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Co-teaching Using the Common Core State Standards in a Secondary Mathematics Classroom

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Co-teaching Using the Common Core State Standards
in a Secondary Mathematics Classroom

By

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A thesis submitted to the Department of Education and Human Development of the
College at Brockport, State University of New York,
in partial fulfillment of the requirements for the
degree of Master of Science in Education

Abstract

In schools today, mathematics teachers are faced with the challenge to educate all students. Additionally, teachers are also being asked to implement the new Common Core State Standards (CCSS) that were adopted by New York State in 2010. With the recent adoption of the CCSS and the rising number of students with disabilities, collaboration between mathematics and special education teachers is essential to meet the diverse academic needs of all students. Many schools are now implementing co-teaching so that teachers can share their expertise and work collaboratively towards the success of all students in the general education classroom. This research used a single case study method to investigate how a pair of co-teachers managed planning, teaching, and assessing lessons around the Common Core State Standards (CCSS) in a secondary mathematics classroom to meet the academic needs of all students. Results from this study may help inform secondary mathematics and special education teachers as well as school administrators about the best practices for co-teaching with the CCSS.

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Chapter One: Introduction

Shift to the Common Core State Standards

In 2010, New York State adopted a set of national standards known as the Common Core State Standards (CCSS). Led by the National Governors Association Center for Best Practices (NGA) and the Council of Chief State School Officers (CCSSO), the CCSS were developed for kindergarten through 12th grade in mathematics and English Language Arts. The authors of the CCSS claim that the standards will ensure that all students have the skills and knowledge they need to be college and career ready upon graduation from high school (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

The standards were first implemented in grades three through eight but are now being taught at the high school level. In response to the recent implementation of the CCSS, many students are being challenged to learn what is taught as teachers adapt lessons to meet the new CCSS. The authors of the CCSS claim that the new mathematics standards call for a deeper focus on a fewer number of topics that build upon one another from one grade level to the next (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

In addition to focusing on a fewer number of topics and a greater coherence between grade levels, the CCSS in mathematics have created a push for students to have conceptual understanding of key concepts, procedural skills and fluency, and the ability to apply mathematical knowledge (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

Educating All Students Using Co-Teaching

Mathematics teachers in schools today are also being faced with the challenge to educate all students including students with disabilities. Recent legislations such as No Child Left Behind (NCLB) and the Individuals with Disabilities Act (IDEA) support the inclusion of students with disabilities in the general education classroom (Brown, Howerter, & Morgan, 2013, p. 84). In the United States, more than half of all students with disabilities are being educated in the general education classroom for more than 80% of the academic school day (Brown, Howerter, & Morgan, 2013, p. 84). This creates diverse groups of students for mathematics teachers to instruct on a daily basis. According to DeSimone & Parmar (2006), “No Child Left Behind mandates that all students, with only a few exceptions master the general education curriculum, participate in standardized assessments and achieve passing levels of performance” (p. 338).

As the number of students with disabilities being placed in general education classrooms rises, it is important for educators and administrators to provide the appropriate accommodations and support services. With support from educators and administrators, students with disabilities can meet the high academic standards that are now expected of them. One common approach for addressing the increasingly diverse learning needs of students in K-12 schools is co-teaching (Graziano & Navarrete, 2012). According to Brown, Howerter, and Morgan (2013), co-teaching is often defined as having a general and special education teacher plan, deliver, and assess instruction together in a single classroom. It is essential for general and special education teachers to be able to communicate and work together effectively (Keefe & Moore, 2004).

Purpose, Significance and Approach of this Study

The purpose of this research study is to investigate how co-teachers manage planning, teaching and assessing lessons around the new CCSS. The recent adoption of the CCSS and the

number of students with disabilities calls for collaboration so that the academic needs of all students can be met. Many schools are implementing co-teaching so teachers can share their expertise and work collaboratively towards the success of all students in the general education classroom.

The following chapter presents how teachers manage the new CCSS, students with disabilities, co-teaching and the six commonly used co-teaching models. It will also present the benefits and challenges of co-teaching as well as some important components to making co-teaching successful. A single case study method was used to gain an in depth understanding of how a mathematics teacher and a special education teacher collaborated in a co-taught classroom. The case study investigated how the co-teachers implemented the secondary mathematics CCSS and met the diverse needs of all students in a class. The results from this study may help inform other secondary mathematics and special education teachers about the best practices for co-teaching with the CCSS.

Definitions

Co-Teaching- an instructional approach in which a general and special education teacher work together to plan, deliver, and assess instruction (Brown, Howerter & Morgan, 2013).

Common Core State Standards- a set of national standards that were adopted by New York State in 2010.

General Education Teacher- a teacher who specializes in a specific content area such as mathematics, science, English Language Arts, or social studies.

Special Education Teacher- a teacher certified to ensure that the academic needs of students with disabilities are met while being educated in general education classrooms.

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No Child Left Behind Act of 2001 (NCLB)- a federal law mandating that all students, with only a few exceptions, master the general education curriculum, participate in standardized assessments, and achieve passing levels of performance (DeSimone & Parmar, 2006).

Individuals with Disabilities Act (IDEA) - a federal law requiring that students with disabilities be placed in the least restrictive environment possible (Keefe & Moore, 2004).

Least Restrictive Environment (LRE) – desired placement for students with disabilities so that they can be educated with their general education peers to the maximum extent possible. (Keefe & Moore, 2004).

Chapter Two: Literature Review

Common Core State Standards

Adopted in 2010 by New York State, the Common Core State Standards (CCSS) are a set of national standards that are being implemented in many schools across the United States (US). The new standards were developed by teachers, parents, school administrators, experts, and state leaders. The goal of creating the new CCSS was to ensure that upon graduation students have the knowledge and skills to be college and career ready (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

According to the National Governors Association Center for Best Practices & Council of Chief State School Officers (2010), the new CCSS in mathematics call for a deeper focus on a fewer number of topics that build upon one another. The CCSS push for students to be provided instruction that include conceptual understanding and procedural fluency in mathematics. They also place an emphasis on applied mathematics and real world problems.

Students with Disabilities in General Education Classrooms

According to Van Garderen, Scheuermann, Jackson & Hampton (2009), the number of students with disabilities being taught by general educators has increased since the NCLB and IDEA. These policies require that all students be exposed to the same curriculum and assessment measures (p. 56). There are challenges related to this for teachers with diverse groups of students with disabilities. Many mathematics teachers are struggling to meet the academic needs of all students on their own. According to Keefe & Moore (2004), collaboration between general and special education teachers is essential to meeting the needs of students with disabilities in general education classrooms. Co-teaching is one way for teachers to collaborate.

