, guide my axiological assumptions. I believe that every child is entitled to an effective teacher who is well prepared. This goes far beyond the right to a free and appropriate public education. This is a moral and ethical issue. With this research I am not trying to persuade the reader or influence any type of policy change by uncovering some self-perceived universal truth. Instead, I will be reporting what reality is through the eyes of my research participants. I want the reader of this study to hear the voices of these teachers as they attempt to help special needs students achieve academic success in the general education classroom.

Problem Statement

The problem that this study addresses is the lack of teacher self-efficacy in the special education mathematics co-teaching in an inclusive environment. The literature does not reflect the self-efficacy of special education teachers working in an inclusive setting or within the co-teaching model using the team-teaching approach in the content area of mathematics (Collie, Shapka, & Perry, 2012; Thoonen, Slegers, Peetsma, & Oort, 2011). There has been extensive research on co-teaching (Aldridge & Fraser, 2015; Klassen et al., 2011; Tschannen-Moran & Woolfolk Hoy, 2001). This study will analyze the problem of content knowledge in the area of

mathematics and the challenges that special education teachers have as revealed through their own perceptions of their self-efficacy. Most of the literature has focused on the different types of co-teaching models with regard to teacher functions in the classroom (Friend & Cook, 2007; Villa et al., 2004). Very few studies have been concerned with the special education teachers' perceived ability to deliver math instruction to students. Teacher self-efficacy has been noted as one of the key factors in student success (Friend & Cook, 2007; Villa et al., 2004).

Similar to co-teaching, there has been extensive research on teacher self-efficacy (Aldridge & Fraser, 2015; Klassen et al., 2011; Tschannen-Moran & Woolfolk Hoy, 2001). The research on teacher self-efficacy has been around since the 1970s, and the research is vast (Collie et al., 2012; Klassen et al., 2011; Thoonen et al, 2011). The increase in the research can be attributed to the belief that teacher self-efficacy has an impact in the classroom (Chacon, 2005; Zee & Koomen, 2016). Although content knowledge has been researched, there is limited research specifically focused on special education teachers' self-efficacy with regard to their mathematics content knowledge and belief in their ability to deliver quality instruction in high school mathematics inclusive classroom settings. Further, there is limited research on the qualities and qualifications that special education teachers in the mainstream classroom must have. It is widely accepted that the number of students in an inclusive setting continues to rise (Berry & TeacherSolutions 2030 Team, 2011). Considering also the fact that academic achievement standards of all students will continue to increase, it is important to research this phenomenon. In an effort to provide academic excellence and achieve curricular goals for students with disabilities and indeed all students, the instruction must be effective.

Purpose Statement

The purpose of this transcendental phenomenological study was to examine the self-efficacy of special education teachers who teach high school mathematics in the inclusive setting. In this study, teacher self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments of all students (Tschannen-Moran & Woolfolk Hoy, 2001). The theory guiding this research is Bandura's (1986) social cognitive theory which suggests that humans can change their trajectory if they can make meaningful evaluations and behavior modifications that lead to desired results (Nurlu, 2015). The research is also guided by Vygotsky's (1998) ZPD which proposes that adults are an important part of student development (Murphy, Scantlebury, & Milne, 2014). Murphy et al. (2014) asserted that it is more helpful for students to solve problems from someone who has mastered the problems being learned. These theories are related in that they both describe how individuals experience their environment and their actions. The student is only able to learn in the ZPD if he or she is being instructed by a competent other. The level of perceived competency is influenced by social cognitive theory.

Significance of the Study

This study is significant because there is limited research on the self-efficacy of special education teachers who teach high school mathematics in the inclusive setting. Schools across the United States are held accountable for student achievement. In the team-teaching model special education teachers are required to deliver high quality instruction not only to special education students but to all students. It is therefore necessary for policy makers, administrators, and pre-service education programs to understand special education teachers' self-efficacy

concerning their content knowledge and perceived ability to deliver instruction that improves student achievement in high schools.

This study is related to other studies such as the work of Tschannen-Moran and Woolfolk Hoy (2001) on teacher self-efficacy. Tschannen-Moran and Woolfolk Hoy (2001) synthesized the major works on teacher self-efficacy and discussed the strengths and weaknesses of the constructs. These researchers introduced the Teacher Self-Efficacy Scale (TSES) which measured teacher self-efficacy. However much of the research on teacher self-efficacy and content knowledge is broad, and few researchers have focused specifically on high school mathematics and special education teachers (Collie et al., 2012; Klassen et al., 2011; Thoonen et al., 2011). This study, while similar to others, seeks to add additional and updated research on the subject of special education teachers' self-efficacy in math. Findings may be of interest to educational leaders and policy makers as well as teacher preparation programs. Findings may also help to inform the methods of practicing teachers and pre-service teachers. Most importantly, the significance of this study relates to student achievement. If schools propose that they will produce students who are capable of meeting the needs of the 21st century, then all teachers must have the content knowledge that provides instruction that challenges all students.

Research Questions

The goal of this study was to understand the self-efficacy of special education teachers who teach high school mathematics in the inclusion setting. The following research questions guided this study:

1. What are the perceptions of special education mathematics teachers in the inclusive classroom in regard to their mathematical content knowledge?

This question is focused on teachers' mathematical content knowledge. This question sought to understand the teachers' understanding of how to solve problems collaboratively, and how they engage students in analytical and high-level thinking (Shoulders & Krei, 2016).

2. How does the perceived self-efficacy of special education mathematics teachers effect their perceived ability to deliver instruction in the classroom?

This question was used to understand the nature of the knowledge needed in order for special education mathematics teachers to teach students with special needs effectively. The researcher was seeking to understand how they were prepared to teach from their point of view (Vygotsky, 1998). This question revealed if they feel that they are effective in light of the inclusion model.

3. What is the nature of the co-teaching relationship and its effect on the self-efficacy of special education mathematics teachers?

This question is concerned with the actions of special education teachers in light of their level of perceived self-efficacy. It revealed the perceived relationship between special education teachers and the general education teacher they were assigned to. The question also helped to bring out the nature of the collaborative relationship between the teachers (Da Fonte & Barton-Arwood, 2017).

Definitions

1. *Co-teaching* – A general education teacher and special education teacher in the same classroom providing SWD instruction with their non-disabled peers (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010). This is also referred to as team teaching. In this study co-teaching and team teaching may be used interchangeably.
2. *Team Teaching* – A style of co-teaching in which both teachers are equally responsible for student outcomes.

3. *Inclusion* – A classroom environment where SWD receive instruction in the same class as their non-disabled peers (Westling & Fox, 2009).
4. *General education* – The classroom environment where non-disabled students receive their instruction based on district and state standards in conjunction with federal law (Kena et al., 2014).
5. *Mathematical knowledge of teaching (MKT)* – Mathematical knowledge used to carry out the work of teaching mathematics (Mathematical Content Knowledge, 2016).
6. *Self-efficacy* – This refers to an individual's belief about his/her own ability to successfully perform a job and is related to an individual's decisions, choices, ability, amount of effort, grit, and affect (Usher & Pajares, 2008).
7. *Special education* – The process of educating students with disabilities to meet the students' unique needs (Kena et al., 2014).
8. *Highly Qualified* – This refers to teachers who have taken and passed a state certification test in a specific content area. Despite being certified in special education, teachers may or may not have the background to service special needs students in a specific content area (Hornby, 2015).
9. *Teacher self-efficacy* – A teacher's belief in his/her ability to provide high quality instruction to students (Tschannen-Moran & Woolfolk Hoy, 2001).

Summary

This transcendental phenomenological study will examine the self-efficacy of special education high school mathematics teachers in the inclusion classroom. A shift in education practices from isolation to inclusion has caused a shift in how and where individual students with disabilities are taught, changing the role and expectations of the special education teacher. The

research will look into the experiences influencing the self-efficacy of the teacher with regard to their content knowledge and how it affects them as educators. The research will seek to examine the lived experiences of special educators teaching mathematics in the general education inclusion classroom.

CHAPTER TWO: LITERATURE REVIEW

Overview

Special education math teachers are charged with instructing special needs students, who often struggle in math, and preparing them to pass state-mandated testing. In addition, with the move to co-teaching in the general education classroom, they must ensure that all students are served by the implementation of effective mathematics pedagogy. When team teaching was first applied in public school settings, it marked a shift from separating the special needs students from the general population to fulling including them. The goal was to ensure that all students received a high-quality education in the least restrictive environment (LRE). The perceptions of the special education teachers in regard to their own self-efficacy in teaching math is the main focus of this study. In this chapter, the current and relevant literature related to this phenomenon is presented. The chapter begins with the theoretical framework. The study is grounded in two theories: social cognitive theory and zone of proximal development theory. Next, the focus turns to the history of co-teaching followed by the literature on different co-teaching models. The chapter concludes with a discussion of the successes and challenges of co-teaching and an argument for the need for further research investigating the self-efficacy of special education teachers who teach high school mathematics in the inclusion setting.

Theoretical Framework

Social cognitive theory (SCT; Bandura, 1986) and Vygotsky's (1998) zone of proximal development are the two theories that this study is grounded in. SCT is related to how individuals think and behave in light of social interactions, experiences, and outside media influences. Zone of proximal development describes the area around a student in which the

student learns best if assisted by a capable other. Both these theories, used in tandem, form the lens through which the results of this study can be viewed and better understood.

Social Cognitive Theory

The SCT (Burnett, Enyeart Smith, & Wessel, 2016) serves as part of the theoretical framework for the study because of the relationships between behavior, cognition, personal factors (i.e., teachers' expectations, goals, beliefs, emotions, thoughts, unique personality characteristics), and the social and physical environments in regard to one's behavior (Burnett et al., 2016). These factors are all a part of the special education teachers' everyday experiences. The SCT constructs of outcome expectations, situational perception, and environment play a strong role in explaining the perceptions of special education teachers' self-efficacy (Burnett et al., 2016). The SCT constructs, environment in which the teachers work, and situational perception may also be used to understand and explain several perceptions mentioned by some teachers related to their views of what constitutes being prepared to service students in mathematics (Burnett et al., 2016).

Foley and Lytle (2015) tested a sample of 1,858 adults aged 60 to 87. They evaluated the relationship between theorized predictors of work satisfaction proposed by social cognitive career theory. Foley and Lytle used a bi-variant comparative analysis and concluded that self-efficacy and life satisfaction were positively related to work satisfaction. They also discovered a relationship with personality characteristics. However, conscientiousness was not significantly related to self-efficacy as had been hypothesized. Finally the researchers surmised that "while it is possible that these traits affect confidence in one's ability to meet the requirements of work, other factors are more salient, at least for older working adults" (Foley & Lytle, 2015, p. 209). The individuals' perceived ability to meet the requirements of work was linked to their overall

happiness and life satisfaction. The amount of overall happiness perceived by the participants in this study may give clues as to their level of work satisfaction and thereby illuminate their level of self-efficacy in regard to their performance at work.

Martin, Burns, and Collie (2017) used SCT to investigate the roles of personal agency (self-efficacy and perceived control) and interpersonal agency (relational support) in the academic achievement of student with ADHD ($N = 164$). They investigated them alongside 4,658 non-ADHD students in the same schools and grade levels (Martin et al., 2017). The researchers found that self-efficacy and relational support were consistently associated with better academic achievement for both groups (Martin et al., 2017). The researchers concluded that “this study showed that the positive roles of self-efficacy and relational support generalized across ADHD and non-ADHD samples, but appeared markedly stronger for students with ADHD. The role of perceived control was not salient in either group” (Martin et al., 2017, p. 50). The findings are informative for researchers studying issues relevant to ADHD, SCT, and achievement. This study is relevant here in that it highlights the relationship between self-efficacy and relational support. In light of this study, when delivering services to students in the classroom, special education math teachers may need to have the support of colleagues and administrators. Students need teacher support. If teachers don’t have the knowledge or feel confident in their ability to support students, they are less likely to provide the support students need to be successful.

Zone of Proximal Development

To explore the process through which student learning is linked to their sociocultural context, Vygotsky (1998) introduced the idea of the zone of proximal development (ZPD), which refers to the difference between what individuals can accomplish entirely on their own and what

they can do with the assistance of a capable teacher. This zone is where learning takes place and learners can explore new psychological tools in interaction. According to Vygotsky, this support allows students to competently engage with ideas that would normally be beyond their reach, thanks to the support of their teacher who is considered a capable other. Vygotsky (1998) also suggested that it was within this zone that the best learning could occur, because it would stretch students' capabilities and in turn lead to new forms of development. Danish, Saleh, Andrade, and Bryan (2017) analyzed the relationship between students' answers and the help they receive as they construct them. The findings of the Danish et al. (2017) study concluded,

There is real value in looking towards the construct of the ZPD to guide the evaluation of early elementary students' reasoning about complex systems concepts, and in fact this construct may help to tease out different levels of capability for students of all ages.

(p. 21)

Vygotsky's (1998) ZPD is a foundational theory for the justification of team teaching or co-teaching. Vygotsky stated that students can achieve in the ZPD if they are assisted by a *capable other*. This study is seeking to hear the voice of the special education math teacher who, in this case, is the capable other. Therefore, this theory is relevant in that through its lens the teachers' perceptions about their self-efficacy in relation to their capability can be better understood.

Related Literature

The central focus of this study was to investigate the self-efficacy of special education teachers who teach high school mathematics in the inclusion setting. Although scholars have acknowledged the role of collaborative relationships of teachers in improving the quality of instruction, teacher collective efficacy continues to be a neglected construct in educational

research (Ninković and Knežević Florić, 2018). A synthesis of related literature regarding teacher efficacy is unpacked here.

History of Teacher Efficacy Literature

The Rand Corporation conducted the first studies on teacher self-efficacy in the late 1970s (Armor et al., 1976), finding that the higher the teacher's reported self-efficacy, the better the students performed in their classes. Following the Rand Corporation study there was an increase of research that can be largely ascribed to the notion that teacher self-efficacy beliefs, or teachers' self-referent judgments of capability, have become relevant to outcomes in the classroom (Zee & Koomen, 2016). Studies have found over the years that positive teacher self-efficacy beliefs have been demonstrated to result in improved psychological well-being in terms of higher levels of job satisfaction and commitment and lower levels of stress and burnout (Brown, 2016; Ninković & Knežević Florić, 2018; Siwatu, Frazier, Osaghae, & Starker, 2011; Yoo, 2016; Zee & Koomen, 2016). Since this construct was introduced four decades ago, a broad range of effects have been studied in light of teacher self-efficacy. However, consensus has not yet been reached among educational researchers about which particular role teacher self-efficacy plays at different levels of the instructional program (Zee & Koomen, 2016).

Higher teacher self-efficacy is associated with a range of beneficial teaching practices (Bandura, 2012). These include setting more ambitious goals for oneself and one's students, selecting instructional strategies likely to improve student development, experimenting with new instructional programs in the classroom, and involving parents in student activities (Corona, Christodulu, & Rinaldi, 2017). More recent research suggests that teachers with high self-efficacy provide more support to students and create a more positive classroom environment (Corona et al., 2017). Today's research is mainly focused on ways to increase teacher self-

efficacy in pre-service teachers and to lower teacher attrition (Brown, 2016; Ninković & Knežević Florić, 2018; Siwatu et al., 2011; Yoo, 2016; Zee & Koomen, 2016). Many studies have examined how professional development impacts teacher self-efficacy and conclude that the greater the amount of professional development, the higher the teacher reported self-efficacy (Bifuh-Ambe, 2013; Corona et al., 2017; Papi, 2018; Scheer, Scholz, Rank, & Donie, 2015; Yoo, 2016).

Special Education Teachers in Mathematics

Since the advent of special education teachers being assigned to team and co-teaching environments there has been an impact on all students in the classroom. The presence of special education teachers and SWD in the general education classroom has changed the way math pedagogy is applied in this environment (van Garderen, Scheuermann, & Poch, 2019). When co-teaching came along, the focus of the classroom changed to service all students, the goal being to ensure that all students receive a high quality education in math. To accomplish this, both the general education teacher and the special education co-teacher must be deemed highly qualified by their state education agency. The general education math teacher must have a certification in math pedagogy in order to teach math. However, the special education teacher must only have a certification in special education pedagogy to be assigned to a mathematics classroom. Furthermore, many of the special education teachers assigned to teach in the mathematics team teaching or co-teaching environment have very little formal training in the area of mathematics pedagogy (Hornby, 2015). There is little evidence in the literature that draws the conclusion that there is any type of relationship between being deemed highly qualified as the result of a certification test and student performance in any subject including mathematics (Clements, Sarama, Wolfe, & Spitler, 2015; Ekstam, Korhonen, Linnanmäki, & Aunio, 2017; van Garderen

et al., 2019). The link between student performance and the teacher being prepared to teach is evident in the literature (Clements et al., 2015; Ekstam et al., 2017; van Garderen et al., 2019); however, there are such instances in which a teacher has little formal preparation but is still deemed highly qualified. There also exists the reverse in which teachers have several years of preparation, but because they did not pass or did not take the certification test, they are not deemed highly qualified by the state (Hornby, 2015).

