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IT TAKES TWO: CO-TEACHING IN THE INCLUSIONARY SCIENCE
CLASSROOM

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Abstract

This qualitative study investigated the development of a co-teaching relationship between a certified regular education teacher and a certified special education teacher when teaching in an inclusionary science classroom. This study was conducted in an urban elementary school consisting of approximately 750 students in eastern Pennsylvania. Data were collected using several different methods. These methods included data collection worksheets, surveys, co-planning meetings, an observation log, and co-teaching summaries. Both co-teachers taught together in the same classroom on a daily basis, while implementing different co-teaching strategies. The relationship that formed between both co-teachers was analyzed and discussed on a daily basis. Findings suggest that a successful co-teaching relationship formed in the presence of effective communication, personality compatibility, flexibility, careful co-planning, and thoughtful self-reflection.

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Researcher Stance

When I graduated from college in 2005, I was extremely motivated to find my very own elementary classroom. Working with young children and being given the opportunity to make an impact in their lives has always been one of my strongest passions. Unfortunately, that summer the only teaching position I was offered was secondary learning support. So obviously events did not go according to plan, and instead of teaching at the elementary level, I found myself teaching high school special education. Teaching at the secondary level was something I never expected to be doing upon graduating from college. Throughout my entire college education, my primary focus was always on teaching at the elementary level, but the secondary special education position was an opportunity that allowed me to begin teaching immediately and gain experience in the field of education. Therefore, I decided to accept the high school special education position graciously and entered that school year with a positive attitude.

Teaching at the secondary level is a completely different ballgame than teaching at the elementary level. As a first year special education teacher there were many responsibilities that I had to become accustomed to. As a special education teacher, I was responsible for teaching pullout math classes, developing IEPs, monitoring the progress of students on my caseload, and co-teaching in the inclusionary environment. Throughout the course of the school year, I began to

feel a certain amount of ease with all the duties I had to fulfill except for one, co-teaching. As a co-teacher in the regular educational setting, I always felt a sense of uneasiness. I was never quite sure what my responsibilities were when it came to teaching the entire class, planning for lessons, and handling classroom behavior issues. I did not feel that students perceived me in the same way as they perceived the regular education teacher, and I never felt that the classroom was shared equally between my partner and me. I always felt a sense of inferiority when compared to the regular education teacher. Part of this was due to the fact that teaching at the secondary level is a lot more content oriented than at the elementary level. However, the main cause of having this sense of inferiority did not come from the actions of my fellow co-teachers, but rather from the inexperience that we all had with the co-teaching process. After completing my first year of teaching special education at the secondary level, it is fair to say that I was left with a bad taste in my mouth with the co-teaching process.

After that first year of teaching secondary special education, I have worked in many positions at the elementary level. However, it was not until I accepted a new teaching position as an elementary special education teacher during the 2012-2013 school year that I was exposed to the co-teaching process once again. Although I was very happy to be working at the elementary level, I found that I still experienced some of the same issues as when I taught secondary special education. This time, though, I realized what an amazing opportunity that

students are given when two teachers are in the same classroom teaching. In a co-taught setting, the students I worked with seemed to grow and develop not only as students, but also as people. Based on this most recent experience, I felt that conducting an action-based research study on co-teaching would be something that was challenging and out of my comfort zone, but in the end would help me to improve as an educator. At the beginning of this school year, my position changed once again. I am currently teaching fifth grade, regular education. Although I was absolutely thrilled to finally have my own classroom, I was concerned as to how this would impact my action research. After discussing my situation with my principal and making a slight change in my daily schedule and thesis proposal, it was decided that I would be co-teaching a science inclusionary class with a special education teacher on a daily basis, which would still allow for my research to continue.

After conducting some initial research, it was obvious that now more than ever many classrooms combine special education students and regular education students together. This type of setting is often referred to as an inclusionary environment. As a result of inclusionary environments, co-teaching has become a commonly used practice in a majority of schools in recent years. Co-taught classrooms usually contain one regular education teacher and one special education teacher, and various methods are used in order to instruct students. These methods include team teaching; parallel teaching; alternative teaching;

station teaching; one teach, one assist; and one teach, one observe. During the first half of this school year, I co-taught an inclusionary science class on a daily basis with a certified special education teacher. Learning and researching specific ways in which a co-taught classroom can operate, and what strategies tend to work best in this setting, helped to guide my co-teacher and me in attempting to meet the needs of all our students. Observing and examining the relationship that developed between my co-teacher and me became the central focus of my action-based research.

All students need to be given the opportunity to learn in an environment that is conducive to learning. The strategies and methods that are utilized in a classroom have a dramatic effect on the success of every student. I personally believe that students will tend to be more successful in the learning environment if they are exposed to a positive atmosphere and are engaged in the learning process. I have always felt that by incorporating cooperative learning and inquiry-based learning into the classroom, students take on the role of being active learners, and are encouraged to take ownership of their own learning. Also, by researching and implementing different co-teaching models, I have gained a greater understanding of how these various strategies can be successfully incorporated into an inclusionary classroom and the effects they have on a co-taught environment.