Co-Teaching Basics

Co-teaching is a common approach in K-12 schools for addressing the diverse learning needs of students in one classroom (Graziano & Navarrete, 2012; Magiera, Smith, Zigmond & Gebauer, 2005; Murawski & Dieker, 2004; Sileo & Van Gardern, 2010). Co-teaching can mean different things to different people but is most commonly defined as having a general and special education teacher working together to plan, deliver, and assess instruction (Brown, Howerter & Morgan, 2013; Mastropieri, Scruggs, Graetz, Norland, Gardizi & McDuffie, 2005). At the secondary level, the mathematics teacher has knowledge of the content and the special education teacher has knowledge of how students learn (Magiera, Smith, Zigmond & Gebauer, 2005; Murawski, 2012; Sileo & Van Gardern, 2010). When both teachers work together, they can blend their knowledge bases (Sileo & Van Gardern, 2010), use a variety of co-teaching models, and meet the needs of all students in one classroom.

Six Models of Co-Teaching

According to Sileo & Van Gardern (2010), there are six commonly used models of co-teaching—(a) one teach, one observe, (b) one teach, one drift, (c) team teaching, (d) alternative teaching, (e) parallel teaching, and, (f) station teaching that can be used by general and special education teachers to help support students with disabilities in general education classrooms. Experienced co-teachers often implement multiple co-teaching models within the same lesson (Cook & Friend, 1995, p. 10). Each model has advantages and disadvantages depending upon the needs of the students, subject being taught, and how comfortable the special education teacher is with the content (Sileo & Van Gardern, 2010).

One Teach, One Observe. In this co-teaching model, one teacher teaches the entire group of students while the second teacher sits in the back of the classroom and observes the

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students or the lesson being taught. This model is particularly popular in new co-teaching situations especially if the co-teachers do not yet know each other's teaching style. The one teach, one observe model can also be used if the special education teacher is not familiar with the content but would like to learn so that s/he can help students more efficiently later. General and special education teachers may also utilize this approach if they need to collect student data, observe student behavior or write individualized education program (IEP) objectives for students in preparation for meetings (Sileo & Van Gardern, 2010, p. 15).

In addition to having advantages, the one teach, one observe co-teaching model has one major disadvantage. If the mathematics teacher instructs the whole group and the special education teacher observes the class, students may only seek help from the mathematics teacher because they might view the special education teacher as an aide rather than as a co-teacher (Magiera, Smith, Zigmond & Gebauer, 2005, p. 22).

One Teach, One Drift. This approach to co-teaching is similar to the one teach, one observe model but in this scenario, one teacher teaches the entire class while the second teacher drifts around the classroom and assists individual students (Sileo & Van Gardern, 2010, p. 17). The one teach, one drift model is beneficial for both students and teachers. If students fall behind or struggle in the middle of class, the second teacher can circulate and provide them with the one-on-one assistance they may need. Teachers also benefit from this approach because it requires a little amount of common planning time since one teacher can instruct the entire class while the other teacher checks for student understanding and misconceptions. The drifting teacher can also help distribute classroom materials or monitor student behavior. This model may also work well in co-teaching situations where the mathematics teacher has a higher content knowledge level than the special education teacher does.

Even though having a second teacher walking around the room and helping students can be useful to some students, it can also be distracting to others. Students who have difficulty focusing in class may struggle even more if a second teacher wanders around the room trying to help his or her classmates while the lesson is being taught. Unless the two adults in the classroom take turns teaching the lesson, students may also think that one teacher has more control over the other.

Team Teaching. This co-teaching model occurs when both teachers share the planning and delivering of instruction equally (Perez, 2010; Sileo & Van Gardern, 2010). In most classrooms, team teaching takes place when both co-teachers are in the front of the room working together side by side. In this scenario, the teachers may take turns leading a discussion or one might speak while the other demonstrates a concept (Cook & Friend, 1995; Graziano & Navarrete, 2012). Co-teachers who utilize this approach can also share the responsibility of managing student behavior.

When co-teachers team teach, students should see no difference in power between the two teachers (Perez, 2010, p. 20). However, although team teaching is beneficial for students to see, it can also be one of the most difficult models to implement in a co-taught classroom for several reasons. First of all, in order for co-teachers to successfully team teach together, both the mathematics and the special education teacher must have knowledge of the content (Perez, 2010, p. 20). If the special education teacher has a lack of content knowledge, the team teach approach will not work very well as both teachers are expected to teach the lesson.

Additionally, teachers need time to plan together as this co-teaching model is most dependent on meshing each other's teaching styles together (Perez, 2010, p. 20). In an ideal team teaching situation, both teachers should be able to feed off of one another and still provide

instruction to all of the students in the classroom. In a new co-teaching situation, this model will be hard to use effectively unless the co-teachers are already familiar with the other person's teaching style. According to Perez (2010), it is necessary for both teachers to have trust, commitment, and personality compatibility. Furthermore, if the special education teacher is knowledgeable with the content and has a similar teaching style or philosophy as the mathematics teacher, then team teaching should work very well for the co-teachers.

Alternative Teaching. In the alternative teaching approach, one teacher works with a small group of three to eight students while the other teaches the rest of the class (Cook & Friend, 1995; Graziano & Navarrete, 2012; Perez, 2010; Sileo & Van Gardern, 2010). According to Perez (2010), this co-teaching model is beneficial to students because it allows them to catch up on work they missed when absent. In most classrooms, alternative teaching is usually only used for a portion of the class period. Participating in small groups also provides students with more individualized instruction (Sileo & Van Gardern, 2010, p. 16).

If one teacher takes responsibility for the larger group of students, the second teacher can offer remedial help to those who need it. On the other hand, if a topic needs to be retaught to a larger portion of the class, then one teacher can focus on that group while the other teacher provides enrichment activities to a smaller group of students (Perez, 2010, p. 25). In either case, the mathematics and special education teachers who are working together should be able to ensure that the needs of all students, including the students with disabilities are met whether the students are part of the small group or the larger group.

When preparing to implement the alternative teaching model in the classroom, co-teachers should keep in mind the disadvantages of it and how to work around them. In other words, co-teachers should vary the composition of the groups so the students with disabilities

and lowest achievers are not placed in the same group every time (Perez, 2010, p. 25). The co-teachers should also take turns working with the smaller group or students may think the teachers do not have equal knowledge and authority. Additionally, co-teachers should be aware that the alternative teaching model may create an increased noise level in the classroom which could then become a distraction for students who already have a hard time focusing their attention.

Parallel Teaching. According to Sileo & Van Gardern (2010), “parallel teaching occurs when teachers plan collaboratively and simultaneously teach the same academic content to two student groups” (p. 16). In other words, both teachers work together to plan the lesson and then place the students into two groups so that each teacher is responsible for one half of the class (Perez, 2010, p. 23). By using the parallel teaching approach, co-teachers can lower the student-teacher ratio and be able to focus on a small group of students. This co-teaching model also provides students with more opportunities to participate, engage in hands-on activities, and interact with one another (Cook & Friend, 1995; Perez, 2010).