Furthermore, mathematics can be a difficult subject to teach to any student no matter their designation. General education students struggle with math as well as students receiving special education services. There is evidence in the literature that teachers who have a special interest in the subject of mathematics facilitate a higher rate of student success (Ekstam et al., 2017). Special education teachers are routinely assigned to mathematics because they consider themselves to be good in mathematics and have an interest in the subject area. The efficacy of these teachers when addressing the needs of special education students is high, but this level of efficacy drops when they are working with students without disabilities (Park, Dimitrov, Das, & Gichuru, 2016). There may also be some doubt in the minds of their co-teaching or team-teaching partner as to their level of competency when dealing with general education students. Beyond the personal relationship between the special education teacher and the general education teachers, there may exist in some cases mutual doubt (Conley & You, 2017). Findings from another study suggest that special education teachers are not receiving the necessary training to meet the needs of all students in the team teaching and co-teaching environment (Ekstam et al., 2017; Langher, Caputo, & Ricci, 2017; Scheer et al., 2015; Vittek, 2015). This lack of feeling prepared has a measured effect on the special education teacher's self-efficacy (Conley & You, 2017).

Impact of Teacher Self-Efficacy

The amount of training that teachers receive may have a positive impact on their level of self-efficacy (Yoo, 2016). Further, the quality of the professional development has little bearing on the level of efficacy the teacher develops as a result of a training in an area that they had little knowledge (Yoo, 2016). Yoo (2016) examined the effect of an online professional development learning experience on teacher's self-efficacy using the Teachers Self-Efficacy Scale (TSES) developed by Tschannen-Moran and Woolfolk Hoy (2001). Yoo used both quantitative and qualitative methods to analyze the results of the instrument and found that teacher efficacy increased as a result of their online professional development experience. This study points to the effectiveness of online professional development at increasing teacher self-efficacy. However, the study said very little about the quality of the online professional development nor did it mention the degree to which the content was implemented in the classroom after the professional development. According to Curtis (2017) the quality of the professional development did not matter to the participants who were surveyed. Curtis did not provide an explanation as to why it did not matter to the teachers. Curtis explained that in order for teachers to teach writing effectively they must feel like they are good writers; they must understand the writing process and feel comfortable enough with it in order to teach it to their students. He asserted that "their beliefs and attitudes can potentially impact students in the writing process and overall achievement" (Curtis, 2017, p.17).

Curtis (2017) found through a mixed method study that confidence and efficacy did impact the teachers' ability to model the writing process successfully. This study underlines the power of teacher efficacy. If teachers believe they can be successful, they are successful. However, preparation plays a part in the construction of that belief. Corona et al. (2017) found

in their study that the more training special education teachers who served students with autism spectrum disorder (ASD) received, the higher their level of confidence and self-efficacy. To examine this, they used multiple linear regression analysis of a survey that was completed by 200 participants. Training was the biggest predictor of teacher self-efficacy (Corona et al., 2017).

Studies indicate that leadership can also have a positive impact on the self-efficacy of teachers. Ninković and Knežević Florić (2018) believe that transformational leadership may play a key role in teacher self-efficacy. Despite showing that transformational leadership had little effect on the collective self-efficacy of the faculty as a whole, individually-focused transformational leadership contributed significantly to an explanation of collective efficiency after controlling specific predictor effects of group-focused dimensions of transformational leadership. The researchers found that if the leader focused attention on the individual teacher, there was an increase in self-efficacy and what follows was an overall increase in the self-efficacy of the group. They concluded,

The principal has an influence on the agency beliefs of staff attribute the school's achievements to the joint activities of teachers, communication of high expectations, verbal persuasion, and providing individualized support. In addition, the school principal can provide vicarious experience in the development of positive perceptions of collective capacity. (Ninković & Knežević Florić, 2018, p. 60)

Challenges of Teacher Self-Efficacy

Mentor coaching has been found to mitigate some of the obstacles to teacher self-efficacy. The Society of Health and Physical Educators (SHAPE) wrote in a peer reviewed symposium that “beginning physical educators have a higher likelihood of having low teacher efficacy during their first years of teaching due to a lack of respect and resources” (Children,

2015, p. 1). The organization went on to state that it is imperative to examine how mentoring, in the form of cognitive coaching, impacts physical education teacher candidates' teacher efficacy by providing them with the necessary skills to overcome those obstacles they may face during their first years of teaching (Children, 2015). Indeed, assigning mentors to aid teachers is a new trend in education over the past 25 years. The SHAPE organization found in their study that the assignment of a mentor did have a positive effect on teacher self-efficacy.

Students are negatively impacted by teachers who have a low level of self-efficacy; however, when teachers have a high level of efficacy, the impact on students is positive. Zee and Koomen (2016) conducted a far-reaching study that brought together 40 years of teacher self-efficacy research in order to explore the consequences of teacher self-efficacy for the quality of classroom processes, students' academic adjustment, and teachers' psychological well-being. They found 165 articles that they deemed to qualify for inclusion in their analysis. The researchers suggested that teacher self-efficacy shows positive links with students' academic adjustment, patterns of teacher behavior and practices related to classroom quality, and factors underlying teachers' psychological well-being, including personal accomplishment, job satisfaction, and commitment (Zee & Koomen, 2016). All of these factors were found to contribute to teacher self-efficacy.

Environment can also impact a teacher's level of self-efficacy. Some studies show that teachers in rural areas have a higher level of self-efficacy than teachers who work in urban areas. Almeida, Jameson, Riesen, and McDonnell (2016) found that that rural preservice teachers have a higher sense of self-efficacy than urban preservice teachers with regard to technology usage. They used survey methodology to examine teacher's self-efficacy regarding technology usage. They found that the main factor that influenced preservice teacher self-efficacy was where they

were when they went to college and not how they were trained. The researchers indicated that there was a significant relationship between the self-efficacy of teachers who lived and worked in rural areas and were trained at smaller colleges was on average higher than teachers who lived in larger settings and went to larger colleges (Almeida et al., 2016).

If teachers perceive that they have been prepared through training and education, they tend to have a higher level of self-efficacy. Song (2016) found that the overall self-efficacy of preservice general education teachers was higher than the overall self-efficacy of preservice special education teachers. While Song (2016) also found that there was a strong relationship between perceived preparation and self-efficacy, the difference between efficacy of general education preservice teachers and special education preservice teachers was striking. The researcher offered no explanation for this difference.

Many of the studies presented in this section to this point center on the theme of teachers feeling prepared to teach. This feeling of preparation has a positive effect on self-efficacy. Ruppap, Neeper, and Dalsen (2016) survey special education teachers' ($N = 130$) perceptions of preparedness to implement recommended practices for students with severe disabilities. The main body of the survey consisted of three brief vignettes describing students who would typically be considered to have severe disabilities. A list of 10 recommended practices followed each vignette that were specific to the student, and survey respondents were asked to indicate the extent to which they felt prepared to use each practice (Ruppap et al., 2016). Using an independent sample t -test, the researchers found that participants who had degrees and certifications in special education felt the most prepared to develop individual education plans and perform other compliance paperwork but felt least prepared to service student academically. They stated that "the 11 highest rated items across vignettes related to management duties, such

as developing IEPs, creating behavior plans, monitoring progress, and collaboration” (Ruppar et al., 2016, p. 280). This study highlights what special education teachers feel they are prepared to do and what they are less prepared to do. Although Ruppar et al. sent the survey to 6000 teachers, only 130 responses could be used. This would constitute a low response rate. However, the results of the study are informative here. Teacher self-efficacy is related to preparedness or the perception of being prepared.

Special Education Services

In today’s schools special education is as much a part of the academic program as gifted and talented programs or art and music. However, it was not always this way. The movement from exclusion to inclusion began in the courts and was energized by a great civil rights movement in the 1960s (Kirby, 2017). Now, despite winning the battle of being fully included into the educational program, special needs students have to overcome the obstacle of having teachers who may be woefully unprepared to deliver instruction to them, particularly in the area of math (Kirby, 2017; Yell, 1998).

History of Special Education

Historically, Americans with disabilities have faced exclusion from education (Yell, 1998). Beginning with the outright refusal of education to the more nuanced exclusionary practices of special education, public policy and legislation reflect societal perceptions of individuals with disabilities (Kirby, 2017). In *Beattie v. Board of Education* (1919) the Board of Education petitioned for a student with a disability to be prohibited from attending school with his peers. The courts agreed on the basis of the student’s presence being a distraction to his peers and teachers, consequently impeding their education. *Beattie v. Board of Education* along with other litigation in the early twentieth century focused on the exclusion of students with

disabilities (Kirby, 2017). Unfounded justifications such as being a detriment to other students and an inability to benefit from education were used to isolate students in separate schools (Kirby, 2017). This particular litigation aligns with the medical model of disability which states that if the flaw is within the student, then the burden is on the individual (Kirby, 2017). In the case of *Beattie v. Board of Education*, the court concluded that other students should not be adversely affected because of a student with a disability. If one examines these cases in a different light, then the environmental barriers and perceptions of others become apparent as the exclusionary force (Kirby, 2017).

The efficacy of the education system as a whole at effectively helping special needs children was very low. Most educators and public opinion were against it because they did not believe that these students could be educated. However, with the advent of *Brown v. Board of Education* in 1954 the law and public opinion begin to swing toward inclusion. Special education since its inception was marked by exclusion. However, the courts ruled in *Brown v. Board of Education* that separate was not equal and therefore integration became the law of the land. This movement not only impacted the integration of races but the integration of special needs students into the educational program. This led to the passing of the Individuals with Disabilities Act (IDEA) and Section 504 in 1968. In 1975 Congress passed the Education of all Handicapped Children Act. These and other laws guaranteed students identified with a disability a free and appropriate public education in the least restrictive environment, meaning SWD should be included with their general education peers to the greatest extent possible.

The days of special needs students not being allowed to come to school were over. However, it still took some time before these students were fully included in the general education classroom. Today, schools have come a long way but new problems such as the one

being addressed in the study are left to be solved. The efficacy of teachers assigned to instruct these SWD in math is one of the next problems upon which the educational system must converge. In 2001, the federal NCLB Act (2002) required that every child be taught by a “highly qualified teacher” by the 2005–06 school year (Rice & Drame, 2017). This law resulted in teachers wishing to service students with special needs having to take a certification test to be considered highly qualified. The certification tests, however, did not differentiate in the area of the content in which the prospective teacher would be working. There was no such thing as a special education mathematics certification. As a result, special education teachers were considered highly qualified to service special needs students in all content areas (Rice & Drame, 2017).

The Higher Education Consortium for Special Education (HECSE) convened in January 2016 in Washington to celebrate both IDEA’s and HECSE’s 40th anniversaries. The authors stated, “As we reflected on those two anniversaries, the convictions that generated this special issue became increasingly evident: the irrevocable significance of the impact of public policy on students with disabilities and special education and the critical importance of advocacy” (West & Shepherd, 2016, p. 150). These laws represent the federalization of special education. The move now is to place more control back in the hands of the state (ESSA, 2015). According to West and Shepherd (2016):

The hallmark of ESSA is returning much decision making from the federal government to states and local school districts. Although the new federal law may offer an invitation to lower standards for teachers (through the elimination of “highly qualified” and a reliance on unfettered state certification systems) and an invitation to lower preparation standards (through the use of teachers in training to serve as teachers of record and

establishment of teaching academies outside of standards reserved for higher education programs), decisions about those possibilities will be made by states and districts.

(p.151)

The impact of the trend described here will be felt in every part of special education. This article helps put the history of special services in perspective. How this policy shift impacts the participants in this study may not be evident at this point. The self-efficacy of the teachers who will feel the impact of this policy shift will need to be analyzed in future studies.

Co-Teaching/Team Teaching

Before the literature on special education co-teaching is presented, it is important that it be put in the context of a description of what commonly occurs. Co-teaching or team teaching is a model used to service SWD who are included in the general education classroom (Da Fonte & Barton-Arwood, 2017). A discussion on the nature of this arrangement cannot be left out when considering the self-efficacy of special education teachers. Often, two professionals are assigned to each other during a specific period of the day. The method by which these assignments are made varies from school to school and normally is driven by necessity and limitations of the schedule (Da Fonte & Barton-Arwood, 2017). Matching teachers to find two who work well together is not a common practice, but it is done in some cases. Normally co-teachers have never worked together or in many cases have never met. The professional development for special education is attended by the special education teacher. However, recent professional development initiatives have invited both the general education teacher and the special education co-teacher to attend together. Further, the general education teacher possesses a certification in the content they are delivering (Da Fonte & Barton-Arwood, 2017). More often than not the special education co-teacher only has a special education certification. In mathematics, for

example, the co-teacher may only be certified in special education and have very little mathematical content knowledge (Da Fonte & Barton-Arwood, 2017). This is the nature of co-teaching as it is practiced in many public schools in the U.S.

All schools in the U.S. use some variation of inclusive models of education for students with disabilities that include higher expectations and increased teacher accountability (Da Fonte & Barton-Arwood, 2017). Within the inclusion framework, both general and special education teachers have responsibilities for the education of SWD (Da Fonte & Barton-Arwood, 2017). Because of this shared responsibility and the level of accountability, collaboration between the special education teacher and the general education teacher is a vital component. Pellegrino, Weiss, and Regan (2015) stated, “Teacher collaboration has been viewed as a critical part of the equation to help meet the needs of special needs learners” (p.187). Collaboration skills, however, take time to develop, with many potential barriers that can limit successful teamwork (Da Fonte & Barton-Arwood, 2017). Therefore, teacher preparation programs are bearing the responsibility for preparing general and special education teachers for collaboration with a focus on strategies to minimize potential barriers and support outcomes for students with disabilities (Da Fonte & Barton-Arwood, 2017).

Setting aside time to collaborate and plan for general education teachers and special education teachers can lead to a more productive relationship and better delivery of instruction in the classroom, thereby increasing the level of efficacy for teachers. Da Fonte and Barton-Arwood (2017) interviewed both special education teachers and general education teachers to discover their perceptions of collaboration. The first theme that emerged from this investigation was a lack of time. The authors found that participants wanted to have time to collaborate with their general education colleague. Participants also wanted time for meaningful conversations

about more than just managerial tasks and discipline. Each participant in this study, both general education teacher and special education teachers, expressed concerns with limited time for collaboration (Da Fonte & Barton-Arwood, 2017). To address the issue of time for collaboration, Da Fonte and Barton-Arwood recommended that school administrators support general and special education teamwork by incorporating planning time into schedules. A common planning period built into the master schedule would support the collaboration process. Time to collaborate has a positive impact on teacher self-efficacy (Da Fonte & Barton-Arwood, 2017).

The second theme that arose in this investigation with general and special education teacher candidates was the gaps in content knowledge (Da Fonte & Barton-Arwood, 2017). “Although preservice candidates expressed hope through a willingness to learn from each other and appeared open to learning and implementing new practices, preservice special education teachers talked about feeling unprepared on content-specific knowledge” (Da Fonte & Barton-Arwood, 2017, p.100). The authors of this study provided the following recommendation to help with the gap in content knowledge:

General education teachers can create academic content sheets for special education teachers. In these content sheets, specific content knowledge and instructional sequence are outlined. This will provide special education teachers with a better understanding of the instructional plans being developed in order to identify and outline the accommodations and modifications needed for a specific student. In supporting the use of content sheets, special education teachers can also consider this difference in content knowledge as an advantage, as they can learn valuable subject matter that can be used in their teaching. (Da Fonte & Barton-Arwood, 2017, p.101)

The authors also found that both general education teachers and special education teachers believed that communication was also a major part of collaboration because general education teachers were unsure of their role in the classroom (Da Fonte & Barton-Arwood, 2017). General education teachers were unsure about student accommodations and individual education programs (IEP) for students with special needs. This lack of communication has been found to have a negative effect on teacher efficacy.

Time for collaboration and planning can improve the level of teacher self-efficacy by improving communication, setting expectations, and clarifying the role of the special education teacher. Hamdan, Anuar, and Khan (2016) sought to determine the relationship aspect of the challenge, readiness, and the role of special education teacher in implementing common approaches in inclusive classrooms. The researchers surveyed 240 teachers and found several challenges in regard to special education teacher readiness (Hamdan et al., 2016). The researchers found that the role of the special education co-teachers in the classroom was often unclear to them. This study reinforces the factors that are noted to contribute to lowering teacher efficacy. If teachers do not perceive that they are prepared to teach special needs students, they will have a low sense of efficacy and failure will follow. Their feeling unclear about their role in the classroom can add to this feeling of failure.

Despite the amount of time set aside for collaboration and planning, relational problems can also play a role in the level of teacher self-efficacy in the co-taught class. Song (2016) found that there were perceived difficulties in the working relationship between general education teachers and special education teachers. The researcher concluded that this had a negative effect on teacher efficacy. Song (2016) pointed to a perceived lack of professionalism on the part of the general education teacher that impacted the relationship. This study would seem to point to

the relational support aspect of teacher efficacy. The participants felt that the general education teacher was unprofessional in some manner. The researcher did not expound on this part of his findings; however, this is an area that needs further exploration. What is unclear from this study is the nature of the unprofessional behavior and the actions of the special education co-teacher that may have precipitated the unprofessional behavior. Despite the shortcomings of this study, Song has uncovered a need for professional development.

Special education teachers who have a high level of self-efficacy in the area of mathematics also have a personal interest in teaching the subject. Ekstam et al. (2017) gathered data from 57 special education pre-service teachers with the intention of examining how the teachers' individual interests affected their self-efficacy. To measure this, the participants answered an online questionnaire, comprised of seven items measuring their individual interest in mathematics and 12 items based on teacher efficacy beliefs regarding mathematics (Ekstam et al., 2017). The results showed that the individual interest of preservice teachers has a strong effect on teacher efficacy beliefs, while subject knowledge had only an indirect effect (Ekstam et al., 2017). Pre-service teachers showed significantly less teaching efficacy in mathematics in terms of motivating students compared to instruction and adapting instructions to students' individual needs (Ekstam et al., 2017). The results of this study indicate that content knowledge has a minimal effect on teacher efficacy. The researchers concluded that there is an indirect relationship between subject knowledge and teacher efficacy beliefs on the basis of instruction in mathematics. But they found no significant relationship between subject knowledge and teacher efficacy beliefs in motivating students or adapting instructions to individual needs. They concluded that "subject knowledge is of importance for efficacy beliefs only if the teacher also has an interest in mathematics" (Ekstam et al., 2017, p. 343). Teachers did not feel a great sense

of self-efficacy when it came to student motivation in mathematics; however, teachers did feel a sense of positive self-efficacy when it came to teaching the subject matter if they believed they were well prepared and had a high interest in math. In many cases, public school special education teachers are thrown into a mathematics class simply to accommodate a tight schedule. In light of the results of this study, that practice may be detrimental.