By conducting this research and implementing different co-teaching models within my inclusionary science class, I had the opportunity to examine the relationship that formed between my co-teacher and me. I also examined what methods were utilized in order for both of us to collaborate most effectively. It was my hope that together, we would create an environment that facilitated growth for all our students and for us as educators.

After having researched many co-teaching models and strategies that could be utilized in an inclusionary environment, I took a profound interest in the team teaching model due to the fact that it promotes equality between co-teachers. When implementing this specific model, both the regular and special education teachers are responsible for instructional delivery and classroom management. Both teachers share an equal role in educating students and creating an environment that is conducive to learning. I have always felt that it is very important for students to accept their co-teachers as equals, and for co-teachers to feel a sense of equality when teaching in the same classroom. When beginning my research, I felt that gaining a better perspective and deeper understanding of the co-teaching models and the relationship that formed between my co-teacher and me would help me to become a better professional educator as well as a conscientious researcher. However, I still had many questions and uncertainties about how a successful relationship would develop between my co-teacher and me and which models of co-teaching would make an impact within our

classroom. Would my co-teacher and I be compatible? Would my co-teacher and I feel more comfortable implementing certain co-teaching strategies than others? Would my co-teacher and I both feel a sense of equality when it comes to sharing classroom instruction and responsibilities? As a result of these questions and uncertainties, I developed the following research question: What are the observed and reported experiences of a co-teaching relationship between a certified regular education teacher and a certified special education teacher when teaching an inclusionary science class?

Literature Review

Introduction

Because federal law requires that special needs students be served in the “least restrictive environment,” special education students are often educated alongside regular education students in the general education classroom in which all students are given access to the general education curriculum (Arguelles, Hughes, & Schumm, 2000). This type of educational environment is commonly referred to as an inclusionary setting (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010). A structure that facilitates this process is co-teaching. In co-teaching, one regular education teacher and one special education teacher instruct a classroom at the same time (Magiera, Lawrence-Brown, Bloomquist, Foster, Figueroa, Glatz, Heppler, & Rodriguez, 2006). Co-teaching offers a variety of models that can be used in order to cater to the educational needs of students, as well as the differing personalities of each teacher in a co-teaching relationship (Treahy & Gurganus, 2010). Developing a strong and meaningful co-teaching relationship not only benefits students, but can also serve as a way for teachers to improve as professionals and renew their enthusiasm for teaching (Arguelles, Hughes, & Schumm, 2000).

Co-Teaching

Co-teaching can be defined as “the collaboration between general and special education teachers for all of the teaching responsibilities of all students

assigned to a classroom” (Gately & Gately, Jr., 2001, p. 41). When teaching in a co-taught environment, both teachers share all responsibilities that are associated within the classroom. These responsibilities include planning, classroom management, and the implementation of instruction. When done effectively, co-teaching not only adds to the experience and success of students, but can also provide teachers with a new sense of enthusiasm and a renewed outlook on the teaching profession (Arguelles, Hughes, & Schumm, 2000). A key component of the co-teaching process is creating an environment that promotes equality and improves the self-esteem of all students. Due to the fact that full inclusion classrooms contain both regular education and special education students, co-teachers must be aware of the desire of both special needs and gifted students to be accepted among their regular education peers. In 2009, an action research study was conducted in a New York City school in which a second grade, regular education teacher and her co-teacher analyzed how truly “inclusive” their second grade class was during one year of co-teaching. By implementing various methods, these teacher researchers attempted to create meaningful relationships which would lead to special education students feeling accepted and valued among their peers. An analysis of the data collected revealed that while the regular education students had become more accepting towards special education students, deeper cross-level friendships were hard to form due to speech and language barriers as well as socioeconomic backgrounds (Zindler, 2009).

Kloo and Zigmund (2008) state:

For it to be a productive use of the special education teacher's talents and training, co-teaching must be dynamic, deliberate, and differentiated. It must unite the science of specially designed instruction and effective pedagogy with the art of reorganizing resources and schedules to provide students with disabilities better opportunities to be successful in learning what they need to learn. (p. 16)

Also, in order to achieve success in the co-taught environment, it has been proposed that co-teachers need to “know” four essential areas in order to be successful: know yourself, know your partner, know your students, and know your stuff (Keefe, Moore, & Duff, 2004). Co-teaching is a challenge that requires teachers to take risks and to perform at times out of their comfort zones. This leads to co-teachers challenging themselves to improve as educators and to take the needs of all their students into careful consideration (Arguelles, Hughes, & Schumm, 2000). Experienced co-teachers believe that in order for a successful partnership to develop, both teachers must be aware of the advantages and disadvantages of co-teaching. Also, understanding the stages of co-teaching and being able to evaluate the co-teaching process leads to a successful learning environment for everyone.

Advantages of co-teaching. Combining both regular and special education students in the same class creates many advantages for both teachers

and students. Teachers have reported that through the implementation of co-teaching, it is easier to cope with unexpected transitions and interruptions that occur within the classroom (Welch, 2000). Also, special education teachers are able to develop relationships with all students in the class rather than just with special education students, which allows them to gain a greater perspective of the classroom demands and the needs of every student (Welch, 2000).