As with the other co-teaching models, parallel teaching also has some disadvantages. In order for the parallel teaching approach to be successful, co-teachers must spend time planning together and pace their instruction carefully so that both groups finish the lesson at the same time (Cook & Friend, 1995, p. 9). The mathematics and special education teachers also have to be knowledgeable with the content because both will be instructing the students separately. Additionally, with two separate groups being taught at the same time, it will also be important for the teachers to monitor the noise level or students may get distracted and not be able to pay attention.

Station Teaching. Station teaching is another approach that co-teachers can use to lower the teacher-student ratio and address a wide range of abilities by individualizing instruction for

students (Perez, 2010, p. 21). In station teaching, the teachers are able to divide the instructional content into two or three different learning centers located throughout the classroom (Cook & Friend, 1995; Perez, 2010). If more than two stations are created, students can work with the teachers at two of the stations and then work independently or in small groups at the other centers. Station teaching also allows the teachers to group students based on ability level, learning style or by results of student assessments (Perez, 2010, p. 21).

This model of co-teaching allows teachers to separate students who may need to work away from others. Students with disabilities benefit from station teaching because they can be integrated into all groups instead of being singled out (Cook & Friend, 1995, p. 8). According to Cook & Friend (1995), station teaching can also be implemented at any grade level and equal teacher status is not a concern since both teachers have active teaching roles (p. 8).

Although both teachers have an active role during station teaching, this approach requires careful planning between the co-teachers. Since students rotate between stations, it is essential for each teacher to pace their instruction so they finish at the same time. The noise level in the classroom may be another issue to be aware of especially if each teacher is working with a group of students at the same time. Students at the independent centers may have a hard time keeping themselves on-task if the rest of the classroom is too loud for them to concentrate.

Co-Teaching Benefits Everyone

While challenging at times, co-teaching at the secondary level is beneficial to both general and special education teachers and students. As a common approach in schools today, co-teaching allows teachers to share their expertise with each other while still providing instruction for students with and without disabilities together in a general education setting (Sileo & Van Gardern, 2010).

General and Special Education Teachers. Scruggs, Mastropieri, & McDuffie (2007) found that teachers typically benefited professionally from co-teaching experiences (p. 401). Being involved in a co-teaching relationship results in increased professional satisfaction, opportunities for professional growth, opportunities for collaboration, and personal support (Perez, 2010; Walther-Thomas, 1997).

General and special education teachers who work together in the general education classroom can provide students with more individualized instruction. Then, as students begin to succeed, satisfaction levels of teachers increase because they know their efforts are finally paying off (Walther-Thomas, 1997). Co-teachers may also result in fewer behavior problems, more on-task behaviors, and increased cooperation among students (Perez, 2010; Scruggs, Mastropieri & McDuffie, 2007).

Co-teaching provides mathematics and special education teachers with professional growth opportunities as well. Mathematics teachers bring content knowledge to the classroom whereas special education teachers bring knowledge of student learning to the classroom (Magiera, Smith, Zigmond & Gebauer, 2005). By blending their expertise together in a secondary mathematics classroom, the general education teacher gains a background on special education and the special education teacher deepens his or her content knowledge (Perez, 2010).

Through collaboration with the special education teacher, mathematics teachers learn new ways to plan, accommodate, and instruct students with disabilities (Perez, 2010). According to Graziano & Navarrete (2012), another benefit of co-teaching is the opportunity to vary content presentation (p. 109). When teachers collaborate for planning, they can consider the different models of co-teaching and then determine a model that will best meet the needs of the entire group (Brown, Howerter & Morgan, 2013).

In addition to gaining a deeper understanding of the mathematics content, special education teachers have the ability to learn the expectations as well as the daily routines and procedures of a general education classroom through co-teaching (Perez, 2010). Collaborating with the mathematics teacher to plan lessons also provides the special education teacher with insight into the standards and curriculum that all students are expected to master since the mathematics curriculum is more content specific at the high school level (Magiera, Smith, Zigmond & Gebauer, 2005).

Co-teaching also provides mathematics and special education teachers with personal support. In many secondary schools, mathematics teachers are often left alone to teach a lesson. Feedback is then given back to the teacher the next day when students come in with homework questions. In co-taught classrooms, mathematics or special education teachers are able to get immediate feedback on a lesson. Another benefit of co-teaching results from the shared responsibility of instruction because even if the math teacher is absent for a day or two, lessons can be taught by the special education teacher if the content and students are known.

General and Special Education Students. Students with and without disabilities benefit from co-teaching as well. According to Walther-Thomas (1997), the smaller student-teacher ratios in co-taught classes provide all students with more teacher time and attention (p. 400). With a second teacher present, students can get help quicker than if there was only one teacher in the classroom. Through co-teaching, students with and without disabilities also receive exposure to the different teaching styles of two teachers (Perez, 2010).

By including students with disabilities in general education classrooms, students without disabilities improve their social skills as they learn how to communicate and work with students with disabilities (Perez, 2010; Walther-Thomas, 1997). Their academic performance and self-

esteem also increase because co-teaching creates more opportunities for teachers to vary their ways of presenting material in an effort to meet the unique learning needs of all students (Perez, 2010).

Co-teaching is particularly beneficial to students with disabilities because it gives them access to the general education teacher and curriculum while providing them with the required accommodations listed in their individualized education programs (Magiera, Smith, Zigmond & Gebauer, 2005). Students with disabilities who are placed in general education classrooms are also given more opportunities to socialize and interact with students without disabilities who are their own age (Perez, 2010). Students with disabilities have more positive attitudes towards learning and a greater availability of role models for behavior in co-taught classrooms as well (Perez, 2010). Using the six different models, co-teachers can share their expertise and work together to meet the diverse learning needs of all students including students with disabilities.

Challenges to Co-Teaching

“Co-teaching is the most popular model for implementing inclusion, allowing special and general educators to provide instruction for students with and without disabilities together in the general education setting” (Sileo & Van Gardern, 2010, p. 73). Although beneficial to students and teachers, co-teaching brings a different set of challenges at the secondary level and has taken longer to be embraced by educators (Keefe & Moore, 2004, p. 78). Lack of common planning time, content area knowledge by special education teachers, administrative support and the relationship between co-teachers are just some of the most common challenges that middle and high school co-teachers face (Cook & Friend, 1995; Graziano & Navarrete, 2012; Keefe & Moore, 2004; Scruggs, Mastropieri & McDuffie, 2007; Walther-Thomas, 1997).