Shoulders and Krei (2016) conducted a multiple regression analysis study of 63 general and special education teachers and found that there was a predictive relationship between the amount of professional development and the efficacy of a special education co-teacher. The researchers found that the more professional development hours the teachers received, the greater their sense of efficacy for both general education teachers and special education teachers. Further, the study found that general education teachers perceived that they interacted effectively with special needs students, but special education teachers believed they did a better job with special needs students than their general education colleagues. Finally, the researchers found that the number of hours in professional development and the perceived collaborative relationship between the general education teacher and the special education teachers was positively correlated (Shoulders & Krei, 2016).

Many researchers agree that professional development may be the key factor in increased teacher efficacy and performance (Shoulders & Krei, 2016; Song 2016). However, according to Papi (2018), the professional development of novice teachers in the profession and in special education is poorly understood, despite its relevance to the improvement of teaching. Papi's study sought to analyze the challenges faced by such teachers with a view to understanding their professional development. Studies on the professional development of teachers have highlighted the importance of the first five years of teaching. According to Papi, professional development

is most effective during the beginning of a teacher's career. The researcher surveyed 78 teachers from 57 schools in Brazil. The novice teachers who participated in this study reported a sense of survival. They were constantly having to adapt to changing situations and dynamics. These teachers did not feel supported by the administration. Additionally, all teachers expressed doubt and insecurity in regard to the inner workings of the school (Papi, 2018). They were not sure whom to seek out and get help from. Due to a lack of space teachers reported working with special needs students outside or in a library. Many teachers reported that it was unfeasible to work with special needs students in their environment (Papi, 2018). This ties directly to teacher self-efficacy in that the lack of professional development and induction for novice teachers had a negative impact on the teacher's belief that he or she could accomplish the job of educating the students.

Today's special educators need to collaborate with general educators in tiered systems of support while providing specialized instruction for students with the most intensive needs, yet teacher education and professional development opportunities may not always adequately prepare them for these changing roles (Shepherd, Fowler, McCormick, Wilson, & Morgan, 2016). Shepherd et al. (2016) proposed a set of policy recommendations intended to promote clarification of special educators' roles and to inform the future of university-based teacher preparation programs engaged in fostering their development at the preservice and in-service levels. The authors recommended that policy makers develop a clear vision regarding the roles of special educators in today's context and support teacher preparation programs in engaging in institutional reforms that ensure effective preparation of all educators (Shepherd et al., 2016). Developing common standards for state licensure and revisiting the high expectations of teacher preparation requirements was another recommendation. Finally, the authors argued that "support

funding for research on effective educator preparation, professional development approaches that address the career span, and development of special education teachers, faculty, and leaders” was the key to increased effectiveness (Shepherd et al., 2016, pp. 92–93).

Throughout the literature, there is evidence of special education teachers’ self-efficacy being impacted by things that are out of their control. This study points to what policy makers can do to improve the self-efficacy and overall effectiveness of special education co-teachers as they take on the challenge of effectively educating students with special needs.

Successes of Team Teaching and Co-Teaching

There are a ranges of instances in which team teaching has be found to be effective and special education teachers have demonstrated a high level of self-efficacy. Ruppap et al. (2016) examined special education teachers’ perceptions of preparedness to implement recommended practices for students with severe disabilities. The researchers used a survey of 6,000 teachers and found that teachers had a higher perception of preparedness than they did of their own ability to provide services to students with severe disabilities. Ruppap et al. (2016) went on to report that teachers with a generalist licensure were significantly less prepared to meet intensive medical, communication, and instructional needs of students with severe disabilities.

Predictably, teachers with master’s degrees felt more prepared to work with students with severe disabilities in several key areas, although they felt less prepared to address long-term curriculum development according to Ruppap et al. (2016). This study would seem to align with most of the studies reviewed in this chapter; the higher the level of education and training, the higher the level of teacher self-efficacy.

Collaboration between the general education teacher and the special education teacher has been established as the foundation of the effectiveness of the instruction of special needs

students. Pellegrino et al. (2015) asked 25 teachers enrolled in a course on special education inclusion a series of open-ended questions and analyzed their responses. The questions were focused primarily on collaboration. The researchers reported that by the end of the course, the candidates had progressed from excitement and anxiety with little understanding of the processes and details of collaboration to valuing collaboration and co-teaching with a cautious respect and a deeper appreciation of the complexity involved in making it work (Pellegrino et al., 2015). The first open-ended prompt from the questionnaire included the scenario of finding a “dream” teaching job and being told that they must now collaborate with either a special or general educator, depending on their own specialty area (Pellegrino et al., 2015). The researchers concluded:

Responses to this prompt shifted from brief, broadly positive exclamations to responses that were still supportive of collaboration, yet inclusive of concrete concerns. Pre-course responses from special education teacher candidates focused on emotion and eagerness to meet their co-teacher, such as “Great!” “Nervous and anxious; not what I expected,” and “I’m a little nervous.” Social studies candidates responded similarly with, “am up for the challenge” “I would be excited and curious about my co-teacher,” “I am pleased,” “Phew,” “Awesome,” and “Less than enthusiastic.” (Pellegrino et al., 2015, p. 195)

Teachers reported knowing very little about collaboration before taking the class. They also stated that they either had negative experiences or had peers who had negative experiences with their co-teacher. Despite this, the researchers reported, “Fourteen of the twenty students, however, specifically noted that collaboration ‘is a factor in the success of the school and the performance of the students and a win-win situation’” (Pellegrino et al., 2015, p. 196).

Finally, Pellegrino et al. (2015) asked teachers to write down any questions that they had about co-teaching and collaboration. The teachers asked questions about logistics and teacher planning. Additionally, it was noted that the teachers had questions about sharing student information and instructional strategies to help the learners in the classroom (Pellegrino et al., 2015). A special educator asked, “What happens if a collaborative pairing is more detrimental to the classroom than it is beneficial?” (Pellegrino et al., 2015, p. 197). They also had questions about workload and responsibility.

Teacher efficacy of special education co-teachers in mathematics hinges on preparation. However, the collaborative process that is present between the general education teacher and special education teachers has a marked effect as well. This is evidenced by the responses to the open-ended questions in the Pellegrino study, which concluded the following about making collaboration work:

At the end of the course, candidates still indicated that communication would make collaboration work but they added more specific descriptors such as “open and honest,” “value,” and “strong” to identify qualities that best enable effective collaboration. In addition, every candidate identified some aspect of respect. They used terms such as “mutual respect,” “trust and respect,” “value what they have to say and try to empathize,” and “respecting each other’s ideas.” In journal responses, it was clear that candidates grew to recognize the value and complexity of communication and building trust and respect. (Pellegrino et al., 2015, p. 198)

Challenges Related to Team Teaching and Co-Teaching

Kirby (2017) argued that while federal policy was created in an effort to promote access to general education, the practices of our educational institutions perpetuate isolation. The

researcher went on to say that “new assumptions must be created to promote access and equality for students with learning disabilities. True inclusion, where students with learning disabilities are fully included in the general education classroom, can help to reinforce new assumptions” (Kirby, 2017, p.175).

Another major challenge of the special education teacher is classroom discipline (Scott, 2017). Classrooms that include students with special needs can present the worst discipline issues encountered in schools (Scott, 2017) and the special education co-teacher is often used as the classroom disciplinarian. Scott (2017) posited that the challenge for special education teachers is not so much how to implement classroom management as how to convince an untrained teacher to engage in these effective practices. As a general rule, it makes sense to consider the structure of a classroom management system in consideration of the lowest common denominator: “That is, teachers must consider the degree of management necessary to maintain success in the most challenging students and use that as a guideline for a class wide management plan” (Scott, 2017, p. 98). Since the special education teacher is presented with the problem of providing quality instruction in the classroom while being the designated disciplinarian, training on how to integrate both is necessary.

Another major challenge is special education teacher attrition (Conley & You, 2017). Conley and You (2017) examined the workplace predictors of teachers’ intentions to leave for a nationally representative USA sample of 2,060 secondary school special education teachers. Structural equation modeling was used to assess the plausibility of a conceptual model, specifying linkages among special education teachers’ perceptions of workplace factors, job satisfaction and commitment, and teachers’ intentions to leave (Conley & You, 2017). Conley and You discovered that administrative support and teacher team efficacy had strong, significant

direct and indirect effects on special education teachers' intentions to leave. The researchers concluded that teachers who perceived their administrative supervision as characterized by supportive behavior, a clear vision, and teacher recognition were less likely to feel they might leave teaching or leave their job for another school. "Perceptions of less-than-positive supervision may create an environment that does not motivate teachers to make their best efforts or enhance their commitment to teaching" (Conley & You, 2017, p. 532). If the teachers perceived that their administration was behind them, they had a higher sense of efficacy and a lower attrition rate.

According to Vittek (2015), there is a severe shortage of special education teachers in the U.S., which has intensified over the last decade. Vittek (2015) wrote a critical review of the literature on special education teacher attrition and retention, concluding, "Given the gap between the number of special education teachers available and the number of jobs to be filled increases each year, a critical examination of the literature is imperative in determining factors relating to both attrition and retention" (p. 1). The author listed job satisfaction, administrative support, mentoring and induction programs as the main factors that determined if special education teacher stayed in the profession or left the profession before five years of service (Vittek, 2015). The reasons teachers leave special education jobs were poor job satisfaction, stress, overworked conditions, and lack of support from administration. The researcher elaborated on job satisfaction to include the feeling of accomplishment in regard to helping students improve (Vittek, 2015). This ties indirectly to teacher self-efficacy.

Another major challenge to the effectiveness of team teaching is the emotional expressions of the teachers themselves, particularly teachers who are frustrated and have a low level of efficacy. Kerr and Brown (2016) conducted a qualitative study collaboratively with 19

special educators to learn about their emotional practice through the emotional labor framework. Emotional labor refers to the management of emotional expression in the workplace (Kerr & Brown, 2016). The following research question guided the Kerr and Brown (2016) study: “How and why do special educators describe their work as stressful? How do special educators perceive their emotional labor? What, if any, are the implications of emotional labor theory for special educators?” (p. 144). The researchers used structured interviews to collect data from their participants and discovered three key themes that emerged describing special educators’ perceptions of the stress in their work as well as their views on how emotional labor may pertain to their daily practice. “Special educators defined these ideas as: (a) surviving the profession, (b) acting as survival, and (c) establishing an emotional language” (Kerr & Brown, 2016, p. 146). Teacher efficacy was mentioned indirectly in many of the teacher’s responses, most notably here:

In order to be a teacher, I think in this day and age you have to be positive, optimistic, encouraging—sometimes you have to encourage yourself. “You know what? You can do this. You can get through this day. You can get through this moment.” Sometimes it’s moment to moment, sometimes it’s minute to minute, sometimes it’s hour to hour, and sometimes it’s day to day. (Kerr & Brown, 2016, p. 147)

Twenty-five veteran special education teachers participated in this study. Of their responses, over half directly or indirectly had to do with self-efficacy. They never used the term self-efficacy; however, it can be implied in several of their responses. This study was conducted in one school district. When reading the description of the setting in which the study took place one can’t help but note the issues in which the teachers themselves could not control. The school would seem to be understaffed and overcrowded. Several of the participants reported having to

jump from classroom to classroom (Pellegrino et al., 2015). The setting in which this study was conducted was not ideal as described by the researchers and the teachers themselves. The concern here is transferability of the findings.

Teacher burnout is another concern in special education because of the emotionally demanding work context. Langher et al. (2017) explored the potential role of perceived support for reduction of burnout in a sample of 276 special education teachers working in secondary schools. Participants were given the Maslach Burnout Inventory - Educators Survey and a scale on the perceived collaboration and support from general education teachers. To explore the association between perceived support and each burnout measure considered, a correlation analysis was performed. In order to check the robustness of their empirical findings, multilevel regression models were used controlling for several variables (Langher et al., 2017). According to Langher et al., emotional exhaustion and depersonalization were correlates, since the lack of collegial support is conceived as the main cause for teacher burnout in special education. However, collegial collaboration and support led to higher feeling of acceptance, job success, and participation (Langher et al., 2017). The results of multilevel regression analyses suggest the potential role of perceived support for reducing two burnout measures, by lowering emotional exhaustion and improving personal accomplishment (Langher et al., 2017). Teacher professional development (in terms of in-service training), seemed to represent an important key factor for preventing teacher de-personalization according to Langher et al.

Professional development and training also leads to better job satisfaction and less emotional exhaustion. Female teachers reported a higher level of emotional exhaustion than male teachers. Also, teachers who worked in urban areas reported higher levels of emotional exhaustion despite in-service training (Langher et al., 2017). Teacher self-efficacy runs like a

thread through this review of the literature. The common theme of all the factors seems to be that the teachers are not confident they can be successful. This leads to emotional exhaustion and feelings of not being supported.

Special Education Math

Teachers must have a solid mathematical base of knowledge in order to support students' achievement in math (Reid & Reid, 2017). This is true for all teachers servicing a particular student, particularly those students who struggle in math or have a learning disability. Reid and Reid (2017) critically examined the math content knowledge of teacher candidates enrolled in a two-year Master of Teaching degree program in Canada. The researchers analyzed the basic numeracy skills of 151 per-service teachers using a pre- and post-test (Reid & Reid, 2017). The researchers also conducted semi-structured interviews of each participant. The researchers discovered that pre-service teachers gained numeracy operation skills and content knowledge over the year as well as increased self-efficacy in delivering math instruction (Reid & Reid, 2017). The authors of this study made the following recommendations in light of their results:

- 1) establish minimum standards
- 2) raise the stakes of the post-test
- 3) interplay of procedural and conceptual knowledge
- 4) coherence between math courses and practicum. (Reid & Reid, 2017, p. 866)

Reid and Reid didn't see increases on the posttest in all areas evaluated. They did, however, see an increase in the self-efficacy of the teachers in every case. The recommendations above apply to preservice programs for special education teachers. With math instruction that follows these recommendations, the self-efficacy of math teachers can improve (Reid & Reid, 2017).

The findings of the Reid and Reid (2017) study are particularly true for pre-service teachers. This study aimed to investigate and compare in-service and pre-service teachers' self-confidence in technological pedagogical and content knowledge (TPACK) in relation to their teaching experience, expertise, technology usage, and gender. Saltan and Arslan (2017) compared the self-confidence of pre-service teachers to veteran teachers in their ability to implement technology in the classroom. The results showed that both pre-service and veteran teachers exhibited the highest self-confidence level in the technological content knowledge domain (Saltan & Arslan, 2017). While pre-service teachers had the lowest score regarding their ability to implement instructional technology, veteran teachers had the lowest score in the technological knowledge domain (Saltan & Arslan, 2017). This study points to the idea that the instruction of pre-service teachers on content knowledge directly related to the classroom will result in higher levels of self-confidence and higher scores on content assessments.

Content knowledge leads to a higher quality of instruction in which teachers instruct students on the process of solving a problem instead of focusing on the right answer. Lachner and Nückles (2014) investigated the impact of instructors' different levels of knowledge on the quality of their instructional explanations. To do this they asked 20 mathematics teachers (with high pedagogical content knowledge, but lower content knowledge) and 15 mathematicians (with lower pedagogical content knowledge, but high content knowledge) to provide an explanation about an extremum problem for students. They found that the explanations by teachers and mathematicians mainly differed in their process orientation. The authors observed, "Whereas the teachers mainly presented the solution steps for the problem (product-orientation), the mathematicians also provided information to clarify why a certain step in the solution was required (process-orientation)" (Lachner & Nückles, 2014, p. 239). The better the instructors

understood the concept, the more detailed an explanation they could provide the student. The mathematicians sought to teach the students the process instead of teaching them to get a certain product. Lachner & Nückles (2014) highlighted the need for a thorough understanding of mathematical concepts in order for there to be quality instruction.

However, despite the amount of preparation and professional development, current educational practices and policies may be preventing students from being successful under the team teaching model. Eichhorn (2016) observed that the current educational policy aims to help students in India with learning disabilities participate in the general education curriculum and pass the 10th standard secondary exam; the implementation of curricular modifications has repercussions in post-secondary settings when students lack the math content knowledge for a required math course in their bachelor's degree program. Eichhorn conducted a qualitative study on the students' transition from secondary to post-secondary education and the students' perceived preparation to be successful in math. The researcher findings suggested that current special education policies and college practices in Mumbai, India, do not prepare students with math learning disabilities with the math knowledge that they need to succeed in post-secondary mathematics courses. The results of this study support that the more training a teacher has, the higher the level of teacher efficacy the teacher will have. This may have a positive effect on student success in mathematics.