Students can experience many advantages when exposed to the co-teaching process. When combined with regular education students, special education students tend to lose the label of being different and are given the opportunity to perform at higher levels of achievement (Nichols, Dowdy, & Nichols, 2010). In a co-taught environment, students experience the benefit of having two teachers rather than just one. This allows students who are struggling to receive extra attention from both teachers while still being included with the rest of their peers.

A study conducted in 1999 in the northern Colorado area compared two co-taught elementary classrooms at the primary level. Each classroom contained regular education students, hearing impaired students, and two co-teachers. After conducting the study for one year, findings showed that co-teaching allowed teachers to respond to the diverse needs of all students, provided another set of hands and eyes, lowered the teacher-student ratio, and allowed each teacher to deliver their expertise to the needs of all students (Luckner, 1999). According to

Luckner (1999), “Co-teaching provides teachers with a sense of shared responsibility and collegial support from someone with whom they share both successes and frustrations” (p. 27).

In 1997, a three year study was carried out that involved 23 co-teaching teams in eight Virginia school districts. Of the 23 teams, 18 taught at the elementary level and 7 taught at the middle school level. As a result of this study, many benefits of co-teaching were identified. It was determined that co-teaching benefited special education students by assisting them in feeling positive about themselves, enhanced their academic performance, improved their social skills, and helped to create stronger peer relationships (Walther-Thomas, 1997). As a result of co-teaching, these teachers felt a high degree of satisfaction for having helped students to succeed in the co-taught setting. Also, many teachers expressed that having the ability to work closely with another teacher was the best professional growth opportunity of their careers (Walther-Thomas, 1997).

Disadvantages of co-teaching. Although co-teaching places students at a higher advantage in achieving high academic standards, there can be drawbacks. The pressure of high stakes testing may force teachers to move through mandatory curriculum quickly and, as a result, special education students can be left behind. In today’s education, there is great emphasis put on high stakes testing. Therefore, sometimes it is looked upon as the responsibility of the special education teacher only to help these students when in actuality both teachers must

take responsibility (Nichols, Dowdy, & Nichols, 2010). Co-teaching involves a great deal of planning between both teachers. If teachers are not given enough common planning time, the delivery of instruction in the classroom can begin to suffer. Also, it has been reported that even though special education students can benefit from a co-taught environment, they may still need additional support in a pull-out setting (Welch, 2000).

As previously mentioned, the study conducted in 1997 that involved eight Virginia school districts found many advantages to co-teaching, but also revealed many disadvantages. According to Walther-Thomas (1997), teachers reported the difficulty with scheduled planning time, especially at the elementary level. Planning periods were not long enough to accommodate the planning for several subject areas. Also, most participants indicated that there had been very few opportunities for staff development in which they could increase their co-teaching skills (Walther-Thomas, 1997). Finally, many teams expressed a problem with student scheduling. Teacher participants indicated that assigning student placements takes thoughtful consideration and they often encountered resistance from staff members who were responsible for making scheduling decisions (Walther-Thomas, 1997).

Stages of co-teaching. A co-teaching relationship is a process that requires time in order to develop. Gately and Gately, Jr. (2001) have identified three stages that they believe every co-teaching relationship will eventually

experience. In the first stage, which is called the beginning stage, both teachers are developing a sense of boundaries and are trying to determine what their roles are in the classroom. The communication between both teachers at this stage can at times be guarded and careful.

The second stage is described as being the compromising stage. At this point, both teachers are beginning to develop a trust and confidence in one another. They are beginning to realize that in order to create a successful co-taught environment, there must be a sense of “give and take.”

The last stage is the collaborative stage. When co-teachers reach this stage, they are openly communicating with each other, there is a high degree of comfort, and both teachers have confidence in one another. At this stage, it is very difficult for someone to discern between who is the regular education and special education teacher.

Evaluating co-teaching. Being able to evaluate co-teaching relationships is crucial to the success of co-teachers. In order to be successful in the co-teaching environment, it is suggested that educators follow particular guidelines and incorporate strategies that will allow for thoughtful and meaningful reflection. These strategies can include interviews, surveys, checklists, observations, and journaling.

Interviews and surveys can be used in order to identify the strengths that exist in a co-teaching relationship, but at the same time can be utilized to identify

the weak areas that need to be improved upon (Salend, Gordon, & Lopez-Vona, 2002). During these interviews and surveys, teachers can express their feelings on the academic and social improvements of their students.

A Best Practices checklist is another reflection method that co-teachers can use. These checklists can help co-teachers to identify the overall quality of their relationship and the programs they are implementing in their co-teaching program. Salend, Gordan, and Loez-Vona (2002) believe that these checklists can assist in pointing out strengths and weaknesses that can provide guidance as to how both teachers can improve individually and as a co-teaching team.

Co-teachers can invite other teachers to visit and observe their co-taught classrooms. Gaining the perspective and opinions of colleagues can guide co-teachers in continuing to implement what is working, and to change methods that are not successful. Salend, Gordan, and Lopez-Vona (2002) suggest that it is helpful to have more than just one teacher observe a co-taught environment in order to ensure multiple perspectives and adequate feedback.