Lack of Common Planning Time. “The co-teaching framework emphasizes that students with disabilities are taught the general education curriculum with needed modifications and support” (Cook & Friend, 1995, p. 5). However, in order to meet the diverse learning needs of all students in general education classrooms, it is essential for co-teachers to have time to collaborate with one another (Carter, Prater, Jackson & Marchant, 2009; DeSimone & Parmar, 2006; Graziano & Navarrete, 2012; Keefe & Moore, 2004; Scruggs, Mastropieri & McDuffie, 2007). Co-planning time gives both teachers a chance to share their expertise so they can prepare and debrief lessons to meet the needs of all students.

According to Murawski (2012), “co-planning is both the most important and the most difficult component of co-teaching” (p. 8). Finding time to co-plan is one of the most common barriers to effective co-teaching, but without it, teachers teach without differentiation strategies (Murawski, 2012, p. 8). At the secondary level, mathematics teachers often have several different courses to prepare lessons for and special education teachers may work with multiple teachers so finding a time that works for both teachers can be a difficult task.

Possible Lack of Content Knowledge. At the high school level, mathematics teachers have highly specialized training in the content and special education teachers have an in-depth knowledge of individual student learning (Magiera, Smith, Zigmond & Gebauer, 2005). According to Magiera et. al (2005), the mathematics curriculum is more content specific at the high school level than at the lower grades (p. 20) but Brown, Howerter & Morgan (2013) suggest that it is important for both educators to deliver substantive instruction so that they are both viewed as integral to the classroom. However, many special education teachers feel they have a secondary role in classrooms due to their lack of content knowledge (Keefe & Moore, 2004).

Co-teaching with a special education teacher who lacks content knowledge can be challenging for secondary mathematics teachers. First of all, if co-teachers use the one teach, one drift approach frequently with the mathematics teacher leading the class, students may view the special education teacher as an aide and only ask the mathematics teacher for assistance (Magiera, Smith, Zigmond & Gebauer, 2005). Moreover, if the special education teacher lacks content knowledge, co-teachers may not be able to vary instruction and use the different co-teaching models that might be necessary to meet the needs of all students who are placed in a single classroom.

Relationship between Co-Teachers. “In co-taught mathematics classrooms, general and special education teachers are expected to work together to accommodate the learning needs of students with and without disabilities” (Magiera, Smith, Zigmond & Gebauer, 2005, p. 24). According to Mastropieri, Scruggs, Graetz, Norland, Gardizi & McDuffie (2005), “the relationship between the co-teachers is a major critical component influencing the success or failure of the inclusion of students with disabilities” (p. 268). Murawski (2012) states that it’s important for co-teachers to communicate with each other openly, “not just about the students and the content but also about their own teaching and interactions” (p. 11).

According to Carter, Prater, Jackson & Marchant (2009), a teacher’s philosophy influences whether he or she is even willing to make accommodations for students with disabilities (p. 67). If mathematics teachers are not even willing to make accommodations or adapt instruction, special education teachers will struggle to help students with disabilities succeed in the general education classroom. Additionally, the different attitudes and beliefs that general and special education teachers may have towards co-teaching and classroom

management can also have an impact on how successful co-teachers are at fulfilling the academic and learning needs of all students.

Lack of Administrative Support. Another challenge that secondary co-teachers face is the lack of administrative support. Cook & Friend (1995) found that “administrative support is essential to teachers’ success” (p. 17). Murawski & Dieker (2004) suggest that “it’s not enough to merely place students with disabilities in general class settings without providing appropriate training, materials, and support to them and their teachers” (p. 52).

According to Brown, Howerter & Morgan (2013), it is helpful to assign special educators to the content area they are most comfortable with so that the amount of instruction they deliver can increase (p. 87). In other words, at the secondary level, a lack of administrative support can be displayed when special education teachers are assigned to work in a content area they are not comfortable with, such as mathematics. If students at the upper grades know that the special education teacher lacks content knowledge, then they will be more apt to ask for help from the mathematics teacher, making it more difficult to ensure that all students can succeed in the general education classroom.

Creating a schedule that does give co-teachers adequate time to collaborate and co-plan is another way administrators show their lack of support towards the inclusion of students with disabilities in general education classrooms. Co-teachers who are not given time to work together struggle because in order to meet the needs of all students, collaboration between general and special education teachers is essential (Carter, Prater, Jackson & Marchant, 2009; DeSimone & Parmar, 2006; Graziano & Navarrete, 2012; Keefe & Moore, 2004; Scruggs, Mastropieri & McDuffie, 2007).

Key Components of Successful Co-Teaching

According to Magiera, Smith, Zigmond & Gebauer (2005), “co-teaching is a popular strategy for implementing the inclusion of students with disabilities within secondary mathematics classrooms” (p. 21). Although co-teaching may mean different things to different teachers (Mastropieri, Scruggs, Graetz, Norland, Gardizi & McDuffie, 2005, p. 261) and inclusive practices vary between schools (DeSimone & Parmar, 2006, p. 338), research has revealed that there are several factors necessary for co-teaching teams to be successful.

Scruggs, Mastropieri & McDuffie (2007) found that some of the important components include the general education teacher’s attitude, administrative support, sufficient planning time and a shared philosophy of instruction and behavior management (p. 393). Additionally, “collaboration is another critical aspect of effective inclusion” (Carter, Prater, Jackson & Marchant, 2009, p. 61).

Common Planning Time. As a common approach in schools today to increase instructional options for students and address the diverse learning needs of all students, co-teaching provides general and special education teachers with an opportunity to work together and share their expertise (Cook & Friend, 1995; Graziano & Navarrete, 2012; Sileo & Van Gardern, 2010). However, in order for them to successfully help all students including students with disabilities, teachers need to have common planning time so that they can discuss lesson plans, individual students, and assessments on a regular basis.

According to Brown, Howerter & Morgan (2013), it’s important for co-teachers to understand the diverse needs of their students and consider the six different models of co-teaching when planning lessons together in order to meet the needs of the entire group (pgs. 85 & 87). Although finding common planning time at the secondary level is challenging, it is even

more crucial with the recent adoption and implementation of the CCSS in schools today. As many students struggle to meet the new standards, co-teachers must find ways to help them succeed which can only be done if both teachers are actually given time to work together.

Administrative Support. Administrative support is another essential component for co-teaching success (Perez, 2012, p. 35). Administrators can assist co-teachers by encouraging them and making sure they have the resources they need (Perez, 2012, p. 143). Additionally, school staff who are supportive of co-teaching will ensure that schedules are created so that their co-teachers have time to collaborate and attend professional development workshops on co-teaching.