Finally, within the field of special education, the use of visual representations (VRs) is a highly recommended instructional practice in mathematics. Van Garderen et al. (2019) examined special educators' own knowledge of and their instructional emphasis with VRs in mathematics for students with disabilities in grades K–12. A total of 146 special education teachers, pre- and in-service, responded to an online survey. A mixed methods triangulation

research design was utilized to understand what the teachers knew about VRs and how they utilized them for mathematics instruction. The researchers found that not only did teachers know very little about VRs and their use in mathematics, but they knew surprisingly little about mathematics instruction overall (van Garderen et al., 2019). These results reinforce the findings of other studies presented in this chapter. This study had a very low return rate in regard to the number of surveys sent out. Given the small number of respondents, generalizability was low. It was also noted that the content knowledge of the teachers was low, thereby limiting the teachers' knowledge of how VRs could be helpful in teaching special needs students. However, this study reinforces that the self-efficacy of teachers is tied to their knowledge of the content they are teaching, particularly, it would seem based on the evidence, in mathematics.

Summary

All of the research discussed in this review is from the past 40 years. The literature presented in this chapter about teacher efficacy seems to all point to the same theme: the more hours of preparation and professional development, the higher the level teacher self-efficacy. Training and professional development also had a positive impact on the relationship between the special education teacher and the general education teacher. The literature also reveals that teachers who have a genuine interest in teaching mathematics have a higher level of self-efficacy despite their hours of preparation. It is interesting that no researcher addresses the quality of the trainings or the professional developments. Finally, it was reported that teacher self-efficacy was impacted by the teachers' location. Teachers in rural settings had a higher level of self-efficacy than urban teachers. There exists a gap in the literature in regard to the self-efficacy of special education mathematics. This study fills this important gap with the voices of special education mathematics teachers informing policy decisions in the future.

CHAPTER THREE: METHODS

Overview

The purpose of this transcendental phenomenological study was to examine the teacher self-efficacy of high school special education math inclusion teachers with regard to their content knowledge and their ability to deliver effective instruction. The move from isolation to inclusion has changed where and how students with disabilities (SWD) are educated. The move has changed not only the placement of students but also the job functions of the special education teacher. With the increased accountability of schools and the increased pressure to prepare students for the 21st century world, it is important that high school teachers have the ability to provide quality instruction, particularly in the area of mathematics.

Long State Independent School District (LSISD; pseudonym) instituted the team-teaching model of co-teaching where both the general education and the special education teacher are required to provide instruction in the classroom to all students. The specific methods that were employed to ascertain the perceptions of these special education teachers regarding their level of efficacy in providing SWD with effective instruction are delineated in this chapter. This chapter includes information on the qualitative transcendental phenomenological research design. The methods of data collection and data analysis are also delineated. Moreover, provisions of trustworthiness and ethical considerations will be explained, and finally the method by which the data will be presented will be revealed.

Design

The design of this qualitative study is a transcendental phenomenology. Qualitative studies focus on individuals or things in their normal arena with the thought of making meaning of the phenomena (Creswell, 2013). The qualitative approach is appropriate because investing

lived experiences of the participants cannot be revealed through quantitative methods.

From the range of qualitative designs possible, a phenomenological design was selected because it is imperative to give a voice to those teachers that are teaching in a co-teaching environment. To further explain this, Moustakas (1994) posited that phenomenological research design

offers a systematic way of accomplishing something orderly and disciplined, with care and rigor. Procedures or techniques make up a method, provide a direction and steps to be followed, and move a study into action. Every method in human science research is open ended. There are no definitive or exclusive requirements. Each research project holds its own integrity and establishes its own methods and procedures to facilitate the flow of the investigation and the collection of data. (p. 2)

Phenomenological research is appropriate to understand the common experiences of individual to a particular phenomenon (Creswell, 2013). Phenomenological research was first developed by Edmund Husserl as a kind of descriptive psychology (Moustakas, 1994). Husserl is considered to be the founder of contemporary phenomenology (Moustakas, 1994). Phenomenology is based on the premise that reality consists of objects and events, called phenomena, as they are perceived or understood in the human consciousness (Moustakas, 1994).

In order to fully understand the perceptions of my participants, the researcher will not serve as a participant-observer in this study and will take great care to bracket himself through journaling so that he does not affect the outcome of the study. By doing this the voice of the participants may be heard unfiltered, and a truer understanding of their experience may be presented. Individual one-on-one interviews and a focus group interview were conducted and a teacher efficacy scale survey was administered.

Research Questions

The following research questions guided this study:

1. What are the perceptions of special education mathematics teachers in the inclusion classroom in regard to their mathematical content knowledge?
2. How does the perceived self-efficacy of special education mathematics teachers affect their perceived ability to deliver instruction in the classroom?
3. What is the nature of the co-teaching relationship and its effect on the self-efficacy of special education mathematics teachers?

Setting

The setting for this study was LSISD which is located in Southeast, Texas. The district spans over 170 square miles. LSISD is the largest employer in Long State county with over 10,000 full- and part-time employees. The district serves over 73,000 students in 46 elementary, 14 middle, and 11 high schools with an additional four unique campuses. LSISD has eight schools that are Title I schools in economically disadvantaged communities. LSISD employs over 4,500 teachers with over 400 serving as special education teachers. Seventy-one percent of the teachers have undergraduate degrees and 27% have master's degrees. LSISD was chosen for this study because the high school level campuses use team teaching in the inclusion mathematics classrooms.

The district first implemented team teaching in the late 1990s in varying forms. The nature of team teaching looks different depending on what campus one is observing. The district provides teachers with numerous professional developments; the focus of which is mainly on research-based techniques for team teaching. In addition to providing team teaching support in the classroom, special education teachers manage a caseload with varying numbers of students.

This responsibility requires them to prepare for admission, review, and dismissal (ARD) meetings as well as contact parents and meet with individual students with disabilities. They are also tasked with team teaching responsibilities in which their level of expertise can impact both special education and general education students. Many campuses fail to schedule a common planning period for special education teachers and math content teachers or teachers of record in the math classroom. The teacher of record is solely responsible for student learning in the classroom because students are listed under the general education teacher's name for accountability and grading purposes. This is reported to the Texas Education Agency (TEA) twice a year by the school district.

The school district as well as each individual campus has staff assigned to ensure that researched-based practices in the area of special education are implemented with fidelity and that laws are followed. These personnel include the principal, assistant principal, special education department chair, special education diagnostician, district director of special education, assistant director of special education, and the special education teachers.

Participants

A sample is the set of actual data sources that are drawn from a larger population of potential sources (Blaikie, 2009; Creswell, 2007; Given, 2008; Vogt, 2005). Given (2008) posited, "Within the broad process of sampling, choosing the actual sample is the second step in a two-step process, which begins with defining the population that is eligible for inclusion in the sample" (p. 797). Purposeful criterion sampling was used in this study (see Table 1). Purposeful criterion sampling was chosen because it allows the researcher to acquire participants who fit the requirements of the study along with the considerations of time and resources of the researcher

(Hannes & Lockwood, 2011; Suri, 2011). Creswell (2013) suggested that in phenomenological studies it is important to have participants who have a story that relates to the research topic.

Table 1

Participant Information

Participants	Yrs. SPED	Yrs. Exp.	Gender	Grade Level(s)	Education
Kathy	4	11	Female	9-12	Master's
Alex	3	6	Male	9-12	Bachelor's
Deborah	5	20	Female	9-12	Bachelor's
Dick	6	6	Male	9-12	Bachelor's
Mike	5	8	Male	9-12	Bachelor's
Tim	4	4	Male	9-12	Bachelor's
Sherry	10	10	Female	9-12	Bachelor's
Kim	4	4	Female	9-12	Bachelor's
TaShane	7	7	Female	9-12	Bachelor's
Bob	9	9	Male	9-12	Bachelor's

Potential participants received invitations and information via email and in person. Ten individuals were recruited to participate in this study. Fewer than 20 participants are appropriate for a qualitative study because it allows the researcher to develop comradery with the low number of participants and create an environment of honest dialogue (Crouch & McKenzie, 2006). The participants provide team teaching support in Grades 9–12 in the area of mathematics. This includes algebra, geometry, math modules, and trigonometry. The algebra

class has an End of Course (EOC) that students must pass in order to graduate. The teachers had a minimum of three years of experience. This delimitation gave a broad range of experiences to the study in order to fully understand the topic. All of the teachers taught resource math prior to being assigned to team teach for at least one full year.

In order for a special education teacher to obtain a job providing services at a campus, he or she must have a bachelor's degree and special education certification from the state of Texas. At this point they are considered highly qualified (Texas Education Agency, 2012). These teachers do not have to possess any certification in math or any other specific content. Further, they are not required to have taken extra hours of math beyond the requirements of their college or university. Special education teachers are routinely asked by administrators during the interview process which area they "feel" most comfortable providing team-teaching support. Depending on their individual answer and areas of greatest need, assignments are assigned to content areas. These assignments are often not based on subject area credentialing. The efficacy of these teachers providing special education services is at the heart of this study.

A questionnaire was used to gain knowledge on teacher's educational background and mainly focus on the participants' math background, teaching experience, and general thoughts about their teaching ability. Questionnaires were used a way to verify that the teachers met the requirements of the study. The questionnaires were emailed to participants using survey monkey. The following questions were used on the questionnaire:

1. What is your age?
2. What ethnicity do you identify with?
3. What is your gender?
4. What degrees have you earned?

5. What certifications/licenses do you hold?
6. How many years have you been in education?
7. How many years have you been assigned to deliver instruction to students with special needs?
8. How many years of experience do you have using the co-teach model?
9. How many years of experience do you have using the team-teaching approach?
10. What subject area is your focus?
11. What is your highest degree earned and what is the name of the college in which you earned it?
12. How many mathematics classes did you take in undergrad and graduate studies?
13. What is the highest level of mathematics that you took in high school and college?
14. How many hours a week do you plan with your team teacher?
15. How many students do you currently service on your case load?

Procedures

The LSISD website was used to identify teachers for the research. The LSISD website posts all teachers and their current teaching position including grade level. After receiving the IRB, district, and campus approval (see Appendices B and C), teachers were emailed information about the purpose of the research. This email included an invitation encouraging their participation and an informed consent form (see Appendix A). The consent form addressed confidentiality, the voluntary nature of the research, and the requirements to participate in the study. Participants completed a questionnaire that was a source of data. They also participated in one individual interview and one group interview. After confirmation of participation dates, an online questionnaire was emailed to participants; individual interviews and the group

interview were developed. The questionnaire contained 15 questions that related to teaching experience and math background. The individual interviews took between 45– 60 minutes and were recorded and transcribed by an independent agent. The group interview took 90 minutes and was also recorded and transcribed professionally. All participants signed informed consent forms prior to participation.

The Researcher's Role

I have 20 years of experience in public schools. I served in LSISD for 15 years and I have worked at three different campuses during my time with LSISD. I spent 10 years as a special education teacher and advocate for special education students and I have also served as an instructional coach and currently I serve as a school assistant principal. I have a special education, English as a second language (ESL), Generalist 48, and a principal certification from the Texas Education Agency (TEA). My undergraduate degree was conferred from Alabama State University, and I possess a Master's of Professional Counseling and an Educational Specialist degree (Ed. S) from Liberty University. I am also a professional development trainer in restorative discipline practices and instructional supports for SWD.

I have a deep passion for the working with SWD. Fundamentally, I believe that all students can learn, but I do not believe that all students can learn from just anyone. I believe that teachers must have the content knowledge, proper pedagogy, and a passion for students if they are to be effective educators. I believe that there must be honest dialogue about how best to educate all students and especially SWD. I believe that schools are responsible for ensuring that capable teachers and proper student placement is necessary if special education students are to succeed.

The role of the researcher in qualitative research is important because the researcher is the main instrument for the gathering and analysis of data. For this study I will be a nonparticipant (Coffey, 1999). For this reason, it was important to not engage in conversations with students, parents, or administrators during the time in the field. The goal was to study the teachers without affecting the environment in any way and thus changing the study (Neuman, 2003). Although I worked in the same school district as the participants, I did not work at their schools, and I did not know any of the participants on a personal level.

Nonparticipant Observer

“Nonparticipation observation is a relatively unobtrusive qualitative research strategy for gathering primary data about some aspect of the social world without changing its participants” (Given, 2008, p. 561). To be a nonparticipant the researcher should not disrupt or change the environment while collecting data (Blaikie, 2009; Creswell, 2007; Given, 2008; Neuman, 2003; Vogt, 2005). For this to occur, several visits to the site were made to gather meaningful data from the participants. I did not ask students direct questions about the school during passing periods, nor was I seen by students and stakeholders writing field notes in public. I also took care not to impose on participants as they went about their daily duties. Typical strategies included writing field notes or audio or video recording social action in private. As the instrument of research, the researcher designs interview questions that do not imply his own opinions and biases. The questions for this study were designed to elicit the teachers’ lived experiences and perception of their own efficacy as dictated by the transcendental phenomenological nature of the study.

Data Collection

After securing all procedural rights including approval from IRB and LSISD to conduct the research and informed consent from participants, the data collection process began. Creating useful instruments for qualitative data collection is paramount. The data collection used interconnected procedures that led to answering the research investigation questions (Creswell, 2007). For triangulation, three different data collection methods were used: results of the teacher efficacy scale survey, individual interviews, and a focus group. Triangulation is described by Patton (2002) as a way to add validity and strengthen the study. For this study participants received a questionnaire that discussed their math and teaching backgrounds. The observations focused on special education teacher actions and interactions in the classroom. The interview focused on the teacher's experiences as a math teacher in the team-teaching model and his or her ability to provide quality instruction. The interview also focused on the challenges and successes that the teachers had. The focus group interview allowed participants to discuss, confirm, and differentiate their experiences. Patton (2002) asserts that triangulation of the methods should produce like results that validate the findings.

Profound Interviews

Profound semi-structured interviews are one-on-one interviews in which participants are encouraged and prompted to talk in depth about the topic under investigation without the researcher's use of predetermined, focused, short-answer questions (Blaikie, 2009; Creswell, 2007; Given, 2008; Vogt, 2005). In phenomenological research "the most appropriate data collection strategy is the profound interview" (Moustakas, 1994, p. 105). The phenomenological interview should be open or semi-structured: "These two types of interviews allow the researcher to address the phenomenon profoundly, providing a space of aperture for the informants to

express their experiences in detail, approaching reality as faithfully as possible” (Moustakas, 1994, p. 105). For this study a list of questions was prepared. The researcher was aware of the major domains of experience likely to be discussed by the participant and was able to probe how these relate to the efficacy of the individual participant. In-depth interviews of participants are suitable for data collection in a variety of research methodologies including a transcendental phenomenological study (Blaikie, 2009; Creswell, 2007; Given, 2008; Vogt, 2005).

The in-depth participant interview is used extensively in transcendental phenomenological studies. It is based on the assumption that in-depth interviews with a few key participants, individuals who are particularly knowledgeable and articulate, will provide insights and understandings about the problem being studied (McMillan, 2004). A relationship with the participants was established so that valuable information could be obtained regarding their perceptions of their own self-efficacy (Marshall & Rossman, 2006). The interviews took approximately one hour, and the researcher electronically recorded each interview using a smart phone recording app that had the capability to store the interview in a MP3 format and then imported directly into NVivo 9 for coding at a later date.

Open-ended questions were developed using a combination of relation to the research question and questions that emerged during the ongoing data analysis. Follow-up interviews took place in a focus group setting. These questions were grounded using studies from the review of relevant literature that was presented in Chapter 2. Follow-up questions were utilized during the interviews to give further insight into the participants’ perceptions of their self-efficacy in regard to being successful at team teaching in math.

The interviews took place in locations chosen by the participant. This was done in order to make the participant feel more comfortable with the process. The participants were told why

the interview was being conducted and consent was obtained. The researcher did not discuss interviews with anyone else, and only the informant was allowed to hear the recording of his or her interview. The researcher used member checks to ensure that the participants' voices were reflected in the data collection. The following are the open-ended questions that were asked to each participant:

1. Please introduce yourself to me.
2. Please walk me through your academic preparation to be a special education mathematics teacher.
3. Of the formative experiences you identified in your preparation, which would you say were the most significant?
4. What made them significant?
5. Describe your ability to successfully teach mathematics to students with special needs.
6. Describe your ability to teach mathematics to students without disabilities.
7. Tell me about the struggles you have experienced since becoming a special education mathematics teacher in the general education class.
8. Imagine you're being interviewed at an educational conference, in front of thousands of special education pre-service teachers. What would you want to tell them to expect to experience as they prepare to team teach in high school mathematics?
9. On a scale of 1 to 10, how would you rate your ability to deliver effective instruction to general education students in the area of mathematics?
10. Why did you choose the number you chose?
11. At what grade level of mathematics do you feel most comfortable teaching at and what would have to happen to make you feel comfortable at this level?

12. Explain what would have to occur to make you choose a higher number.
13. What would you change about your preparation to be a special education mathematics teacher in the general education setting if you could go back in time?
14. How do you believe the general education teacher perceives your mathematics ability?
15. Explain how you perceive the practice of team teaching at your current assignment compared to how you learned that it should be practiced during your teacher preparation.
16. Describe how your knowledge of mathematics affects the relationship that you have with your teaching partner.
17. Discuss your level of mathematics content knowledge and your ability to discuss specific mathematics topics in conversation.
18. In what ways does your mathematics content knowledge limit your ability to participate in conversations about pedagogy?
19. Discuss the most difficult relationship you have had with a team teacher and how it impacted your job performance.
20. Discuss the most productive relationship you have had with a team teacher and how it impacted your job performance.
21. I would like to show you some themes that I have identified so far in my study of teacher efficacy. I would like your reaction to these themes and I would like to know how you feel about their relevance to your situation.