Keeping an ongoing journal of the events that transpire within a co-taught classroom can assist co-teachers in analyzing and reflecting upon their daily teaching techniques and interactions with students. Also, journaling provides co-teachers with an avenue to brainstorm new ideas that will enhance their co-teaching relationship (Salend, Gordon, & Lopez-Vona, 2002).

As a co-teaching relationship evolves, various strategies can be utilized in order to strengthen and cultivate the rapport that has been established within the co-teaching partnership. Paying attention to parity is critical in maintaining a successful co-teaching relationship (Stivers, 2008). The absence of equality between co-teachers can be evident to all observers, especially students. When this occurs, the co-teaching relationship is not perceived as a partnership between equals. Stivers (2008) suggests that maintaining equality within a co-teaching relationship requires paying attention to the little things that can mean a lot, such as both teachers' names on the classroom door, equal input when completing report cards, and both teachers having adult-sized desks and chairs in the same classroom. Also, acknowledging problems early and honestly will assist in keeping the lines of communication open between co-teachers and will help to keep the focus on the success of the students (Stivers, 2008).

Co-Teaching Strategies

Within co-teaching, there are many models that can be used in order to instruct students. Each model creates a different dynamic within the co-taught classroom, and the ways in which both teachers interact with students varies with each model. These various models also provide multiple benefits to all students.

Team teaching. When co-teachers implement the team teaching model, both teachers share instruction time, and instruct the whole class throughout the course of a lesson (Treahey & Gurganus, 2010). Both teachers must become

familiar with the curriculum due to the fact that team teaching requires both teachers to be teaching at the same time. A common misconception of team teaching is that each teacher is taking turns teaching the students. Team teaching is only successful when both the regular and special education teachers are fully engaged in the teaching of content material (Gaytan, 2010). Co-teachers using this method are constantly interacting with each other and are engaging students in critical thinking. Also, it was reported in a 2012 study that team teaching provides both educators with the flexibility to take on various roles in the classroom in which both individuals are in charge of classroom management and teaching (Rytivaara, 2012).

One teach, one assist. During the one teach, one assist model both teachers are present in the classroom (Treahey & Gurganus, 2010). However, one teacher takes the lead and delivers all instruction to the entire class throughout the lesson. The other teacher circulates around the classroom making sure to assist students who need additional help and refocus students who are not paying attention.

Alternative teaching. Alternative teaching requires both teachers to divide the class into two groups. One teacher works with a smaller group that requires pre-teaching instruction, supplementary work, or enrichment activities (Treahey & Gurganus, 2010). The other teacher then instructs the larger group during the entire lesson.

Parallel teaching. When implementing parallel teaching, students are divided into two equal groups. Each teacher is assigned a specific group to teach during the entire lesson. During parallel teaching, both teachers are presenting the same content material but are only instructing half the class (T Leahy & Gurganus, 2010).

Station teaching. Students are divided up into three small groups for station teaching. Each teacher works with a specific group for a specified amount of time while the third group is engaged in independent work (T Leahy & Gurganus, 2010). Students then rotate to a different station throughout the course of the lesson until they have completed each station. Station teaching requires more planning time than the other co-teaching models due to the fact that students need to be provided with engaging activities to complete independently.

One teach, one observe. When the one teach, one observe model is incorporated into the co-taught classroom each teacher has a specific role to fulfill. One teacher must lead the large group instruction and provide all necessary instruction to the students. The other co-teacher engages in the task of collecting academic, behavioral, or social data on particular students or the entire class (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010).

Attitudes

The co-teaching process affects not only students, but also teachers. Co-teachers must be aware of their attitudes and their students' attitudes towards the

co-teaching process (Austin, 2001). Understanding and being cognizant of these attitudes will assist teachers in improving their co-teaching methods and will lead them in understanding the best and most effective ways in which to engage their students.

During the 2004-2005 school year, a study was conducted within a southeastern U.S. public school system that included seven schools: four elementary schools, one middle school, one junior high school, and one high school. The purpose of this action research was to identify teachers' and students' perspectives of co-teaching and the effectiveness of the co-teaching process. The participants in this study included 31 general education teachers, 14 special education teachers, and 58 special education students. The data that were analyzed in this study included the academic and behavioral performance of student participants, and teachers' and students' responses to surveys. According to survey responses, both teachers and students expressed their beliefs that co-teaching increases students' self-confidence and leads to better behaviors in the co-taught classroom (Hang & Rabren, 2009). Teachers also indicated that comprehensive planning and classroom issues, such as responsibility for management of classroom behavior, are important for the success of co-teaching. It was also determined that special education students' academic performance did show some improvement over the course of the school year. This study presented data that suggest that co-teachers and students have positive perspectives of co-

teaching, and that the co-teaching process provides special education students with adequate support for academic success (Hang & Rabren, 2009).

Student attitudes. The way in which students react to the implementation of co-teaching can determine whether or not it will succeed or fail. A 2012 study reported that students in a suburban school district referred to the general education teacher in their co-taught classes as the real or head teacher (Embury & Kroeger, 2012). One student stated that the special education teacher's job was to help students who do not learn as fast as others. Also, it was determined that the behavior and interactions co-teachers had toward one another had a direct impact on students' perceptions of co-teaching.