Furthermore, even though groups of students will change from one school year to the next, administrators “should allow co-teachers to stay together for more than one year” (Perez, 2012, p. 143). According to Murawski (2012), “when teachers have worked together for a while and are familiar with each other, then it is more likely that they will need less time to plan” (p. 12). In other words, after the first year of co-teaching, even with the CCSS, lesson planning in consecutive years should become easier for co-teachers as their lessons should only need to be tweaked to meet the needs of the new group of students.

General Education Teacher’s Attitude. The general education teacher’s attitude towards the inclusion of students with disabilities in general education classrooms can play a major role in how successful co-teaching teams are as well. When secondary teachers lack the proper training, resources and support from administration, they tend to have more negative attitudes towards co-teaching (Scruggs, Mastropieri & McDuffie, 2007, p. 394).

The NCLB and the CCSS have put added pressure on mathematics teachers as well so in addition to implementing the new standards, secondary mathematics teachers are also being

asked to educate a rising number of students with disabilities who are placed in their classrooms. To help mathematics teachers, many schools have begun implementing co-teaching as a method for addressing the diverse learning needs of students (Graziano & Navarrete, 2012). However, although co-teaching is beneficial to all students including students with disabilities, it can also be frustrating and thus create more negative attitudes towards inclusion and co-teaching for mathematics teachers.

Collaboration between Co-Teachers. One of the most important components of successful co-teaching is how well both co-teachers collaborate with one another. According to DeSimone & Parmar (2006), “collaboration between the general and special education teachers has been found to be a key element in successful and effective middle or secondary level inclusion models” (p. 338). Keefe & Moore (2004) state that “in order to meet the challenge of educating students with disabilities successfully in the general education classroom, collaboration between general and special education is essential” (p. 78). Carter, Prater, Jackson & Marchant (2009) found that “effective collaboration between special and general education teachers can facilitate the successful inclusion of students with disabilities who are in general education classrooms” (p. 60).

Through collaboration, co-teachers share their expertise, provide feedback, plan lessons, discuss students, and set goals for meeting the needs of everyone involved. Although essential to successful inclusion, finding time to collaborate is difficult unless co-teachers are given common planning time and support from administration. Collaboration between mathematics and special education teachers is even more important in schools today as co-teachers must work together in order to help students with disabilities meet the higher expectations associated with the CCSS.

Shared Philosophy of Instruction and Behavior Management. Mathematics and special education teachers who are assigned to work together should also have a shared philosophy of instruction and behavior management (Scruggs, Mastropieri & McDuffie, 2007, p. 393). According to Keefe & Moore (2004), “schools need to be thoughtful about how they pair up teachers or teams of teachers to work with one another” (p. 86) because a “teacher’s philosophy may influence whether he or she is willing to make accommodations for students with learning disabilities” (Carter, Prater, Jackson & Marchant, 2009, p. 67). Mathematics teachers must be willing to make accommodations and work with a special education teachers on a daily basis in order to meet the needs of all students. They should also have a shared philosophy of behavior management so that teachers and students all know what the expectations are as well as the consequences for misbehavior.

Content Knowledge by Special Education Teacher. According to Brown, Howerter & Morgan (2013), “current practice suggests that it helps to assign special educators to the content area that they feel most comfortable with since it increases the amount of instruction they may be able to deliver” (p. 87 & 88). Working with a special education teacher who has content knowledge can be very helpful to a mathematics teacher because it provides more opportunities for co-teachers to vary instruction. Having a special education teacher certified in mathematics is also beneficial for students as it gives them an extra person to go to for assistance when they need it.

Chapter Summary

In conclusion, there are many different aspects of co-teaching to consider when preparing to implement it in schools today including the six teaching models, benefits for students and teachers, challenges of co-teaching and some key components for successful co-teaching. The

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CCSS and rising number of students with disabilities may make teaching more difficult for mathematics teachers. However, with the help of a special education teacher on a daily basis, the pair of teachers should be able to address and meet the needs of all students in a secondary mathematics classroom.

Chapter Three: Methods and Procedures

Co-teaching between general and special education teachers has become a common strategy in order to successfully address the increasingly diverse learning needs and academic levels of students who are placed in one classroom (Graziano & Navarrete, 2012). Co-teaching is often defined as having a general and special education teacher plan, deliver, and assess instruction together in a single classroom (Brown, Howerter & Morgan, 2013). In order to meet the needs of students with disabilities who are placed in general education classrooms, it is essential for general and special education teachers to be able to communicate and work together effectively (Keefe & Moore, 2004).

As stated in chapter one, the purpose of this qualitative research study is to investigate how co-teachers manage planning, teaching and assessing lessons around the Common Core State Standards (CCSS) in mathematics. The researcher in this study is looking to see how co-teachers with more experience work together to meet the needs of all students in a general education classroom. By surveying, observing, and interviewing a pair of co-teachers, the researcher is hoping this study will provide enough information that will be useful in answering the following research question: How do teachers who co-teach manage planning, teaching, and assessing lessons around the CCSS in mathematics?

Participants

The participants for this case study include two participants, a high school mathematics teacher and a special education teacher who co-teach high school mathematics together using the CCSS. Both are Caucasian males in their early 30's who each hold a master's degree. They have both been teaching for eight years and are in their second year co-teaching together. Although

neither participant volunteered to co-teach, both teachers have attended workshops on co-teaching.

The mathematics teacher, Matt (pseudonym to protect the participant's identity), is certified in Mathematics 7-12, works with students in grades nine through twelve and only co-teaches with one teacher. The special education teacher in this study, Kevin (also pseudonym), is certified in Mathematics 7-12 and Special Education 7-12. Even though this is only his second year co-teaching with Matt, Kevin has eight years of co-teaching experience altogether while Matt has three years of co-teaching experience. Additionally, Kevin works with students in grades nine and ten and also co-teaches with one other teacher.

Context of the Study

This study will take place in a rural school district in upstate New York. The school in which this study will be conducted is located in a middle-class community where the median income for a household is \$51, 505 (usa.com). The district population recorded in 2010 was found to be 13,054 people (usa.com). During the 2011-2012 school year, approximately 1,900 students made up grades kindergarten through 12th grade. The demographics of the student population consist of the following: 96 percent white, 2 percent Hispanic/Latino, 1 percent multiracial, and 1 percent Black/African American (usa.com).

The school district is comprised of four schools: a primary school, an intermediate school, a middle school and a high school. The primary school includes students in kindergarten through second grade and the intermediate school houses students in grades three through five. The middle school consists of students in grades six through eight and the high school includes students in grades nine through twelve.

The school rotates on a four-day cycle with each day consisting of four eighty-five minute periods. The core subject classes such as math, science, social studies and English typically meet every other day and classes such as art, music and physical education are allowed one period out of the four day cycle. However, the class that is going to be observed meets three out of the four days to provide students with more instructional time. The classroom itself consists of a smart board and approximately twenty student desks arranged in pairs facing the front of the room.