Questions 1–5 are basic background knowledge questions and were designed as follow-up questions to the original questionnaire the participant took to qualify for the study (Moustakas, 1994). These questions were intended to be build a relationship with the participant so that they felt comfortable sharing their perceptions with me (Moustakas, 1994). The questions varied

depending on the participant and their level of comfort starting out. Questions 6–10 were based on the teachers' perceived level of efficacy in relation to their assignment (Ninković & Knežević Florić, 2018; Wang & Neihart, 2015; Zee & Koomen, 2016). Questions 11–21 were designed to allow the participants to reflect on their environment and to dig for a deeper understand of their own self-efficacy (Zee & Koomen, 2016).

Focus Groups

Focus groups are a form of qualitative interviewing that uses a researcher-led group discussion to generate data (Blaikie, 2009; Creswell, 2007; Given, 2008; Vogt, 2005). The specific topic of the focus group in this study was the team-teacher relationship and its contribution to teacher self-efficacy (Given, 2008, p. 352). Given (2008) wrote:

Group composition is one of the most important aspects of research design for focus groups. As a starting point in the selection of participants for a focus group project, it is crucial to take into account both the needs of the researcher and the interests of the participants. Too often, researchers make the mistake of determining the group composition based on their own needs, without giving enough attention to the participants' point of view. At a minimum, the participants need to feel comfortable talking to each other about the research topic; beyond that, lively conversation requires a set of participants who are actively interested in talking to each other about the interview topic. (p. 353)

The focus group interview in this study was comprised of eight participants and was approximately 90 minutes in length. This focus group interview was conducted in a conference room, and participants sat around a conference table. Audio was captured during the focus group interview and saved into an MP3 formatted file in the same manner as individual interviews

were. This file was later imported into NVivo 9 and given an identifying name such as: “math department focus group—4/30/2018.” The file was then transcribed in NVivo 9 and coded.

Selecting participants who share a similar perspective toward the topic is the most common strategy for producing the kind of group composition that could generate active exchanges (Given, 2008). This strategy is usually summarized as creating homogeneous groups, where the homogeneity is based on what the participants share with regard to the research topic rather than simple similarity in demographic characteristics (Given, 2008). For this study the participants all had similar job responsibilities. For example, six special education teachers were interviewed who all provide team-teaching support in Algebra I. They all have similar job responsibilities, and therefore their conversations generated more data (Given, 2008).

Questions for the focus group interview were developed in the same way as questions for the in-depth interviews. The following questions were asked:

1. Describe how you see yourself as a mathematics teacher.
2. Explain the difficulties you have teaching both general education and special education students.
3. What has made teaching mathematics to special education and general education students easier for you?
4. What advice would you give teachers who are new to teaching special education mathematics?
5. Is there anything else that you would like to discuss that I didn't ask you?

All five of the focus group questions were selected to determine the level of efficacy the teachers perceived themselves as having and to elicit discussion among them (Moustakas, 1994; Ninković & Knežević Florić, 2018; Wang & Neihart, 2015; Zee & Koomen, 2016). Focus group

interviews in this study were used for member checking of emergent themes. Members were asked to comment on the validity of themes that were identified in the study based on previous interviews and coding analysis. The participant reviewed all themes in this study.

Teacher Efficacy Scale

A teacher efficacy scale survey was used to determine the teachers' level of efficacy. Tschannen-Moran and Woolfolk Hoy (2001) first developed the *Teachers' Sense of Efficacy Scale* (TSES) to correspond to the tasks that teachers are required to perform in schools. The scale is divided into three parts: efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement. The TSES has been widely used in recent empirical studies in teacher efficacy and has found significant relations with teacher commitment, job satisfaction, classroom goal structures (Nie, Lau, & Liao, 2011). The TSES has been found to be valid instrument and will be used to assess the efficacy of each participant in this study.

After permission was gained to use the scale (Appendix D), the TSES was loaded into Google Forms and a link was emailed to each participant. After the participants completed the survey, the results populated to a spreadsheet. This spreadsheet was loaded into NVivo for analysis. The results of the teacher efficacy scale were triangulated with the results of individual interviews and the focus group interview.

Data Analysis

Qualitative data analysis techniques were employed to analyze the data collected in this study. Further, qualitative provisions were used to ensure trustworthiness. Software also managed, organized, and evaluated relationships and differences.

Bracketing

Bracketing is a method used by qualitative researchers to lessen the potential “deleterious effects of unacknowledged preconceptions related to the research and thereby to increase the rigor of the project” (Tufford & Newman, 2012, p. 81). One method of bracketing that was employed is writing memos throughout data collection and analysis. This served as a means of examining and reflecting upon my engagement with the data (Moustakas, 1984; Tufford & Newman, 2012). Moreover, I engaged in discussions or interviews with peers not involved in the study in order to uncover and bring into awareness preconceptions and biases that I developed during the process. Finally, I maintained a reflective journal during the research process in order to write down thoughts and feelings about the information that was collected and analyzed. The journal was kept separate from the research and was used to enhance my ability to sustain a reflexive stance (Tufford & Newman, 2012).

Horizontalization

According to Moustakas (1994), data analysis in phenomenology is characterized by the following procedures: epoche, identifying common meanings and essences, horizontalization of data, textual and structural analysis. I ensured the horizontalization of the data by identifying each of the quotes stated by the participants that were relevant to the topic under investigation. I gave these quotes equal value with regard to the expressions of the entire group of participants. This was the basis of the textual descriptions that were written that brought out what the participants were saying and if any were thematic.

Textual analysis refers to the description of what is expressed by the participants. Structural analysis refers to the interpretation of how it is expressed by the participants. Both types of analyses are fundamental in the interpretation of the findings. Structural analysis plays a

vital role as a fundamental part of the scaffolding of phenomenology because it is the one that directs us towards common essences and meanings. Structural analysis reflects the intentionality of conscience as a fundamental aspect of phenomenology. My analysis of data was conducted in this study as recommended by Moustakas (1994) and outlined by Creswell (2013):

1. The researcher groups the relevant topics into units of meaning.
2. The researcher writes the textual description and includes “ad verbatim” quotations.
3. The researcher writes the structural description.
4. Finally, according to the textual and structural analysis, the researcher proceeds to identify the essence of the phenomenon. What are the common elements repeated in each of the researched participants? (p. 225)

Qualitative Software Package

Qualitative software can be considered as a basic toolkit containing specific tools that help users to organize and record thoughts about and reactions to data as well as tools to access and review the material they organize and record (Given, 2008). Initially, researchers make decisions about what type of data they will collect and how they will manage those data within software. The document system within NVivo 9 is the primary tool for storing each data document users work with (QSR). A document can be in the form of text, graphic, audio, or video file (QSR). NVivo 9 allows the use of rich text or Word files, thereby maintaining the original formats (e.g., bold, italic, underline, color) present in documents when they are reviewed for coding (QSR, 2007).

NVivo 9 also has a linking system where the users can connect an entire multimedia file from within the body of a text document (QSR, 2007). This procedure works like web-links placed in the body of an email. Direct work with a multimedia file proceeds in the same way as

work with a text document. Users can write notes about all or parts of the file. With NVivo 9, sections of the file can be marked and/or coded for later retrieval, and entire files can be organized by major categories that characterize them (QSR, 2007). NVivo 9 is one of the most widely used software packages in qualitative research (Given 2008; Moustakas, 1994). Given (2008) further states:

The trustworthiness of qualitative research depends upon the integrity of data gathering and analysis, the robustness of processes, and the demonstration of thoroughness. One tool that assists a researcher to manage these tasks well is the NVivo data management and searching program, which enables a researcher to demonstrate the integrity, robustness, and therefore, trustworthiness of an investigation. The benefits of NVivo lie in its user-intuitive interface and its extensive data storage, search, and retrieval capacity. (p. 564)

I used software to create memos for this purpose, providing a rich source of information about research processes (Given, 2008; Moustakas, 1994). Because memos are separate from the actual data, the independence and integrity of data were maintained by ensuring against contamination from my perspective (Given, 2008). As discussed in the research design section of this chapter, this was used to bracket the researcher. Finally Given (2008) states about NVivo 9:

These features make NVivo a sophisticated addition to a qualitative researcher's toolkit, but it remains the researcher's responsibility to ensure the authenticity of the research project and output by aligning methodology, epistemology, and ontology. Because NVivo makes it easier for researchers to demonstrate robustness in their practice by assisting the management of data and by establishing trustworthiness, the research

process becomes more transparent and therefore is open to closer scrutiny. As a result, the researcher needs to think carefully through the methodological approach as well as the process of analysis. (p. 565)

NVivo did not analyze data; it served as a management tool enabling greater depth in analysis and facilitating the searching of large quantities of transcript data so that I could consider judgments about coding and the identification of themes.

Trustworthiness

Trustworthiness is an important concept because it allows researchers to describe the virtues of qualitative terms outside of the parameters that are typically applied in quantitative research. Hence, the concepts of generalizability, internal validity, reliability, and objectivity are reconsidered in qualitative terms (Given, 2008; Moustakas, 1994). Trustworthiness can be thought of as the ways in which qualitative researchers ensure that transferability, credibility, dependability, and confirmability are evident in their research (Given, 2008). Methodologically, “moving away from the quantitatively oriented terms allows qualitative researchers the freedom to describe their research in ways that highlight the overall rigor of qualitative research without trying to force it into the quantitative model” (Given, 2008, p. 894). Vogt (2005) stated: “Trustworthiness is the equivalent of validity when referring to qualitative research” (p. 328). Qualitative researchers must take extensive measures to guarantee to the reader or consumer of the research that the data collected is valid (Blaikie, 2009; Creswell, 2007; Given, 2008; Moustakas, 1994; Vogt, 2005). The alternative terms include transferability, credibility, dependability, and confirmability (Given, 2008; Moustakas, 1994).

Credibility

Credibility and internal validity are also considered to be parallel concepts (Given, 2008). A study possesses internal validity if it has successfully measured what it sought to measure (Given, 2008). In contrast, a credible study is one where the researchers have accurately and richly described the phenomenon in question (Given, 2008). Specifically, “instead of ensuring that one has measured what one set out to measure, one is making sure that they have accurately represented the data” (Given, 2008, p. 895). Credibility was addressed in this study by the use of audio recordings that were coded by the use of a computer software package (NVivo 9), and the recording directly corresponded with transcriptions of what the person said. Member checking of identified themes was used in order to ensure that they were creditable. More significantly, triangulation was used in order to address credibility of this study. Data from individual interviews, a focus group interview, and surveys were analyzed and cross-referenced to ensure that there was consistency in themes and findings.

Dependability and Confirmability

Objectivity and confirmability are considered to be parallels of each other. In quantitative research, an objective study is a study in which the data is considered to be unbiased. In qualitative research, confirmability reflects the need to ensure that the interpretations and findings match the data. In other words, no claims are made in this study that cannot be supported by the data. Measures were taken to bracket myself during this investigation as stated in the research design earlier in this chapter. To ensure confirmability, the recordings of in-depth interviews and a focus group interview were linked with the actual transcribed responses of the participants. To confirm that the participant actually said what the transcription stated, the user could hear as well as read the response of the participant.

Recordings of the focus group interview and in-depth interviews of participants were used to guarantee to the greatest extent possible that each member's perception was recorded accurately in the study. These recordings were imported into NVivo 9, transcribed, and coded. The transcriptions were directly linked to the recording and could be heard simply by clicking on the transcription. This eliminated the need for any extensive member checking techniques. However, member checking strategies were used particularly when major themes were identified from coding analysis. This provided an extra layer of dependability.

Transferability

To understand the differences between quantitative and qualitative terms, it is helpful to compare the parallel concepts. To start, transferability is akin to generalizability but differs as follows:

Although generalizability refers to situations where research findings can be applied across the widest possible contexts, transferability reflects the need to be aware of and to describe the scope of one's qualitative study so that its applicability to different contexts (broad or narrow) can be readily discerned. In this way, a study is not deemed unworthy if it cannot be applied to broader contexts; instead, a study's worthiness is determined by how well others can determine (i.e., through a paper trail) to which alternative contexts the findings might be applied. (Given, 2008, p. 895)

For this study, transferability was addressed by my giving a thick rich description of each site being studied as well as the school district as a whole. The results of the questionnaire were used to ensure maximum variation of the sample by including teachers with varied years of experience, different levels of experience, and a cross-section of gender and ethnicity.

Ethical Considerations

Information including names, passwords, and any information that was deemed confidential was handled with the utmost of care. All actions of the researcher were listed in the audit trail and the strict guidelines of the IRB were adhered to. All security precautions outlined in the data security section of this study were adhered to. Pseudonyms were used to identify sites and participants, and that information was kept confidential.

Honesty, openness, and candid revelation of a study's strengths and limitations according to commonly held standards of practice are typical indicators of the integrity of the scholarship (Given, 2008; Moustakas, 1994). It is particularly important in qualitative research to ensure that they "maintain the necessary ethical standards, established clear agreements with the research participants, recognized the necessity of confidentiality and informed consent, and developed procedures for insuring full disclosure of the nature, purpose, and requirements of the research project" (Moustakas, 1994, p. 17). With respect to ethical integrity, "Some consider any covert work conducted in secrecy, for whatever purposes, to lack integrity because it is not amenable to member checking" (Given, 2008, p. 276). I was open and honest about what was being studied, allowing participants to read any notes that were taken during in-depth interviews and the focus group interview. I did not hide the fact that I was studying teacher self-efficacy from any of the participants, and I assured the participants that I would keep their information confidential. Furthermore, public access to field notes, audio recordings, and other information collected at the site was withheld.

Data Security

All data were imported into NVivo 9. The software has the capability of requiring a password to open a particular project. The password function was utilized. The project was

backed up on a portable hard drive, my home computer, and my personal laptop, all of which were password protected. The raw data files, all field notes, and artifacts were kept in a locked filing cabinet located in my home office, which is also locked. The raw data was destroyed upon the completion of the dissertation process (approximately six months). The data that was imported into NVivo 9 will be stored on my home computer, which is password protected, for five years after the study's completion and then destroyed.

Summary

The purpose of this transcendental phenomenological study was to examine the teacher self-efficacy of high school special education math inclusion teachers with regard to their content knowledge and their ability to deliver effective instruction. This chapter explained how the research was conducted. The participants in the study all worked in the same school district and taught in high school math in the inclusion classroom. The methods used in this study align with best practices for conducting qualitative phenomenological research (Moustakas, 1994).

The research involved questionnaires, interviews, a focus group, and a teacher efficacy scale survey. I completed journal entries immediately after each interview to ensure that, as the instrument of research, researcher reflexivity was maintained while conducting the study. Data courses were triangulated to ensure that the information is credible, dependable, and transferable. Member checking was also used to ensure that the voices of the participants were clearly articulated. I used memos, reflective journal, and peer interviews to bracket myself and ensure that personal bias was minimized in the representation of the outcomes of the study.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this transcendental phenomenological study was to examine the teacher self-efficacy of high school special education math inclusion teachers with regard to their content knowledge and their ability to deliver effective instruction. The problem that this study addressed is the lack of teacher self-efficacy in the special education mathematics co-teaching setting within an inclusive environment. The purpose of this chapter is to give a brief description of the participants of the study and to present themes that were developed through data analysis. A description of each participant gives context to what they contribute to the study in the way of their perceptions and experiences as they deliver services to students with disabilities and general education students in mathematics. The themes are linked and applied to answer the research questions that guided the research in this study.

Participants

This study examining the self-efficacy of special education mathematics teachers in inclusive settings included 10 participants who are currently assigned to co-teach in high school mathematics classrooms. The participants worked in different subject areas; however, most of the participants provided support in Algebra I or geometry. Three of the participants hold degrees in mathematics. All of the participants except one reported that they had tutored others or had been good in mathematics while in school. Each participant answered questions from a questionnaire that was given to them (see Table 1).

Kathy

Kathy has 11 years of experience in education and has aspirations of becoming an assistant principal. She currently holds a master's degree in educational leadership that she

acquired after getting her undergraduate degree in accounting and finance. The highest-level mathematics class that she has provided support in is statistics. She has a certification in special education and is qualified to teach grades K–12. Kathy has been providing support in special education for four years and believes that it is her background in accounting and finance that allows her to provide quality instruction to all students, “not just the special education students.” Kathy has a good relationship with the general education teachers but does not believe that team teaching is as effective as other models because of the lack of planning time.

Alex

Alex never really wanted to go into education. He was undecided about his career path in college and acquired a degree in general studies as an undergraduate. He always possessed an interest in math and felt comfortable explaining difficult concepts to his friends and family members. Alex liked math in high school and decided to go into teaching six years ago. Alex has been in special education for three years and has been co-teaching for the past two years. He feels comfortable teaching mathematics to all students in the collaborative environment and has a very cordial relationship with his assigned general education teachers. He has provided services for students in Algebra II as well as Algebra I and geometry. Alex also holds an English as a Second Language (ESL) certification, and he feels he is effective at assisting students struggling to learn the language with mathematics concepts as well.

Deborah

Deborah is one of the veteran teachers in this group of participants. She has been in education for the past 20 years. She has spent the past five years in special education. She entered special education to become more marketable when seeking employment. She has a bachelor’s degree in business and provides support to students in Algebra I through a co-

teaching model. She is concerned about the level of professional development that she has received in order to help all students in the Algebra I classroom, particularly because of the fact that Algebra I is a tested area. She is also concerned about her general education co-teacher's ability to help special education students when they do not immediately grasp the concept. Although she believes that her general education co-teacher values her and is confident that she knows math, she wishes that they had more time to plan together.

Dick

Originally, Dick wanted to be a social worker and help troubled youth. He earned a bachelor's degree in psychology but decided to go into education six years ago. Dick is one of few participants who went directly into special education after college. He co-teaches in Algebra I and geometry. He maintains three different certifications: Special education K–12, Generalist grades 4–8, and ESL. Dick has the same concerns as the other participants in that he feels rushed to prepare for class and does not feel that he gets enough planning time with the general education co-teacher. Dick feels underused in the classroom and wishes that he could do more to help deliver quality instruction to all the students.