In another study, drawings that were created by elementary students were utilized in order to gain a better perspective of how they perceived co-teachers. The drawings created by the students depicted teachers as being friendly, optimistic, approachable, and inviting. Also, students depicted co-teachers sharing the role of instructor and considered both individuals to be their teachers (Bessette, 2008).

Teacher attitudes. The attitudes and perceptions that teachers have toward co-teaching can dictate whether or not co-teaching will be a successful experience. A 2001 survey of co-teachers in northern New Jersey reported that 92 co-teachers believed that the general education teacher does more teaching in the inclusive classroom, while the special education teacher is primarily responsible

for the modifications of lessons and remediation of learning difficulties (Austin, 2001). The general consensus was that co-teachers benefited from working together, however the level of support from administration and the lack of common planning time were problematic.

An action research study conducted in 2006 examined the perspectives and opinions of 20 teachers at an urban elementary school in New York who had worked in the co-taught environment. Based on these interviews, it was determined that communication, flexibility, respect, and organization are four elements that are necessary in any successful co-teaching relationship (Magiera, Lawrence-Brown, Bloomquist, Foster, Figueroa, Glatz, Heppler, & Rodriguez, 2006). Also, it was stressed that co-planning time is extremely important in the co-teaching process, which allows for teachers to formulate ideas and decide how to best meet the needs of the students in their classroom.

Friend, Cook, Hurley-Chamberlain, and Shamberger (2010) found that three themes have emerged when interviewing co-teachers about their outlook on the co-teaching process. First, teacher compatibility is crucial in a successful co-teaching relationship. The more comfortable one is with the co-teacher, the more effective the communication and planning process will be.

Second, educators discussed the roles and responsibilities of the teacher. Co-teachers indicated that special education teachers tend to take on the role of

helper rather than co-teacher, which is possibly a result of their lack of content knowledge (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010).

The last theme that Friend, Cook, Hurley-Chamberlain, and Shamberger (2010) identify is that outcomes for students who are exposed to a co-taught environment are generally positive. There is also less of a stigma placed on special education students and more individualized time and attention given to all students.

Teaching Elementary Science

In 2007, a survey of Northern California elementary teachers revealed that time devoted to teaching elementary science was significantly less when compared to other subject areas. Of 923 elementary teachers surveyed, 80 percent said that they spent less than one hour each week teaching science (Asimov, 2007). A fourth grade teacher involved with this study stated that, “The demands of No Child Left Behind have made it almost impossible to devote enough time to science” (Asimov, 2007, para. 18). Due to limited instructional time devoted to science, teachers are faced with the challenge of making their science instruction as effective and engaging as possible.

A 2012 study conducted at an elementary school in the southeastern part of the United States suggests that an inquiry-based curriculum entitled *Electric Circuits Kitbook* had a significant positive impact on students’ understanding of science concepts and their attitudes towards science (Aydeniz, Cihak, Graham, &

Retinger, 2012). Researchers determined that allowing students to engage in a curriculum that was inquiry-based and hands-on helped students to stay engaged and also assisted elementary students with learning disabilities to improve their conceptual understanding of science concepts (Aydeniz, Cihak, Graham, & Retinger, 2012).

Strategies for Developing Inquiry-Based Activities for Science

When using an inquiry-based approach to teaching, teachers can utilize various strategies in order to create inquiry activities. These activities will encourage students to stay engaged in the learning process and will allow teachers to differentiate instruction in order to meet the needs of all students in their classroom (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012).

Design challenge. Design challenge activities center around having students develop a specific product (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012). In order to complete the task, students need to acquire certain background knowledge that will assist in completing the design challenge. Having students work in groups, with each group member having a specific job, promotes responsibility and cooperative learning.

Intrinsic data space. Intrinsic data space activities encourage students to explore pieces of data that promote meaningful inquiry. Students can then be given a task to complete and can be challenged to make conclusions about the

data they have been presented with (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012).

Discrepant event. Discrepant event activities usually pose the question, “What is going on?” The teacher may perform a particular experiment, and based on what the students witness, they must discuss and question what happened and the way in which it happened. Students can also be given the opportunity to illustrate what they saw, and discuss their theories with other students (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012).

Product testing. Activities involving product testing encourage students to evaluate and compare the performance of particular products (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012). Not only are students responsible for comparing items, but they must also quantify the comparisons they have recorded. Based on these comparisons, students can then determine which product is of a better quality.

Protocols. A protocol is a procedure that is implemented in order to collect data (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012). Protocols can be applied to a variety of situations and can be used when carrying out further research that can be both teacher and student driven. Learning specific protocols can assist students in not only answering scientific questions, but can also lead to the development of a brand new outlook on the natural world.

Summary

Co-teaching is a complex method of instructing both regular and special education students, which takes an adequate amount of time to master. According to Gately and Gately, Jr. (2001), co-teaching is defined as “the collaboration between general and special education teachers for all of the teaching responsibilities of all students assigned to a classroom” (p. 41). When two teachers engage in the co-teaching process, there are many ideas and concepts that must be researched and considered. Within the co-teaching process there exists advantages and disadvantages. Welch (2000) believes that co-teaching assists in dealing with unexpected situations that occur within the classroom due to the fact that two teachers are present. Also, co-teaching gives the special education teacher the opportunity to form relationships with all of the students in the classroom, not just the special education students. However, there are times when the responsibility of educating special education students falls solely on the shoulders of the special education teacher (Nichols, Dowdy, & Nichols, 2010). Furthermore, co-teaching requires a significant amount of co-planning time. Teachers often find co-planning a struggle due to other obligations that they must fulfill as professionals (Welch, 2000).