Data Collection

This qualitative research study was an investigation into how a pair of teachers who co-teach manage planning, teaching, and assessing lessons around the CCSS in mathematics and if such practices aligned with the research of best practices for co-teaching. Data collection began soon after it was approved by the Institutional Review Board (IRB) using a demographic survey, observations, field notes and teacher interviews.

Demographic Survey. Before the observation began, the teachers were first asked to complete a demographics survey consisting of fourteen questions. Responses to the survey provided the researcher with information regarding their gender, age, education levels, and area(s) of certification. Their answers also informed the researcher on the grades and courses they taught, years of experience teaching, years of experience co-teaching, whether or not they have attended any co-teaching workshops and the location of where their co-teaching experiences typically occur.

Observations and Field Notes. For this study, the teachers were observed for the duration of one class period which was eighty-five minutes long. There was also a thirty minute lunch break an hour into the class. After lunch, the lesson continued for approximately twenty-

five more minutes. During the observations, field notes were made on the different roles that each teacher took on as well as which co-teaching models were implemented throughout the entire lesson. The researcher focused on their roles, which models were used and how they worked together to ensure that the needs of all students were met.

Teacher Interviews. After the observations, both of the teachers were interviewed using a list of open-ended questions that were created prior to meeting with the participants. Of the eleven interview questions, the first two focused on their definition of co-teaching and what a typical day in their co-teaching situation was like. The next seven questions focused on how the co-teachers addressed major components of co-teaching such as roles and responsibilities, planning, student assessment and strategies for meeting the academic needs of all students in a single classroom. To finish, the co-teachers were then given an opportunity to offer advice to other mathematics and special education teachers as well as provide any comments that they felt necessary to include.

Data Analysis

Triangulation. According to Cresswell (2011), triangulation is the “process of corroborating evidence from different individuals, types of data, and methods of data collection to create themes in qualitative research” (p. 259). Researchers use triangulation to draw upon multiple sources of sources of information and viewpoints to help ensure accuracy and credibility of the study.

In this study, data was collected from two individuals using multiple methods in order to find out how a pair of co-teachers worked together to plan, teach, and assess a lesson around the CCSS in mathematics. The first method of data collection was a survey which provided the researcher with demographic information on the participants. Observations and field notes

helped determine which co-teaching models they used and how the pair worked together in the classroom to meet the needs of all students. Responses to the interview questions then uncovered how major aspects of co-teaching were handled such as roles and responsibilities as well as the planning, teaching and assessment of lessons in their co-teaching situation.

Chapter Summary

The participants for this particular study included a high school mathematics teacher and a high school special education teacher who have each been teaching for eight years. In their second year of co-teaching together, the special education teacher was certified in both mathematics and special education. Data was collected through the use of a demographics survey, observations, field notes and interview responses in order for the researcher to gain an in-depth understanding of how a pair of teachers work together to plan, teach and assess lessons around the CCSS in mathematics.

Chapter Four: Results

Co-teaching can mean different things to different people but is most commonly defined as having a general and special education teacher working together to plan, deliver and assess instruction (Brown, Howerter & Morgan, 2013; Mastropieri, Scruggs, Graetz, Norland, Gardizi & McDuffie, 2005). In this study, both of the participants believed that co-teaching is about teamwork. The mathematics teacher, Matt said that co-teaching is when two teachers are able to balance each other out especially when one teacher can approach a concept from a different angle that the other teacher may not be seeing.

The special education teacher, Kevin (pseudonym), described co-teaching as typically having two specialists of different backgrounds working together to ensure that the academic needs of all students are met. However, responses to survey and interview questions revealed that both of the participants in this study were certified in mathematics thus making their co-teaching situation a little different than most.

Roles and Responsibilities of Co-Teachers

According to the mathematics teacher, Matt (pseudonym), a typical day for them is a give and take like teaching style in which they easily transition from one teacher teaching to another. Since both of them are certified in mathematics and know the material, it is easy for them to take turns implementing the lesson. In addition to being ready to teach the lesson, Kevin said they are always flexible because they rarely get through an entire lesson as planned.

In this study, the roles and responsibilities of the co-teachers were not decided upon by a formal conversation but rather it is what works for them since they are in their second year of co-teaching together. During the observations, it was clear that there were no lines drawn between their roles while teaching. In other words, if the researcher had not already known which teacher

was which, it would not have been evident through observation. Throughout the entire class period, Matt and Kevin spent time working with every student in the classroom so it was hard to determine who the students with disabilities were. Their belief that co-teaching is about teamwork was also demonstrated as they took turns asking questions and leading the lesson using the different co-teaching models.

Responses to the interview questions revealed that outside of the classroom, Matt and Kevin each have individual responsibilities around planning and assessing instruction. As the content expert, Matt gets the lesson ready, makes the copies and grades all of the homework and tests. As the special education teacher, Kevin ensures that the students with disabilities receive their classroom modifications and testing accommodations.

Planning

The school district in which this study took place runs on a four day cycle with four class periods each day. In the interview, both Matt and Kevin stated that they have common planning time three days out of the four day cycle. However, as second year co-teachers, they only meet every other day. As stated above, Matt does most of the lesson planning since he is considered the content expert. Kevin mentioned that when they do get together, big ideas, lesson objectives, and student concerns are often discussed.

Teaching

Field notes from the observations found that the participants, Matt and Kevin used two different models of co-teaching in order to implement the lesson and meet the needs of all their students. After completing basic tasks such as taking attendance and distributing papers, the co-teachers in this study began their lesson using the team teach approach in the mathematics

teacher's classroom. After Matt introduced the lesson, Kevin asked students' questions and then wrote their answers on the board.

When it came time for the students to solve a mathematics problem independently, Matt and Kevin switched to a different model of co-teaching. As the students worked, both teachers wandered around the room checking answers and providing assistance as needed. Once most of the students were finished, they began using the one teach, one drift approach. The mathematics teacher worked with a couple of students in the back of the classroom while Kevin discussed the problem's answer with the rest of the class. After Matt was done helping those students, he went to the front of the room where they switched back to the team teach approach again.

In this study, both of the teachers worked together to implement the lesson and ensure that the needs of all students were met. Although Matt and Kevin took turns leading the lesson, Kevin spent more time in the front of the classroom instructing the students while Matt helped make sure everyone understood the lesson. Additionally, since the co-teachers worked with every student, it was difficult for the observer to determine who the general education students were and who the special education students were.

Assessment

Answers to the interview questions found that in this co-teaching situation, the teachers worked together to assess student learning. On a formative basis, Matt and Kevin both look and decide where to go next. On summative assessments such as tests and quizzes, they give the same tests as the math department but modify them to meet the needs of their students.