Mike

When asked in what area he would feel most comfortable providing special education support, Mike said, "It doesn't matter, just put me where you need me." Mike was assigned to co-teach Algebra I and has enjoyed doing it for the past three years. When hired, Mike thought he would be a co-teacher in the English classroom. Mike has a total of eight years' experience in education. His undergraduate degree is in political science and he has earned a Special Education certification in grades K–12. He also has an ESL certification and feels that he has been effective working with students who are learning English. The highest math class that

Mike has provided support in his college statistics although he notes that he barely passed the class. In addition to his teaching responsibilities, Mike coaches football and track. He feels very confident in his ability to help all students understand mathematical concepts.

Tim

Tim went into education to be a basketball coach, having played it in high school and college. He went into special education so that he could be more marketable and attain a job. He noted that special education was an area of great need and particularly in mathematics. Tim volunteered to co-teach in Algebra I and has been doing it for the past two years. He truly believes that he is making a positive difference in the classes that he services. He routinely works with general education students, helping them grasp concepts they are struggling with. He has an ESL certification in addition to a K–12 Special Education certification. He finds it difficult sometimes to balance his coaching duties with his academic duties. He has really focused on time management during the school day, but he is unable to meet with his general education co-teacher in order to plan. He feels there is a need for an increase in professional development for special education math teachers as well as in co-teaching methods because the methods used to co-teach to the students are not implemented with fidelity.

Sherry

Sherry has a bachelor's degree in mathematics and holds a math certification as well as a Special Education certification and an ESL certification. She has provided special education co-teaching services in Algebra I, geometry, and calculus and enjoys math instruction. She has a very high level of confidence; she eventually wants to earn an advanced degree in mathematics education. Sherry enjoys planning with her co-teacher but wishes there were more opportunities for her colleagues to plan with their co-teaching counterpart. She believes that teacher

preparation programs should do a better job of providing mathematics methods courses for prospective special education mathematics teachers. She further believes that schools should provide ongoing quality professional development to help special education teachers in all subject areas continually grow and provide better and better instruction. Sherry also wishes that she had the opportunity to truly implement the co-teach model in the classroom because she wants to teach.

Kim

In college, Kim wanted to go into either film production or teaching theater. In order to acquire a job, she decided to get a Special Education certification. In addition to this, she also acquired an ESL certification and has provided services in Algebra II for the past two years. Kim, being relatively new to the profession, would like more training in teaching methods in mathematics. She believes that she could do a better job of working with all students in the classroom if she could attend quality professional development. Further, she would like to have had the opportunity to take mathematics methods courses in college as a minor in education. Kim is not confident that her general education co-teacher has faith in her ability to provide instruction to all students based on past conversations with him.

TaShane

TaShane has been in education for the past seven years and provided special education services in mathematics for all seven years. She currently provides services in Algebra I but has experience in geometry as well. In addition to her duties as a special education teacher, TaShane is an assistant volleyball coach. When she was hired, she was asked what area she preferred to provide services. Her first preference was social studies as she earned a degree in political science as an undergraduate. She was placed in mathematics, however, because she listed it as a

second preference and because of a shortage of staff. She has been in mathematics all seven years and feels confident that she can provide quality instruction to all students. She feels overwhelmed during the day at times because she has multiple teaching partners and no time to meet with any of them. She wishes she was paired with one partner and had time for common planning.

Bob

Bob has a degree in business and wants to become a head baseball coach. He currently provides special education services in Algebra I and is an assistant baseball coach. Bob has been in education for the past nine years and has worked with special education every year. He agrees with the other participants that more time for planning is needed and more classes in teacher preparation are needed in order for teachers to provide better instruction. He volunteered to teach special education mathematics because he has a great interest in mathematics and has helped friends and family members understand mathematics concepts in the past. Bob has a high level of confidence that he can explain complicated mathematics concepts in a way that students understand no matter what their academic level. Bob provides co-teach services to multiple teachers during the course of a year but wishes he could have a working relationship with all.

Results

The purpose of this transcendental phenomenological study was to examine the teacher self-efficacy of high school special education math inclusion teachers with regard to their content knowledge and their ability to deliver effective instruction. Data were collected from a questionnaire, teacher efficacy scale survey, one-on-one interviews, and a focus group interview. The data were analyzed using a qualitative software instrument called NVivo in accordance with the procedures for transcendental phenomenology as outlined by Moustakas (1994). This section

discusses steps for data analysis that eventually resulted in the identification of themes organized by the research questions that guided this study.

Theme Development

In order to answer the research questions that guided this study, information collected from one-on-one interviews, the teacher efficacy scale survey, and focus group interview was analyzed using qualitative software (NVivo). Using this powerful instrument, word frequency was counted. From this, the context of each word was analyzed so that themes could be developed to begin to reveal the level of efficacy each participant possessed according to their own voice and perception. What follows is a discussion on each step taken in the process of theme identification.

Epoche. Moustakas (1994) described epoche as “a process of setting aside predilections, prejudices, predispositions, and allowing things, events, and people to enter anew into consciousness, and to look and see them again, as if for the first time” (p. 85). When conducting a study, phenomenology requires researchers to bracket themselves outside the topic of study to ensure that only the participants’ views are expressed in the research and not the bias of the researcher. It was important that my personal thoughts and opinions were set aside to be able to focus on the experiences of the participants without constantly referring to my personal experiences. After conducting one-on-one interviews, I recorded my opinions of the individuals in a reflective researcher journal. This helped me in not including my opinion when identifying themes in the transcript of what my participants said. Throughout the data collection process, I recorded my thoughts, opinions, and personal experiences in my reflective researcher journal. I also took time to remind myself to view each interview without bias based on my experiences teaching in a special education environment.

Questionnaire. Each participant completed a questionnaire before the one-on-one interview. This information was used to help provide some background to the professional experiences and education of each participant. Information related to education, number of years teaching, and experience in teaching, as well as the highest-level mathematics course the teacher had experience with was gathered and analyzed. During the one-on-one interviews, the participants were given an opportunity to further elaborate on a few of their responses on the questionnaire.

Teacher Efficacy Scale Survey. The long 24-item version of the Teacher Efficacy Scale that was developed by Tschannen-Moran and Woolfolk Hoy (2001) was used in the study. Before testing, the items were rephrased or rewritten to make them appropriate for gathering data in this study. To improve the content validity, three items in the original scales under efficacy for student engagement were deleted because they did not directly represent the motivational strategies. Twenty-one items were measured on a five-point Likert scale from 1, “not well at all,” to 5, “very well.” The results of this survey were imported into the NVivo software and analyzed. All participants responded to the survey. The results of the survey will be reported as a narrative.

One-on-one interviews. The primary source of data collected and analyzed for this study was gleaned from one-on-one interviews with each special education teacher. The interview questions were based on the theoretical framework for this study as well as selected studies from the review of literature in Chapter 2. I conducted each one-on-one interview with each participant, and the interviews lasted between 30 minutes and one hour. No interview exceeded an hour. The setting for the interviews occurred at the participant’s assigned school in his or her office or conference room with no one else present. There were no interruptions

during any of the interviews. I made an effort before each interview to make the participants comfortable with me by talking about other things such as common interests or the weather. I felt very at ease with each of the participants and could empathize with each of them as I had experienced the same types of things they were experiencing. Each interview was recorded using my laptop and a high definition microphone placed between the participant and myself. All participants were comfortable being recorded and no one opted out. Each participant was very honest and forthcoming when answering the questions.

Focus group interview. The focus group interview in this study was comprised of eight participants and was just short of 90 minutes in length. This interview was conducted at the site on my campus and was centrally located to allow for easy access by the other participants that attended. The participants sat around a conference room table. Audio was captured during the focus group interview using a laptop and a high definition microphone and saved into an MP3 formatted file. For this study, the participants all had similar job responsibilities. The participants seemed to all be at ease with each other. Each one had an opportunity to respond to each question if they chose to. Although the teachers barely knew each other, they each represented perspectives about experiences in the mathematics co-teach classroom, and there seemed to be an overall sense of agreement with their responses to the questions. A sense of shared responsibility was perceived to meet the needs of all kids in the co-teach environment for the good of the school.

Reflective researcher journal. Throughout the data collection process, I kept a researcher journal in a notebook. After each interview, I wrote in my journal to reflect upon my experience interviewing each participant, my opinion of the responses of each participant, and my overall view of each participant. I also made note of the environment in which the interview

took place. I used this as a method of bracketing. Bracketing is a method used by qualitative researchers to lessen the potential “deleterious effects of unacknowledged preconceptions related to the research and thereby to increase the rigor of the project” (Tufford & Newman, 2012, p. 81). Moreover, I engaged in discussions or interviews with peers not involved in the study in order to uncover and bring into awareness preconceptions and biases that I may have been developing during the process.

Horizontalization and clustering. According to Moustakas (1994), data analysis in phenomenology is characterized by the following procedures: epoche identifying common meanings and essences, horizontalization of data, textual and structural analysis. The horizontalization of the data was ensured by identifying each of the quotes stated by the participants that were relevant to the topic under investigation. These quotes were given equal value with regard to the expressions of the entire group of participants. This was the basis of the textual descriptions that was written that brought out what the participants were saying and if any were thematic. This was done using NVivo for textual analysis.

Textual analysis refers to the description of what is expressed by the participants and structural analysis refers to the interpretation of how it is expressed by the participants (Moustakas, 1994). Both types of analysis are fundamental in the interpretation of the findings. Structural analysis plays a vital role as a fundamental part of the scaffolding of phenomenology because it is the one that directs us towards common essences and meanings. Structural analysis reflects the intentionality of conscience as a fundamental aspect of phenomenology. After the initial step of epoche and collecting data through one-on-one interviews, and a focus group interview, Moustakas’s (1994) modified version of Stevick-Colaizzi-Keen’s method was followed to analyze each interview transcript. I read and reread each transcript looking for

significant statements that could answer the research questions. Then I examined the remaining statements, clustered those statements, and created themes. The same procedure was followed for each participant. Once all of the transcripts were read and analyzed for significant statements, I combined the significant statements from all the participants using the qualitative software NVivo. A list of significant statements across participants is listed in a table (see Appendix F) with a formulated meaning for each statement. After combining all the significant statements across participants, I followed the same process, removed overlapping statements, and clustered statements into themes that depict all the participants' experience with teacher self-efficacy.

Themes. During the process of horizontalization, significant statements from each participant were identified and related statements were clustered together. Once these statements were clustered together, themes were developed that aligned with the research questions that guided this study. Significant statements were combined across participants and a report was generated using the NVivo software. The scores on the teacher efficacy scale survey were also included in the process of horizontalization. The results of the survey are summarized (see Appendix E).

This study answered the following research question: What are the perceptions of special education mathematics teachers in the inclusion classroom in regard to their mathematical content knowledge?

The themes that surfaced from the sources of data are as follows: (a) time to concentrate on math, (b) lack of confidence, (c) good at math in school, (d) time to plan with the general education teacher, (e) helping kids, (f) co-teacher, and (g) professional development (see Tables 2 and 3). These themes formed the scaffolding through which the participants stories

were built. Through these themes, it is apparent that although mathematics special education teachers have a relatively high sense of efficacy, they believe they could do much better if they have the proper resources.

Table 2

Themes and Codes from Significant Statements and Data Aggregation

Data Source	Significant Statement
INT/FG/	Time to concentrate on math
INT/FG/TSES	Lack of confidence
INT/FG	Good at math in school
INT/FG	Time to plan with the general education teacher
INT/FG/TSES	Helping kids
INT/FG	Co-teach
INT/FG	Professional development

Table 3

Open Code, Frequencies, & List of Themes

Open Code	Frequency	Theme
Need time to work out problems	5	Time to Concentrate on Math
I never know what's going on	9	
Need time to go over the problems	9	
No time during the day because of coaching duties.	8	
The schedule is not set up right	5	
No time	13	Lack of Confidence
I don't think they believe in my ability	8	
I don't believe I'm good with the higher students	10	
Behavior is sometimes a problem	13	
I wish I had taken more math courses	10	
We need professional development	13	
I used to tutor my friends	9	Good in Math in School
I would help my little brother	6	
I worked as a math tutor	10	
Math has always come easy to me	7	Time to plan with the General Education Teacher
I like math	8	
I show up and I don't know what's going on	9	
Our conference periods are different	13	
We need time to get to know each other	7	
She isn't available during the day when I'm off	5	
I just stand there	5	
We are not on the same page at times	11	
I can work with all kids	16	
Several gen. ed students ask me questions	10	
I'm able to break it down for them	7	Helping kids
I build relationships with them	4	
I feel like I'm doing a good job	8	
If they don't need help I check on others	9	
I just stand there	10	Co-Teaching
I feel like I'm not trusted	13	
We are not doing it the way it was taught in PD	9	
We work well together	9	
Need more	14	Professional Development
Better professional development	16	

Time to concentrate on math. Time was one of the more prominent themes identified in this study. All participants spoke to this theme repeatedly. According to Deborah, “Most of the general teachers for math meet together and are able to plan together and then discuss lessons thorough lessons and so they have common knowledge of what's going to happen in the classroom, I've been not able to participate in those meetings.” She went on to say, “It's just it's a struggle for me in geometry. It's also a struggle sometimes for me because if I'm not given the problems ahead of time so I can work them out it's sometimes more difficult to teach.” Tim believes that the time he spends traveling from class to class and the fact that he has nowhere to “set up” contribute to his inability to give math the focus it deserves and contributes to his ineffectiveness. The participants spoke of varying reasons for why that could not concentrate on mathematics. Some of the reasons given by participants include special education duties, coaching duties, IEP meetings and student support in other areas. In the focus group it was evident that the participants all thought that if they had time to concentrate on math, they would be able to deliver instruction that is more effective.

Lack of confidence. Many participants spoke to a lack of quality professional development, or a lack of training at the undergraduate level. They came from different backgrounds and several of them were not set on becoming teachers until after college. This fact contributed to the lack of confidence they felt at providing mathematics instruction. When asked, “How well can you motivate students who show low interest in school work?” on the teacher self-efficacy survey, the average response was a 3.7. This was one of the lowest scores on the survey for each item. The respondents rated a 3.8 when asked, “How well can you get through to the most difficult students?” These suggest that teachers lacked confidence when trying to modify the behavior of students. According to Deborah, “My background doesn't allow

me to be as helpful in the classroom with every kid in the room. I'm generally walking around trying to help and I don't feel as successful as if I'm able to participate in those conversations.”

Kathy, although she likes her current assignment in Algebra I, wishes she were teaching at a lower level. She stated,

I really like what I'm doing now but I guess I like Algebra 1 because I like the age of the kids. But in terms of where I felt like I was really rocking and rolling was probably sixth grade math and maybe it's because I really understood how to bridge gaps.

She feels that once a student gets to the ninth grade, gaps have grown and are harder to bridge. Although she feels comfortable providing support in lower level classes, Kathy stated, “I don't have the knowledge base to talk about geometry and calculus.” However, she felt that if she took a course, she would be able to.

Kim posited the following:

I would say I had more trouble last year because I was uncomfortable being in a new subject area and not having a lot of expertise on it. It was just uncomfortable. You want to build healthy kids you want to be able to answer questions and sometimes I just got like oh let's go.

However, this year based on her experience she rates her ability to provide instruction to all students in the co-teaching environment very high. She explained, “So I guess the more I know the curriculum and the more I see the math the better it will be, hopefully I won't get move to a new teacher who does things differently.” Kim feels that she is only in math because that is where she was needed. She stated,

It's just I feel like everyone who's in math or teaching math is there because they chose it and I really did not choose this career path. You know this is what I signed up for. I

mean I am just math because that's where our special education department needed me. . . . I am happy to be there. But does that make sense for this.

Good in math in school. The participants who felt most confident at providing mathematics instruction spoke to how they were good in mathematics in high school. Many stated that they tutored their peers and family members in mathematics in school. Alex volunteered to co-teach mathematics classes because, “When I was in school, I made very good grades in math.” He went on to say that he was a strong math student his entire life. However, despite claiming to be a good math student Alex admitted that he was not comfortable in geometry. Kathy took honors AP calculus as a senior in high school and got college credit for the course. She believes that this experience helped to prepare her for teaching all kids in the co-teach environment. Sherry, who has a vast background in mathematics preparation states, “In Nigeria, I did science and mathematics and out went to university got a degree in mathematics education. I really love teaching and I love teaching math.” Kim pointed to the fact that because she had not seen geometry since high school the “learned content kind of slips away from you.” Of the participants, seven of them stated they were good in math in high school and this is why they have high self-efficacy.

Time to plan with the General Education teacher. Every participant felt that the time that was allocated to plan with his or her general education counterpart was inadequate. They felt that more time to plan with their general education teacher would result in a higher level of instruction in the co-teach classroom. On the teacher efficacy scale teachers rated themselves comparatively low on the item that stated, “I systematically review previously taught materials.” The teachers gave themselves a 3.8 on this item and it may speak to the fact that teachers feel they do not have enough time to plan. Deborah posited, “I think planning spending more time in

the math settings and looking at the delivery of other teachers would help me do a better job because I don't have that opportunity to observe other classrooms just to see some of the things and also listen to the conversation so that I'm able to answer students questions." However, Kathy reports a different experience. She stated,

basically just go to all the planning meetings with the Algebra 1 team . . . we meet daily and we have a team leader . . . they kind of guides us through and we talk about the standards and what the objectives are that we want to cover . . . and then we go into instructional methods that we plan to use them to cover the objectives.