Treahy and Gurganus (2010) identified the following co-teaching strategies that can be utilized in the co-taught classroom: (a) team teaching, (b) one teach, one assist, (c) alternative teaching, (d) parallel teaching, and (e) station

teaching. Friend, Cook, Hurley-Chamberlain, and Shamberger (2010) also identify one teach, one observe as an effective strategy that can be implemented during co-teaching. Co-teachers need to take the time to reflect on these various teaching methods and determine which ones will best suit their co-teaching relationship and the needs of their students. Also, Salend, Gordon, and Lopez-Vona (2002) suggest that co-teachers constantly evaluate and reflect on the development of their co-teaching relationships through the use of interviews, surveys, best practices checklists, peer observations, and ongoing journals. Through the implementation of these various strategies, co-teachers can gain a greater understanding of the co-teaching model, which will ultimately lead to success in their co-teaching relationships and in educating both regular education and special education students.

Due to the demands of high stakes testing, the time devoted to teaching science at the elementary level has been significantly decreased (Asimov, 2007). In order to make the teaching of science as effective as possible, the implementation of inquiry-based science curriculums has been suggested (Aydeniz, Cihak, Graham, & Retinger, 2012). The following are inquiry-based teaching strategies that can be utilized in an inquiry-based science curriculum: (a) design challenge, (b) intrinsic data space, (c) discrepant event, (e) product testing, and (f) protocols (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012).

Methodology

Introduction

The purpose of my action-based research study was to examine the relationship that developed between my co-teacher and me as we taught a fifth grade inclusionary science class during the first half of this school year.

According to Arguelles, Hughes, & Schumm (2000), it has become a common practice for special education students to be educated alongside regular education students in the general education classroom. As a result, regular education and special education teachers are often paired together and co-teach in the same classroom. The main intent of this study was to observe and reflect upon the growth of a co-teaching relationship between a regular education teacher and special education teacher. Based on these observations, both co-teachers were given the opportunity to grow not only as a team, but also as individuals.

Setting

This research study took place in an urban school district that is located in the eastern section of Pennsylvania. This particular school district has four elementary schools, one middle school, and one high school. The total enrollment is approximately 5,800 students, and class sizes average approximately 22 students, but this varies from school to school. Students within this district tend to come from middle income families. I co-teach a fifth grade inclusion science class in an elementary school that contains approximately 750 students, grades K-

6. Science classes are grouped according to students' ability level. My co-teacher and I instructed a class that included 26 students. This was an inclusionary science class, containing a mixture of regular education and special education students. The science class was 35 minutes in length and was taught on a daily basis. Desks were arranged into six cooperative working groups. Students were provided with current, up-to-date materials, such as textbooks and manipulatives throughout the course of this study.

Participants

Due to the fact that this study focused on the relationship development of a co-teaching partnership, the only participants for this study included my co-teacher and me. My co-teacher had been employed in the school district for many years and had over twenty years of special education teaching experience.

Procedures

Before conducting my research study, I received permission from my building principal (Appendix A), as well as the permission of my co-teacher (Appendix B). During the course of this study, my co-teacher and I implemented the Pearson Interactive Science Series, which is an inquiry-based science curriculum that our school district just implemented this year.

When beginning my research, my co-teacher and I took some time to discuss our feelings and attitudes that we had toward the co-teaching process. Our discussions included past experiences and expectations for the upcoming

science class that we would co-teach together. We each completed a data collection worksheet that served as baseline data for the development and growth of our co-teaching relationship. A personality survey was also completed by my co-teacher and me, which helped us to measure our compatibility from the outset.

During my research, my co-teacher and I conducted weekly co-planning meetings in which we discussed what was going to be taught for the upcoming week and what strategies we would implement when teaching. These co-planning meetings also served as a way for my co-teacher and me to touch base on what we felt was going right and wrong within the classroom and the co-teaching process.

Throughout the course of this research, observations that were made by my co-teacher and me were documented with great detail in a field log, and served as a basis in the development of our relationship and the implementation for different co-teaching strategies. Co-teaching summaries were also created at the conclusion of the study in which we each explained the relationship that we felt had developed during our time together as co-teachers.

Data Sources

Data collection worksheets. At the beginning of my study, my co-teacher and I each completed a co-teaching data collection worksheet that served as baseline data for the development of our co-teaching relationship (Appendix C). We had to list the individual strengths that we each could bring to a co-teaching relationship. We listed the perceived strengths of one another and three

obstacles that we anticipated in the development of our co-teaching relationship. A goal was also created as to how one of these obstacles could be overcome. We then discussed these obstacles again at the conclusion of my research and evaluated the outcomes.