In addition to using the one teach, one drift and team teach models of co-teaching, Matt and Kevin use a variety of other strategies to meet the academic needs of all their students. Both teachers stated using the parallel teach approach, one-on-one help and small group instruction as

other methods they often use. The special education teacher noted that the students work either independently or in partners on quizzes as well. Meanwhile, Matt and Kevin try to make questions relate to the students' personal lives rather than using the book examples all of the time. Lastly, they make a copies of the notes for some students to have.

In Their Own Voice

At the end of the interview, both teachers were given the opportunity to share any advice and other comments they had on co-teaching. The mathematics teacher advised future co-teachers to know the content and their students. Matt also added that co-teachers should understand that each year and class will be different so the same lesson or style of teaching may not work every time. Instead, teachers will need to be flexible in their thinking and teaching.

The special education teacher mentioned that co-teachers must be flexible in their teaching practices and views of student success as well. Kevin pointed out that all partnerships are different so it is important to be open and honest with your co-teacher while still being respectful and understanding. According to Kevin, good co-teaching will take time as the partnership grows.

Co-teaching can be challenging particularly when teaching philosophies do not align with one another. However, in this particular study, the co-teachers trusted each other with both content knowledge and management styles. In their second year of co-teaching together, Matt and Kevin were already familiar with one another's teaching style and view towards inclusion.

Chapter Summary

The participants in this study believed that co-teaching is about teamwork. During the observation, there were no distinct roles between them when teaching the lesson. They worked together and used different models of co-teaching in order to meet the needs of all their students.

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However, according to interview responses, the co-teachers each have their own responsibilities outside of the classroom. In this co-teaching situation, the planning and assessing of lessons around the CCSS in mathematics is done mainly by the mathematics teacher. The special education teacher, on the other hand, makes sure that students receive the correct classroom modifications and testing accommodations. The co-teachers get together every other day though to discuss individual students, lesson objectives and any other concerns that they may have.

It was also discovered that neither of the co-teachers in this study volunteered to co-teach. Instead, they were paired together because the special education teacher held dual certification in mathematics and special education. Survey responses also revealed that both teachers have attended workshops on co-teaching.

Chapter Five: Discussion, Summary and Reflections

With the recent shift to the Common Core State Standards (CCSS) and a larger percentage of students with disabilities receiving instruction in the general education classroom (Brown, Howerter and Morgan, 2013), it is important for teachers and administrators to find ways to support and meet the academic needs of all students. Research suggests that co-teaching between general and special education teachers has become a common approach for addressing the diverse learning needs of students (Graziano & Navarrete, 2012). According to Brown, Howerter and Morgan (2013), co-teaching is defined as having a general and special education teacher plan, deliver and assess instruction together in a single classroom (p. 85).

Co-teaching can be beneficial for both teachers and students but it can also be challenging for teachers because it requires collaboration between the general and special education teachers (Carter, Prater, Jackson & Marchant, 2009; DeSimone & Parmar, 2006; Graziano & Navarrete, 2012; Keefe & Moore, 2004). Although finding time to collaborate at the secondary level can be difficult for co-teachers, it can be overcome if the administration truly supports the inclusion of students with disabilities in general education classrooms. The high school teachers in this study meet every other day to share their expertise, discuss lesson objectives, big ideas and individual students.

According to Brown, Howerter and Morgan (2013), it helps to assign special education teachers to the content area in which they feel the most comfortable with since it increases their comfort level and the amount of instruction they are able to deliver in the classroom (p. 87 & 88). Research also suggests that it is important for teachers to consider the six different models of co-teaching when developing lesson plans because each educator should deliver a substantial amount of instruction so that both are each viewed as integral to the classroom environment

(Brown, Howerter and Morgan, 2013). Magiera, Smith, Zigmond & Gebauer (2005) also note that “co-teachers need to develop a rapport in the classroom so that the kids feel that their teachers are equal” (p. 23).

Results from the demographics survey and interviews showed that the co-teachers in this study had a unique co-teaching experience because they were both certified in mathematics. Since they were in their second year of co-teaching together and the special education teacher had the content knowledge, they were able to effectively use the team teach approach and instruct the class together. Once students began solving problems independently, each teacher circulated the room and checked on all of the students. The co-teachers then moved into the one teach, one drift model because the mathematics teacher was providing assistance to a couple of students so the special education teacher continued the lesson with everyone else. In other words, the co-teachers in this study used multiple co-teaching models within the same lesson in order to meet the needs of all students.

In the classroom, the mathematics and special education teachers in this study formatively assess their students on a constant basis in order to decide where to go next. Although the tests are created by the mathematics department, the co-teachers do work together to make the necessary modifications for their students. Additionally, even though both of the teachers know the material and are certified in mathematics, most of the grading is done by the mathematics teacher.

Overall, the co-teachers in this study have enjoyed co-teaching together. When asked what advice they would give to other mathematics or special education teachers though, the mathematics teacher suggested they know the content and their students. The special education teacher noted that all co-teaching partnerships will be different so you must be open and honest

with your co-teacher because teaching philosophies may not always match up. Both teachers also advised others to be flexible because each year and class will be different and lessons may not always go as planned.

My Positionality as the Researcher

I am a 25 year old Caucasian female living in a small town in central New York. I was raised on my family's dairy farm and attended the same rural school district my entire life. After graduating from high school, I completed my undergraduate degree at The College at Brockport in western New York. In addition to a Bachelor of Science in Mathematics, I also hold New York State initial teaching certification in Mathematics, grades seven through twelve. Currently, I am pursuing my master's degree in Mathematics Education at The College at Brockport while working on my family's dairy farm and substitute teaching in my home school district.

While in college, I participated in the America Reads program at The College at Brockport. Through the program, I was first given an opportunity to work with a sixth grade mathematics teacher at the Brockport Middle School a couple days a week. After working with that teacher for two semesters but with a different group of students the second time around, I switched and worked with the science teacher on the team. Although I didn't teach any lessons to students, I did gain experience working with a pair of sixth grade teachers and their students.

After graduation, I became a graduate student in the mathematics education program at Brockport. During the first three semesters in the program, I completed field placements in a suburban middle school, suburban high school, and a city high school. My student teaching placements were done in a rural high school closer to my hometown. For them, I worked with a high school mathematics teacher first and then with a special education teacher for the second placement.

During my special education placement, my school based teacher educator (SBTE) and I pushed into five different classrooms where we worked with a different teacher in each one. Three of the classes that we went into were English while the other two were mathematics classes. Within the first week, I quickly learned that each teacher had a different philosophy towards instruction and classroom management making my placement a difficult one to adapt to after only working with one teacher for the previous seven weeks.