Time spent planning with the general education teacher is invaluable according to Kathy. She is paired with the Algebra I team leader. She states,

But the thing that I'm grateful for is that our Algebra 1 Team Lead is really good and really has a deep understanding. So, I'm not shy about going in there like I get it. Sit down with me and teach me how to help.

Kathy also believes that time spent planning with the general education teacher made them feel more comfortable with her as well as she feeling more comfortable with the material being presented.

Despite being formally trained at the college level to teach math Sherry stated,
I don't know what to do. I teach special education math classes . . . I don't have time to meet with the gen ed teacher so we're not on the same page . . . when I get to class, I asked the teacher what are we doing.

Kim also spoke to having time to spend on math instruction when asked what other classes she felt comfortable providing services in: "I have to. I have to spend some time reading learning you know just figure out what goes on in Geometry." Kim states that she does not get much time

to plan with her general education co-teacher because they have different conference periods. Tim admits that his conference period does not align with the conference period of his general education co-teaching partner. Mike noted that he never plans with the teacher and “just show[s] up and help out.” While the general education teacher has a conference period and a professional learning period, Tim has other duties to perform when he is not in the inclusion classroom. “Planning is a constant issue,” he said exasperated. He continued, “I feel like I’m being penalized because they expect me to use my lunch period to plan.” Therefore, he prefers to plan “on the fly.” Questions in the focus group about time and planning were where the participants were most engaged. Nearly all of the participants in the group addressed this issue at one point or another. Whenever the topic came up, most participants nodded in agreement with the speaker.

Helping kids. The special education co-teachers interviewed in this study each spoke to their longing to help all students not just the special education students. One of the highest rated items on the teacher efficacy scale survey was, “I stress to students that I want them to understand the work rather than just memorize it.” Participants scored themselves an average of 4.8 on this item. In addition, teachers rated themselves a 4.6 on the item that asked, “How well can you respond to a difficult question from your students?” From this, it appears that teachers have a high sense of self-efficacy when it comes to helping kids. According to Alex when it comes to helping kids, “You really do not know how low they are just by looking at an IEP. You cannot tell anything about the level of a student just by looking at a piece of paper.” Kathy was concerned with the different levels of students’ abilities in co-teach environments. Sherry believes that she has the ability to help all students no matter what their level. She stated that she checks on her students to assess their understanding: “I have been successful teaching Algebra,

for me it is just a lot of re-teaching and one-on-one which students need.” She went on to describe her ability to help students:

And so, there are even times I work with gen ed student and it's fine. I would say I use a lot of the same methods just because I've seen success with some student whether they are general ed or special ed I'm going to try that again with another student see if it's successful or not.

Kim posited that the best way to help kids is to learn how they learn best: “You really have to learn your students and learn how they learn best that you can accommodate for them and shift gears a little bit.” Kim continued:

I think that I'm having an impact not only on my special ed students who number about five a class . . . but daily I have general ed kids asking me, “Hey how do I figure this out or how I entered this into the calculator. Hey can you help me on this.” So, I feel like they come to me just as much as any of the other students in the classroom who need extra help.

When asked about his ability to help all students in the co-teach environment Tim said, “If I've got them in smallish groups six or seven, I'm just as good as I am with the special ed kids. I've done it with more than 20.” While most of the group had high self-efficacy with regard to their mathematics content knowledge, several conceded that they could not help all kids. Most of the conversations were about remediation and bringing students up to par. When discussing students who were on grade level or above, the self-efficacy was not as high. Mike noted, “When the smart kids ask questions, I usually tell them to ask the teacher.” TaShane asserted, “I will try to help them if I can but I don't want to tell them anything wrong.” Kim did not hold back and stated, “Some of those kids are smart and may know more than me in the geometry class.”

During the focus group the researcher got the sense that the teachers genuinely cared about students and the teachers' concerns were not self-serving but about the students.

Co-teaching. The participants in this study rarely used the word team teaching. In fact during the focus group interview the word team teaching was only used, and in that instance, Mike stated, "We don't team teach." They routinely used the word co-teaching. Many of them had a negative attitude toward the limited amount of training they had been given in order to effectively collaborate. Mike passionately stated, "They have all of these meetings about us teaching in the class room but I hardly ever get to teach a lesson." When asked about the expectations of the general education teacher in the co-teach environment Deborah said, "I think they expect me just to show up to basically deal with behavior and they don't see me as a strong competent person in the classroom." Deborah went on to say that the co-teach model they were trained on is not being implemented with fidelity. Deborah continued,

I try to help as much as I can but the content teacher takes on most of those responsibilities. Just because that's what she does. We deal mostly with those kids that are extremely low that just can't get it. The expectation is that I take those kids out of class and work with them someplace else.

Deborah also said that the co-teacher "takes the bulk of the lessons so I would say 90 percent I just help students, every now and then I will say something about the lesson." This did not seem to bother Alex who stated that he believed his strength was in teaching students with special needs and only wanted to deal with them exclusively. Alex also felt that the general education teacher that he was paired with was confident in his areas of strength and they worked very well together. Alex also reported taking kids out of the classroom and dealing with discipline

problems from both special education students and general education students. Alex reported feeling comfortable “chiming” in during the lesson at times.

Kathy believes that her co-teacher feels comfortable with her, but also that he feels like all the kids are his. What makes him comfortable with her, according to Kathy, is when he sees her effort and hears her talking and helping the kids. For Sherry things are different. The general education teachers that she collaborates with do not understand how to work with special needs kids so she focuses on them.

All of the teachers discussed being trained on the co-teaching model. They all stated that the model is not being implemented with fidelity. The team-teaching model should have both teachers teaching all students and both teachers providing direct instruction to all students. In the team teaching model, there is no distinction between the general education teacher and the special education teacher. Sherry doesn't believe that the model of team teaching is being implemented with fidelity because the general education teacher doesn't feel comfortable instructing “her students.” However, Sherry states that her general education counterpart does trust her and wants her to be involved in the classroom. Kim's general education co-teacher was a special education teacher. She said,

I've worked with to really good people this year. My co- teacher in math was a special education co- teacher his entire career leading up to this point. Now he's on the other side. I think he has confidence in me. He let me take the lead a couple of times and even more the second semester quite a few days.

She feels that because of this it has had a positive effect on her confidence. However, she states, “Unfortunately my role comes with a lot of other responsibilities and duties have to be completed on a daily basis.” Tim doesn't believe that the co-teach model is being implemented

with fidelity based on the fact that he is not listed as one of the special education students' teachers and he doesn't have access to the gradebook. In Tim's opinion, he could better perform his duties and deliver better instruction if he had access to his students' records. Tim also asked, "How can we do true co-teaching when we never plan or anything?" The major issue for the participants was ownership. They seemed to collectively believe that the general education teacher perceived the class to be theirs and the special education teacher was just an assistant or helper. The participants did not blame the teacher and Bob confirmed, "It's their class and it is what it is."

Professional development. Each of the participants spoke to the amount of professional development they had received to prepare them for their mathematics assignment. They generally felt that it was not adequate to prepare them to deliver effective quality instruction. The participants spoke of attending professional development in math but thought that professional development focused more on strategies and less on content. TaShane commented, "I wish they would teach me geometry rather than strategies because as a SPED teacher I know strategies, what I need help with is theorems." TaShane went on to say, "I think having a degree or going back and getting certified in math was the most significant for me." In addition, according to Deborah, "Maybe even if there were staff development to train us for math, the way the instruction should be delivered it would be better." Sherry stated, "Most of our professional development is on special education paper work and laws, we get to go to some math trainings but very rare." Kim regrets not taking more mathematics courses in college. She lamented, "You're asking me what I would do differently in college? Oh yeah I would have taken more math classes in college and probably even done my content certification in math." Kim stated when asked what advice she would give to incoming special education math teachers, "I mean I

guess I would encourage them to. I mean, if they know what level they're going into, I would tell them to get a head start on the content and get to know the teacher to establish a relation.”

Research Question Responses

The research questions that guided this study were centered on the amount of efficacy special education teachers had in regard to meeting the needs of students in mathematics who are in an inclusion environment. The sub questions explored what issues may impact the amount of efficacy a special education teacher has by examining the relationship between them and the general education teacher. Here the questions are answered in light of the data that were analyzed.

The Central Question. The central question that guided this study was as follows: What are the perceptions of special education mathematics teachers in the inclusion classroom in regard to their mathematical content knowledge? This question focuses on teachers' mathematical content knowledge. All the participants in this study believed that they were competent enough to provide an adequate level of instruction to all students. However, the extent to which they were confident varied greatly. Most of the participants noted that their perceptions of their ability to deliver effective instruction in the inclusion classroom were formed because they were good mathematics students in high school and they could help others. The participants who did not have math classes in college wished they had and believed it would have made them better co-teachers. However, they also pointed to organizational constraints as impeding their abilities to be successful. They felt that they could increase their content knowledge if they had more time to plan and better professional development opportunities. All participants except two stated that if they had known they were going to be co-teachers in mathematics they would have majored in math in college.

Sub Question 1. The first sub question that guided this study was as follows: How does the perceived self-efficacy of special education mathematics teachers affect their perceived ability to deliver instruction in the classroom? Participants in this study had a relatively high level of self-efficacy. However, the teachers all asserted that they had limited opportunities to deliver instruction in the classroom. Most of the teachers felt that if they had the opportunity to deliver instruction, their content knowledge was sufficient to deliver effective instruction to the students. There was a consensus that math content knowledge had very little to do with them not delivering instruction in the class. Again, they pointed to a lack of preparation time as negatively affecting their ability to be successful. They also stated that if they had taken more classes in college or had a mathematics certification, they would have been better prepared. While some of the teachers wanted to deliver instruction to students, most conceded that it was not practical under the circumstances. The participants had high self-efficacy when it came to their math content knowledge and working with individual students and small groups of students. Their sense of efficacy came from their special education background that they believed armed them with strategies that support student learning. The participants also believed that their content knowledge benefited SWD in the general education class. The participants focused on these students and believed that they were making a difference.

Sub Question 2. The second sub question that guided this study was as follows: What is the nature of the co-teaching relationship and its effect on the self-efficacy of special education mathematics teachers? According to the participants, the nature of the relationship had little to do with their sense of self-efficacy. However, the amount of time this were given to spend planning with their general education counterpart did contribute to their sense of efficacy. They felt that they were sometimes planning on the fly, and they did not know what was going on until

they showed up. They also reported that the co-teach model they were taught was not being implemented with fidelity, in that the model was not being practiced as evidence-based research recommended and, therefore, inhibited their ability to be successful. While all of the participants reported that they have a cordial relationship with the co-teacher, only one of the teachers believed that there was a true partnership in the classroom. Many of the participants did not know the perceptions of the co-teacher because there were few opportunities for the teachers to have academic conversations. The teachers all concluded that the perceptions of the general education teacher did not affect their belief in themselves despite the suspicion they had about not being trusted to deliver effective instruction. The teachers seemed to suggest that trust could not be established because of the barriers involved.

The essence of what all participants posited in this study was that, generally, they felt confident in their ability to deliver effective instruction. The more years of experience they had, the more confident they were. However, they believed that they could do much better if they had more time to plan with their general education counterpart and if they had better professional development. The level of efficacy these teachers demonstrated was generally above the mid-range of the scale.

Summary

This chapter provided a description of the participants involved in this study, the procedures that led to the development of themes, and results of the study and answers to the research questions. Based on the data gathered, it was evident that special education co-teachers feel that they have a great responsibility that they take very seriously. Almost all of the participants in this study volunteered for their assignment in mathematics because they knew that providing co-teach services in the mathematics inclusion setting was a great need. Despite not

having time to plan, not having an office, and not knowing what is occurring in the classroom many times until they showed up to provide services, they believed they are making a difference. Their sense of efficacy with regards to mathematics is based on mathematics knowledge gained in high school and some college classes. While a few teachers reported good working relationships with their general education counterparts, others spoke of issues with trust, being able to work with all students, and the fidelity of implementation of the co-teach model. They also wished for professional development and lamented not taking more mathematics courses in college. Finally, their professional experiences, both successful and unsuccessful, contributed to their sense of efficacy. The average score across all participants on the self-efficacy scale was a four, demonstrating that they have a relatively high sense of efficacy.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this transcendental phenomenological study was to examine the self-efficacy special education teachers who teach high school mathematics in the inclusion setting. In this study, teacher self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments of all students. In this chapter, a summary of the findings are presented followed by a discussion of the findings and the implications in light of the relevant literature and theory. Then implications of these findings are presented followed by an outline of the study delimitations and limitations. Finally, recommendations for future research are proposed.

Summary of Findings

The central question that guided this study was as follows: What are the perceptions of special education mathematics teachers in the inclusion classroom in regard to their mathematical content knowledge? This question focuses on teachers' mathematical content knowledge. All the participants in this study believed that they were competent enough to provide an adequate level of instruction to all students. However, the extent to which they were confident varied greatly. Most of the participants noted that their perceptions of their ability to deliver effective instruction in the inclusion classroom were formed because they were good mathematics students in high school and they could help others. The participants who did not have math classes in college wished they had and believed it would have made them better co-teachers. However, they also pointed to organizational constraints as impeding their abilities to be successful. They felt that they could increase their content knowledge if they had more time to plan and better professional development opportunities. All participants except two stated that

if they had known they were going to be co-teachers in mathematics, they would have majored in math in college.

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their general education counterpart did contribute to their sense of efficacy. They felt that they were sometimes planning on the fly, and they did not know what was going on until they showed up. They also reported that the co-teach model they were taught was not being implemented with fidelity in that the model was not being practiced as evidence-based research recommends and therefore inhibited their ability to be successful. While all of the participants reported having a cordial relationship with the co-teacher, only one of the teachers believed that there was a true partnership in the classroom. Many of the participants did not know the perceptions of the co-teacher because there were few opportunities for the teachers to have academic conversations. The teachers all concluded that the perceptions of the general education teacher did not affect their belief in themselves despite the suspicion they had about not being trusted to deliver effective instruction.

Discussion

This section discusses the study findings in relationship to the theoretical framework and empirical literature presented in Chapter 2. Social cognitive theory (Bandura, 1986) and Vygotsky's (1998) zone of proximal development are the two theories that were used in this study. The study findings are discussed in relation to how they inform and reflect these theories.

Zee and Koomen (2016) conducted a far-reaching study that brought together 40 years of teacher self-efficacy research in order to explore the consequences of teacher self-efficacy for the quality of classroom processes, students' academic adjustment, and teachers' psychological well-being. They found that teacher preparation through professional development or college training had a positive impact on teacher efficacy. If teachers perceive that they have been prepared through training and education, they tend to have a higher level of self-efficacy. Song (2016) found that the overall self-efficacy of preservice general education teachers was higher than the

overall self-efficacy of preservice special education teachers. He posited that this was because they were trained in specific areas and had a better grasp on content knowledge.

To explore the process through which student learning is linked to sociocultural context, Vygotsky (1998) introduced the idea of the zone of proximal development (ZPD), which refers to the difference between what individuals can accomplish entirely on their own, and what they can do with the assistance of a capable teacher. What makes this theory relevant to this study is the presence of a capable teacher. From the data gathered, it is clear that these teachers want to be better and are continually striving to be the best they can be. They all report a lack of fidelity of implementation of the co-teach model and wish for more professional development opportunities in the areas of mathematical content and the planning time necessary to effectively implement the co-teach model. Although they believe overall that they can be successful delivering instruction, they want to continually improve in this area. Many of them reported getting better each year. The teachers believe that they have an impact on students needing remediation and SWD but are not sure if they affect all students.

Most importantly, schools have to determine if the team-teaching strategy is viable. The research suggests that team teaching is the most collaborative method of co-teaching and requires the most amount of time to be effective (Badiali & Titus, 2010; Nevin, Thousand, & Villa, 2009). With the responsibilities of special education teachers, administrators must decide if the practice of team teaching has constraints that do not allow the strategy to be implemented with fidelity. The participants, when considering the viability of the strategy, did not see a way forward. It is particularly important to consider if the model is important when analyzing the impact on high school students in mathematics. Mathematics achievement affects students in a

myriad of ways that include high school graduation, college entrance exams, class rank, and college readiness.

Implications

Here the theoretical, empirical, and practical implications of this study will be discussed. This study was grounded in social cognitive theory and zone of proximal development theory. The efficacy of teachers was relatively high; however, they did state that some aspects of the environment detracted from their ability to deliver quality instruction to all students in the mathematics inclusion classroom.

Theoretical

Bandura's (1986) social cognitive theory (SCT) and Vygotsky's (1998) zone of proximal development (ZPD) are used in this study to examine the role of the special education teacher in the inclusive mathematics setting. SCT is related to how individuals think and behave in light of social interactions, experiences, and outside media influences. The SCT serves as part of the theoretical framework for the study because of the relationships between behavior, cognition, personal factors (i.e., teachers' expectations, goals, beliefs, emotions, thoughts, unique personality characteristics), and the social and physical environments in regard to one's behavior (Burnett et al., 2016). These factors are all a part of the special education teacher's everyday experiences. The everyday experiences reported by the participants in this study involved them not having time to prepare to meet the needs of students. These experiences had a negative impact on their own self-efficacy according to all participants. This was despite their overall high level of efficacy. Their expectation seems to be that they have the professional development, time to plan, and place to plan necessary to meet the needs of students in the mathematics inclusion classroom. They also expect a level of communication and trust from

their general education counterpart. Their ultimate goal is for all students in the classroom to learn math and be able to apply mathematical concepts. They seem to believe as a group in their ability to be successful despite organizational and profession choices they made during their teacher preparation. They believe that had they taken more math classes in college, they would be more successful in delivering quality instruction. Those who had a higher self-efficacy in teaching math attributed their confidence to positive experiences in math in high school as well as math classes they took in college. Teachers with lower self-efficacy expressed a desire for more training and professional development focused squarely on math content, not just on strategies to support the acquisition of math content. Positive and negative experiences in delivering instruction in the mathematics co-teach classroom also had a positive contribution to their sense of efficacy. Emotionally speaking, these teachers care about their students and take the time to understand how they learn.