Surveys. A personality survey was completed by my co-teacher and me at the beginning of my research (Appendix D). This survey provided both of us with an idea of how compatible our personalities were and how this could benefit or hurt the growth of our co-teaching relationship.

Co-planning meetings. Throughout this study, my co-teacher and I met one morning every week in order to co-plan the following week's lessons. These meetings served as important times in which we were able to discuss any issues concerning the implementation of specific science material, co-teaching strategies to be used or changed, and the progress of our relationship. All discussions and observations were recorded in my daily observation log.

Observation log. During this study, an observation log was kept on a daily basis in which I recorded several pieces of data. These data included my observations, observations made by my co-teacher, and conversations that took place between my co-teacher and me. Within my log, I also discussed my personal reflections, as well as those of my co-teacher, which helped to shed light on the growth of our co-teaching relationship. This observation log was written in a narrative format and served as the backbone for my research study.

Co-teaching summaries. At the conclusion of this research study, my co-teacher and I both created a summary in which we each described the co-teaching relationship that had formed (Appendix E). In the summaries, perceived teaching roles and personal reflections were discussed.

Summary

The purpose of my research study was to examine the growth and development of the relationship that formed between my co-teacher and me. In order to achieve this goal, data collection worksheets were completed, which provided initial information about our co-teaching relationships. Surveys were also utilized in order to determine the compatibility of my personality with that of my co-teacher. A detailed observation log was kept on a daily basis in which teacher observations, reflections, and conversations between my co-teacher and me were recorded. At the conclusion of this research, my co-teacher and I each prepared a summary in which we described the co-teaching relationship we had formed throughout the course of this study and the teaching roles that had been established.

Trustworthiness Statement

McNiff and Whitehead (2010) recognize the fact that all researchers must articulate how their research is valid and trustworthy, and is not just their opinion. In order to fully ensure the trustworthiness of my action research study, certain guidelines needed to be met. When developing my thesis proposal during the spring semester of 2013, I was unsure whether or not I would be returning to the same special education position that I was filling during that particular school year. Although there was uncertainty regarding my employment for the 2013-2014 school year, I still proceeded in developing my thesis proposal. At the beginning of the 2013-2014 school year, I was offered a fifth grade regular education position in the same school district I had taught in the previous year. As a result, I amended my research study and resubmitted my thesis proposal to Moravian College's Human Subjects Internal Review Board (HSIRB). Upon receiving approval from the HSIRB, I discussed my research study with the principal of my school. She was well aware of the action-based research that is required in the Master of Education program at Moravian College and was in total support of my research study. After submitting my consent form to my building principal, I was required to change the direction of my research yet again due to the fact that my school district does not allow any individual student data to be collected during research studies. Therefore, I decided to gear my research towards observing the relationship that would develop between my co-teacher and

me. My updated consent form explained the need for my study, that confidentiality would be maintained throughout the study, and that my co-teacher could withdraw from the research study at any time. Upon receiving my amended consent form, my principal approved and signed the consent form (Appendix A). I also conducted a meeting with my co-teacher and explained my research study. She fully agreed to participate during the study and felt very excited to be implementing action-based research within the inclusionary classroom. She also signed the consent form (Appendix B) and agreed to be a participant in my action-based research study.

Prior to beginning my research and collecting data, I spent the first two weeks of school getting to know the students that my co-teacher and I would be working with. My co-teacher and I also needed to become comfortable with each other and familiarize ourselves with our teaching styles. I personally felt that beginning my research too early would hurt my study in the long run. Taking an adequate amount of time in order for my co-teacher and I to get to know each other, our students, and for our students to get to know us, created an environment that allowed everyone to feel more comfortable and allowed for the development of trust.

In order to be sure that my research was effective and credible, I implemented the strategy of triangulation. The method of triangulation ensures that multiple forms of data are being collected in order to answer the research

question being posed (Hendricks, 2009). My data were collected through data collection worksheets (Appendix C), personality surveys (Appendix D), co-planning meetings, an observation log, and co-teaching summaries (Appendix E). On a daily basis, I recorded my observations and thoughts as soon as I left my classroom for the day. By maintaining continuous, ongoing reflection, it was my goal to create outcome and catalytic validity within my research (Hendricks, 2009). I also made sure to discuss with my co-teacher what she observed and felt each day during the research study, and what her suggestions were as we moved throughout the study.

The completion of my literature review was very important in conducting my research. Prior to my research study, I examined many different methods of co-teaching, such as team teaching, parallel teaching, station teaching, alternative teaching, one teach, one observe and one teach, one assist. I also examined many research studies that had been conducted on co-teaching. Many of these research studies focused on the advantages and disadvantages of co-teaching, as well as teacher and student attitudes towards the co-teaching process. I made sure to share all of this information and my entire thesis proposal with my co-teacher, which allowed for both of us to be exposed to the same information prior to the start of the research study.