As mentioned above, I am also a substitute teacher for my local school district and have been since the fall of 2009. When I first started substituting, I worked with students in every grade and subject but now focus my attention on students in grades five through twelve instead. Over the last couple of years, I have had numerous opportunities to substitute for a sixth grade mathematics teacher. When in for this particular teacher, I am given the chance to not only teach lessons around the CCSS but also work with a special education teacher and students with disabilities who are placed in the general education setting.

I chose this research topic based on my personal experiences as both a student teacher and a substitute teacher. As the number of students with disabilities being educated in general education classrooms rises, meeting the needs of all students is becoming more challenging for mathematics teachers thus requiring them to collaborate with a special education teacher (Carter, Prater, Jackson & Marchant, 2009; DeSimone & Parmar, 2006; Keefe & Moore, 2004) through co-teaching. Since co-teaching is becoming a common approach in schools today, this research study may benefit secondary mathematics and special education teachers by providing them with some of best practices for co-teaching.

Limitations of the Study

For this study, there were several limitations that could have affected the results. Since it was a case study, there was a limited number of districts, schools and teachers who participated in the study. The school district selected for this study was a rural school district in upstate New York comprised of mostly Caucasian students and teachers. If the study was expanded to include other districts, then the demographics of the participants would be varied which might provide more information on how co-teaching is being done in schools today.

Another limitation of this study is that co-teaching practices may vary across schools and districts depending on the number of students with disabilities, number of teachers available to co-teach, and the training available to co-teachers. Schools in urban and suburban districts may have more students with disabilities, teachers and training available to their co-teachers. Rural school districts often differ in their size so some schools may have the funding available for co-teachers to attend workshops while other schools may not.

A third limitation of this study was the limited number of participants. As a case study, there were only two teachers selected to participate both of whom were males. In the field of education, there are typically more female teachers than male teachers. Co-teaching teams consisting of a male and female or two females may manage planning, teaching, and assessing lessons differently than a pair of male teachers who already have experience working together.

Additionally, having two teachers who were both certified in mathematics could have affected the results of the research. Since the special education teacher had the content knowledge, using the different models of co-teaching was easier to do for this pair of teachers. Including teams consisting of a mathematics teacher and a non-mathematics certified special

education teacher may also provide more information on how co-teachers manage planning, teaching and assessing lessons in secondary mathematics classrooms.

One other limitation of this study is that the co-teachers were only observed once and with one class. By conducting multiple observations, the researcher may have more opportunities to observe the co-teachers use additional co-teaching models and strategies to meet the needs of all students. Since the participants in this study co-teach two different classes together, it may have also been helpful to observe each class to see how their methods of teaching differed between the two classes.

Future Research

In the future, it may be beneficial for myself or another researcher to have a larger sample size of participants. Even though the results from this study provided good information on how a pair of co-teachers managed planning, teaching and assessing lessons around the CCSS in mathematics, it may be helpful to include more teachers with varying teaching backgrounds from different school districts so that a wider range of demographics are represented. In addition to a broader range of backgrounds and demographics, a larger sample size should also result in a mixture of teachers who may have different beliefs and attitudes towards co-teaching and the inclusion of students with disabilities in general education classrooms. At the secondary level, co-teaching can be challenging and not always be embraced by general education teachers.

It is also recommended that the researcher conduct multiple observations of co-teaching teams to see how often or if teachers vary their instructional methods. As noted before, each class is going to be different so co-teachers need to be flexible in their thinking and teaching when working with students with disabilities. Conducting multiple observations may provide

more information on how well they communicate with each other and work together in the classroom to meet the diverse needs of all students.

Future research could also look at co-teaching experiences and their impact on student learning. As mentioned earlier, every co-teaching situation is different depending on the teachers and students involved. In other words, one co-teaching experience may be better than another one, particularly for students. By looking at co-teaching experiences and the impact on student learning, researchers might be able to tell if more positive experiences result in better student performance or not.

Final Thoughts

For this study, the researcher was interested in seeing how a pair of teachers who co-teach manage planning, teaching and assessing lessons around the CCSS in mathematics. Using a demographics survey, it was found that the participants in this study were in their second year of co-teaching high school mathematics together. Even though they had common planning time three days out of the four day cycle, they only met every other day.

By observing their class for the duration of one period, the researcher was able to watch them work together and teach a lesson using two of the co-teaching models that was learned about through research on co-teaching. Through interviews with each teacher, a deeper understanding of how a mathematics teacher and special education teacher plan and assess lessons around the CCSS was gained. Their responses to the interview questions also provided me with more insight into the roles and responsibilities each teacher held and what teaching strategies they typically use in their classroom.

In addition to learning how co-teachers manage planning, teaching, and assessing lessons, the researcher's knowledge of co-teaching also expanded. Through research, the researcher

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learned about six different co-teaching models that could be used in a secondary mathematics classroom, the benefits of co-teaching for both teachers and students, the challenges of co-teaching, and some key component for successful co-teaching.

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Appendix A:

Demographics Survey

1) What is your gender?

_____Male _____Female

2) How old are you?

_____20-29 _____30-39 _____40-49 _____50+

3) What is your highest level of education?

_____Associate's degree

_____Bachelor's degree

_____Master's degree

_____Other

4) If you marked "other" in question three, please specify below.

5) What is your area(s) of certification? Please specify below.

6) What do you teach?

_____Mathematics Courses _____Special Education Courses _____Both

7) What grade(s) do you teach? Please circle all that apply.

Grade 7 Grade 8 Grade 9

Grade 10 Grade 11 Grade 12

SECONDARY MATHEMATICS CO-TEACHING

8) What mathematics course(s) do you teach?

9) What mathematics course(s) do you co-teach?

10) Please write the number of:

Years you have been teaching _____years

Years as a co-teacher _____years

Years taught with your current co-teacher _____years

Teachers with whom you co-teach daily _____teachers

Classes that you co-teach in a day _____classes

11) Did you volunteer for your current co-teaching experience?

_____Yes _____No

12) Have you attended any co-teaching trainings or workshops?

_____Yes _____No

13) Do you consider yourself as a co-teacher or lead teacher?

_____Co-teacher _____Lead teacher

14) Where does your co-teaching experience occur?

_____In my own classroom

_____In another classroom that I go to

Appendix B:

Interview Questions

- 1) What does co-teaching mean to you?

- 2) Please describe a typical day in your co-teaching situation.

- 3) What are the roles and responsibilities of the mathematics teacher in your co-teaching situation?

- 4) What are the roles and responsibilities of the special education teacher in your co-teaching situation?

- 5) How did you decide on these roles and responsibilities?

- 6) Do you and your co-teacher have a common planning time?

- 7) How often do you and your co-teacher meet to plan lessons?