Empirical Implications

The amount of training that teachers receive may have a positive impact on their level of self-efficacy (Yoo, 2016). Further, the quality of the professional development had little bearing on the level of efficacy the teacher developed as a result of a training in an area that they had little knowledge (Yoo, 2016). This would seem to point to a placebo effect. The results of this study seem to be in line with Yoo's research. The participants in this study stated that a lack of professional development in the content area specifically contributed to their inability to be successful in some cases despite feeling that they are successful overall. Those who had taken advance mathematics courses in college or during their teacher preparation training reported a higher level of confidence. Curtis (2017) found through a mixed method study that confidence and efficacy did influence the teachers' ability to model the writing process successfully. This

study underlines the power of teacher efficacy. If teachers believe they can be successful, they are successful. Students are negatively impacted by teachers who have a low level of self-efficacy; however, when teachers have a high level of efficacy, the impact on students is positive.

Practical Implications

In order for teachers to have a high sense of self-efficacy certain things must be in place according to the data gathered for this study. Teachers must have some level of training during their teacher preparation program in college or when training to be a special education mathematics teacher. Participants reported that they were selected for math because of a preference that they listed when asked in which areas they felt most comfortable. They also reported that if they had the opportunity, they would have taken more advanced math teaching methods courses during college and would appreciate professional development in the content area as practicing teachers.

During the interviews and analysis, it became evident that teachers also think that if they are good in math, they are good at teaching math. This was revealed with statements such as the following: “I used to help my friends and family with their math homework,” and “In college I would tutor my friends in college algebra,” and “people have always told me that I was good in math.” They also used the following statements: “I know how to solve it,” and “if I had time to solve the problem.” When I reviewed the word count report which is demonstrated in the word cloud (see Appendix H), I noticed that the most used word was “know” and this reflects that use of the phrase “I know,” “They know,” “they must know,” and other variations. However, knowing is not the same as teaching. However, their self-efficacy is shaped by what they know. TaShane stated, “I know math very well and I can do most math problems when I have time to

refresh myself but teaching it to the students is another thing.” Kim stated, “I think that some gen. ed. teachers doubt how much we know about math.”

Special education co-teachers must have time to plan with their general education counterpart in order to have a high sense of efficacy and to be able to make a meaningful contribution to the classroom. Several participants in this study reported that they did not have enough time to plan with their co-teacher. They recalled showing up and asking what was happening that day. They also reported planning on the fly and during their lunchtime. These teachers felt that their colleague would have had more faith in their ability if they had more time to plan together.

Special education co-teachers must have time to focus on math. The participants in this study reported that they needed time to look over records of students that they service, read over the lesson before assisting in its implementation, and work out problems before being asked to teach students who are struggling how to do them. They also wanted time to observe math lessons in other classes in order to better understand the concepts.

Special education co-teachers must have quality and targeted professional development with co-teaching models and mathematics instruction. Professional development for special education math teachers is relatively nonexistent according to the participants in this study. Time to attend professional development with fellow general education mathematics teachers is lost because of other duties performed by the special education teachers. The participants reported that organizational constraints prevented them from being successful in the co-teach environment. These constraints included not having time to plan, not having a common planning period with their general education counterpart, not having an office, having to plan during their

conference period or at home, and having duties that interfered with their mathematics preparation.

Implications for Administrators

Based on the findings of this study, school administrators would be wise to remove organizational barriers that deter teacher collaboration. General education teachers and special education co-teachers should be paired together and their schedules should mirror each other. This speaks to a scheduling constraint that can only be addressed by administration. Also, the number of teachers who coach athletics in the special education department should be limited or at least in line with the numbers in other departments. During this study over half of the participants reported coaching athletics, which can be time consuming and interfere with preparation of mathematics instruction and therefore detract from teacher self-efficacy. Administrators are tasked with ensuring that the law is followed in regard to students with disabilities being educated in the least restrictive environment. Some participants reported that the general education teacher expected them to take the students “somewhere else” and administer tests, provide tutoring, and deliver instruction at a slower pace. This is out of line with the law and creates an environment where students are not being educated with their non-disabled peers in the least restrictive environment.

Administrators should make an investment in special education teacher training in both the implementation of the co-teach model and in mathematics instructional methods. The participants in this study reported that training had a positive impact on their sense of efficacy. Knowing that the higher the level of teacher efficacy the more successful they are in the inclusion mathematics classroom (Curtis, 2017; Yoo, 2016; Zee & Koomen, 2016),

administrators need to ensure that these teachers have the resources, training, and support they need in order to be successful.

Delimitations and Limitations

This study was delimited to only public school teachers who provided mathematics instruction in the co-teaching environment. This decision was made because the voices of these teachers are largely absent from the literature. With the pressure of standardized testing increasing each year, and federal regulation that demands that students with special needs be fully included in the general education environment, the efficacy of teachers who have little to no training in mathematics needed to be studied specifically. Mathematics does not come easy to many people, both adults and students. The importance of a high level of instruction in the mathematics classroom that services all students cannot be overstated.

Limitations or potential weaknesses of this study are the fact that the sample was small as is the case with qualitative studies. This study was conducted in one geographical area in the United States. Most of the participants in this study attended the same professional development classes and those classes may or may not be effective. These participants also worked within the same school district. The study considered only high school math teachers and mostly in Algebra I and geometry; the findings may not generalize across content areas.

Recommendations for Future Research

In consideration of the study findings, limitations, and the delimitations placed on the study, I identified several recommendations for future research. A quantitative study that is expanded to a larger population of special education co-teachers should be conducted with regard to time, professional development, and level of efficacy with regard to teachers being able to deliver quality instruction to students in the mathematics inclusion environment. A

correlational analysis should be run in order to see the relationship between time, amount of professional development, and level of efficacy to determine the effect each has on the teacher's efficacy and in what order. Other variables mentioned in this study could be included as well, such as organizational constraints, coaching responsibilities, and the relationship with their general education counterpart.

A qualitative study should be conducted that targets the collective teacher efficacy of the general education teacher and the special education teacher to determine the combined efficacy of them both and its impact on student outcomes (Goddard, Hoy, & Hoy, 2000). Goddard et al. (2000) described collective teacher efficacy as the collective belief of teachers in their abilities to impact the lives of students. Both participants should be interviewed individually and as a team. The results of the study may shed light on the team dynamic and what coaching techniques could be implemented in order to increase student success.

This study should be expanded to a larger number of participants in a broader geographic area. The participants should come from a variety of different school districts including some private schools. The schools should be varied in relation to socioeconomic factors as well as prior academic success on state testing.

A program evaluation that examines the fidelity of implementation of the co-teach model should be conducted at each of these campuses so that more specific recommendations can be made both organizationally and instructionally. Throughout the interview and data analysis process, the theme of co-teaching not being practiced as was intended continued to surface.

Finally, it is recommended that leadership and teacher efficacy in the special education co-teach environment should be examined. Both teacher leadership and administrative leadership were briefly touched on in this study. The effects of mentoring and organizational

stability are greatly impacted by leadership. This should be examined in order to get a fuller view of teacher efficacy in the special education mathematics inclusion classroom.

Summary

The purpose of this transcendental phenomenological study was to examine the self-efficacy of special education teachers who teach high school mathematics in the inclusion setting. The problem that this study addressed is the lack of teacher self-efficacy in the special education mathematics co-taught, inclusive environment. The participants worked in different subject areas; however, most of the participants provided support in Algebra I or geometry. Three of the participants held degrees in mathematics. All of the participants except one reported that they had tutored others or had been good in mathematics while in school. Data were collected from a teacher efficacy scale survey, one-on-one interviews, and a focus group interview. These data were analyzed using a qualitative software instrument called NVivo and informed by the work of Moustakas (1994). Through data analysis it was found that participants felt that they needed time to concentrate on math, displayed a lack of confidence in some form or another, were generally good in math in school, wanted time to plan with their general education counterpart, focused on helping and getting to know individual kids, felt that there were problems with the implementation of the co-teach model, and wanted quality professional development. Participants in this study had a relatively high level of self-efficacy. Their sense of self-efficacy came from their past success in math, whether it be in high school or tutoring their friends and family members. They also brought up their experience providing services earlier in their careers as a big contribution to their sense of efficacy. According to the participants the nature of the relationship they had with their general education counterpart had

little to do with their sense of self-efficacy. However, the amount of time they were given to spend planning with their general education counterpart did contribute to their sense of efficacy.

The findings in this study are instructive for administrators and future teachers. From an organizational standpoint, several roadblocks were unintentionally in place that prevented teachers from being successful in the mathematic inclusion classroom. The biggest roadblock seemed to be time and resources needed to do the job effectively. A lack of time to focus on math and train with their general education counterpart was a major road block according to all participants. The process by which teachers are selected to provide services in the mathematics co-teach environment seems to be informal and haphazard. They are simply asked what they feel more comfortable doing, or they are chosen to teach mathematics because of a need. The participants are tasked with difficult assignments and do not shy away from them. To the contrary, they seek to be better at it every day and they maintain a high to moderate sense of efficacy while doing so.

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APPENDIX A

Sample Consent Form

The Liberty University Institutional
Review Board has approved
this document for use from
2/5/2019 to 2/4/2020
Protocol # 3651.020519

A PHENOMENOLOGICAL INVESTIGATION INTO THE SELF EFFICACY OF SPECIAL
EDUCATION TEAM TEACHERS WITH REGARD TO THEIR MATHEMATICS CONTENT
KNOWLEDGE

Reginald Brown
Liberty University
School of Education

You are invited to be in a research study on your content knowledge in mathematics and how this affects you as a team teacher in the inclusion classroom. You meet the criteria to participate in this study because you are a special education teacher team teaching in the inclusion mathematics classroom. Please read this form and ask any questions you may have before agreeing to be in the study.

Reginald A. Brown, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of study is to examine the self-efficacy of high school special education mathematics team teachers with regard to their content knowledge. The study will seek to understand three questions: What are the perceptions of special education mathematics teachers in regard to their mathematics content knowledge? How does the perceived self-efficacy of special education mathematics teachers affect their perceived ability to deliver instruction in the classroom? What is the nature of the co-teaching relationship and its effect on special education mathematics teachers?

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Respond to a questionnaire. The questionnaire will take about 15 minutes. The questionnaire will be completed and transmitted electronically.
2. Complete the Teacher Sense of Efficacy Scale (TSES). This will take approximately 30 minutes. The TSES will be completed online.
3. Interview. The interview will take approximately 45minutes, and it will be audio recorded. The interview will take place on the campus of Missouri City Middle School
4. Group interview. The group interview will take approximately 60 minutes. The group interview will consist of special education mathematics teachers who team teach. The group interview take place at Missouri City Middle School and will be audio recorded
5. Review the transcriptions of the interviews to ensure accuracy.

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include research that closes the gap in the literature. The research may also provide information that may contribute to professional development practices and pre-service teacher training practices. The research may also benefit society in that it can give insight on teacher perceptions and the data may provide information on how to best support teachers.

APPENDIX B**IRB Approval Letter****LIBERTY UNIVERSITY.**
INSTITUTIONAL REVIEW BOARD

February 5, 2019

Reginald Brown

IRB Approval 3651.020519: A Phenomenological Investigation into the Self Efficacy of Special Education Team Teachers with Regard to Their Mathematics Content Knowledge

Dear Reginald Brown,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

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

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,



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

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APPENDIX C

District Approval Letter

Innovation & Continuous Improvement

January 15, 2019

Dear Reginald,

The [REDACTED] Research Review Board is pleased to inform you that your study, "The Self-Efficacy of Special Education Teachers using the Team Teaching Approach in Mathematics" (Submitted November 6, 2018), has been approved by [REDACTED]. You have District approval to conduct your research with Special Education teachers who co-teach mathematics at 11 [REDACTED] school campuses from January 10, 2019 – February 10, 2019.

When you contact potential participants, please include a copy of this letter for reference and ensure that communication is sent from your personal email address to avoid potential conflict as an [REDACTED] employee. However, please note that despite District approval, individuals are not obligated to participate in your study and their participation is not guaranteed. Also of note, classroom instruction should not be interrupted as a result of participation in the study. Please seek the consent of participants before proceeding with your study.

Additionally, in your application, you requested to conduct focus groups. Please note the following conditions of your approved research:

- [REDACTED]
School facilities, please provide a copy of this letter to the campus principal.
- [REDACTED]
- This work should not interfere, occupy or conflict with the instructional day and further permission is required for use of building resources i.e.: district copy machine, email, phone, etc.

Please note: failure to comply with the conditions listed above may lead to a revocation of your approval to conduct research in [REDACTED].

When you complete your research, please submit the Data Collection Completion Notification Form (attached to email) and share with us your findings in a summary.

We wish you good luck in your research efforts. If you have any further questions, please let me know.

APPENDIX D**TSES Permission Letter**

Anita Woolfolk Hoy, Ph.D. Professor
Psychological Studies in Education

Dear Reginald Brown,

You have my permission to use the *Teachers' Sense of Efficacy Scale* in your research. A copy of the scoring instructions can be found at:

<http://u.osu.edu/hoy.17/research/instruments/>

Best wishes in your work,

Anita Woolfolk Hoy, Ph.D. Professor Emeritus

College of Education
29 West Woodruff Avenue Columbus, Ohio 43210-1177

www.coe.ohio-state.edu/ahoy

Phone 614-292-3774 FAX 614-292-7900 Hoy.17@osu.edu

APPENDIX E

Summary of TSES Results

3/22/2019

Teacher Efficacy Survey - Google Forms

Teacher Efficacy Survey

QUESTIONS

RESPONSES 7

7 responses



SUMMARY

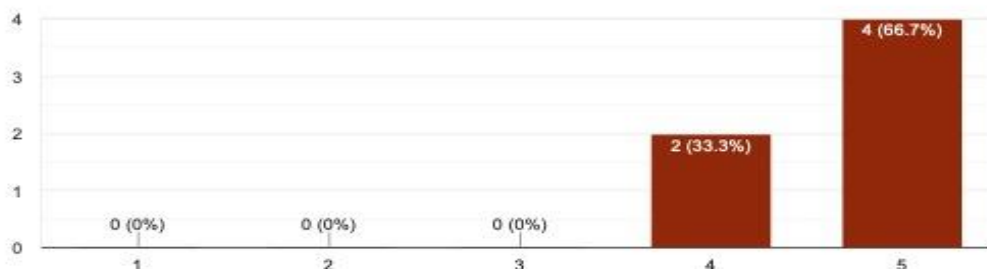
INDIVIDUAL

Accepting responses

Rate each question on a scale of 1 to 5 with 1 = Bad, 2 = Poor, 3 = Average, 4 = Good, and 5 = Very Good.

How well can you respond to difficult question from your students?

6 responses



How well can you provide appropriate challenges for very capable students?

6 responses



<https://docs.google.com/forms/d/1SeiaSNh10WvJCbRO6B8bbXNAyHZ8TsUCDr3UgFqOuVw/edit#responses>

APPENDIX F

Significant Statements

1 - Nodes\College Preparation to Teach Math	0	1	0	2	0	0	1	0	1
2 - Nodes\Co-Teaching	2	0	7	1	3	5	4	4	7
3 - Nodes\Experience	1	10	0	0	0	1	2	0	0
4 - Nodes\Focus Group	3	20	15	7	5	8	20	8	12
5 - Nodes\Good in Math in School	3	0	0	0	0	2	0	0	1
6 - Nodes\Helping Kids	0	3	1	0	0	0	0	0	0
7 - Nodes\Lack of Confidence	0	4	2	3	0	0	0	6	0
8 - Nodes\Level One Coding	44	77	42	36	18	47	43	24	38
9 - Nodes\Time to Concentrate on Math	0	0	0	0	0	0	0	0	1
10 - Nodes\Time to Plan with General Education	1	1	0	0	0	0	1	0	0

APPENDIX G

NVivo Project Summary

3/25/2019 6:36 PM

Project Summary
**THE SELF EFFICACY OF SPECIAL EDUCATION TEACHERS USING
 THE TEAM TEACHING APPROACH IN MATHEMATICS**
 3/25/2019 6:36 PM

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
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C:\Users\Reggie Brown\Documents

The purpose of this transcendental phenomenological study is to study the teacher self-efficacy of high school special education math inclusion teaches with regard to their

content knowledge in Long State Independent School District (LSISD). The central question that guided this study was what are the perceptions of special education mathematics teachers in the inclusion classroom in regard to their mathematical content knowledge? The research was conducted using a school district located in Southea

**Created By: Reggie Brown
 Created On: 1/31/2019 9:55 AM
 Last Modified By: Reggie Brown
 Last Modified On: 3/25/2019 6:30 PM**

[Externals](#)

Extracts

Hierarchical Name	Item Type	Created By Username	Created On	Modified By Username	Modified On
Extracts\Coding Summary By Node Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Coding Summary By Source Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Node Classification Summary Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Node Structure Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Node Summary Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Project Summary Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Source Classification Summary Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM
Extracts\Source Summary Extract	Extract	Reggie Brown	1/31/2019 9:55 AM	Reggie Brown	1/31/2019 9:55 AM

APPENDIX H

Word Cloud