Prior to beginning my action-based research, my co-teacher and I agreed that students needed to be actively engaged in the learning process. We did not

want the students in this research study to take on the role as passive learners. Therefore, my co-teacher and I decided to implement inquiry-based learning throughout our science classes, which would parallel the inquiry-based curriculum that was being implemented. In order to achieve this design challenge, intrinsic data space, discrepant event, product testing, and protocol activities were utilized on a consistent basis (Meyer, Kubarek-Sandor, Kedvesh, Heitzman, Pan, & Faik, 2012). Also, students worked in cooperative groups, shared ideas, and brainstormed ways in which to solve particular problems. Every lesson that was taught revolved around a particular question. Students were also encouraged to keep this question in mind as each lesson progressed and new material was introduced.

Prior to beginning my action-based research, I had always been under the impression that if two teachers were teaching in the inclusionary classroom, students would automatically be at a greater advantage over other students and would have a higher motivation level to succeed. Realizing that this is not always the case, I knew that I would need to become comfortable while being uncomfortable. I needed to be open to new experiences and adjust my teaching methods when appropriate.

Finally, on a weekly basis, I met with my professor and also my research support group. This allowed me to share my concerns and data collection with fellow researchers who could offer advice and support.

My Story

Ready, Set, Go

It has been said that a journey of a thousand miles begins with a single step. My action research journey began one year ago in the Spring semester of 2013. During that time, I was filling a long term substitute position as an elementary special education teacher. Up to that point, I had been away from the many demands of special education for several years. But after accepting that position, I found myself back in the role as a special education teacher and managing all the responsibilities that go along with special education. The last time I had been in this role was my first year out of college when I taught special education at the secondary level. At that time, I had become comfortable with several of my responsibilities except for one, co-teaching. When it came to co-teaching, I always felt uneasy and unsure about being in another teacher's classroom and trying to teach together at the same time. I realized that this uneasiness was caused not by my attitude or the attitudes of my fellow co-teachers, but rather by the lack of understanding and knowledge we had about the process of co-teaching and each other. So when I had the opportunity to co-teach once again, I felt that co-teaching was meant to be the central focus of my action research study. During the spring of 2013, I developed my action research, hoping that I would be able to return the following school year to put it into action. During that summer, I was offered a regular education position in fifth

grade at the same school. It was an offer I could not refuse. However, one of my first thoughts were, “What about my action research study?” After discussing the situation with my principal, I was informed that I would be teaching science for a portion of the school day and I would have a special education teacher with me for that period of time. Therefore, I changed my study to fit my current position, but I was thrilled that I would be able to continue on with my research study.

However, as I have learned throughout this journey, you can never become too comfortable. Right before I began my research, I was informed that my school district did not allow any individual data to be collected on students during the course of a research study. So once again, I needed to alter the course of my action research. Due to the fact that I could not collect any individual data on students, I turned the focus of my research to the relationship that would form between my co-teacher and me over the course of the study. I have also come to realize that all the struggles and obstacles I went through in order to change the course of my study, even before my research began, were a blessing in disguise. Turning the focus on studying the development of our co-teaching relationship forced me to step out of my comfort zone and confront many of the insecure feelings I had developed over the years about co-teaching. Furthermore, I feel that this study was so unique, due to the fact that students were taken out of the research and the spotlight fell on the relationship that existed between two teachers who worked incredibly hard to improve as professionals, educators, and

individuals, which in the long run will have a direct effect on all the students they teach.

Introducing the Study

Once I had a clear focus that my research study was going to be geared towards the developing relationship between my co-teacher and me, the next step was to meet with my co-teacher and inform her about the study. To this point, my co-teacher had over twenty years of teaching experience in the special education field and had many opportunities to co-teach throughout her career. Going into this study, I knew that she would have a lot to offer, and I was very interested to have a chance to share my study and listen to her ideas and insights.

On a Thursday afternoon, after one of our beginning of the year in-services, my co-teacher and I discussed the upcoming study and school year. As I was explaining the research, my co-teacher would stop me periodically and ask about the various sections I was discussing. She informed me that she had never really taken part in a study like this before and was interested in the journey ahead. I explained that I would need to collect some data that would be included in my research. A lot of this information would include self-reflection on our teaching roles, daily observations, and the development of our relationship. She was very open and willing to supply as much data as she could. One of the most important parts of our initial meeting was to discuss our expectations and how we wanted to approach the beginning of the school year, which was quickly

approaching. She felt that it was very important to take some time to get to know our students before diving into our research. We also felt that because this research study was only going to focus on our relationship, it would be more beneficial not to inform the students about the study, which would allow for a more authentic study.

By the end of our initial meeting, I could tell that my co-teacher had a make-it-work attitude and was looking forward to the process ahead. I informed her that the only thing left to do was for her to sign the consent form to participate in the study. She said that she would be more than happy to do so. Our journey was underway!

Pre-Study Surveys

In order to gain a greater understanding of each other, my co-teacher and I completed a variety of surveys at the beginning of this research study. This information provided us with a foundation and a starting point from which we could begin to build our co-teaching relationship.

Data collection sheet. After having our initial meeting, my co-teacher and I each completed a co-teaching data collection worksheet (Appendix C). This worksheet asked a number of questions that pertained to various aspects of co-teaching. The data collected pertained to my strengths, the co-teacher's strengths, possible obstacles that may develop in the co-teaching relationship, and creating a goal as to how to overcome an anticipated obstacle. Due to the fact that

some of the questions required background knowledge to be obtained by each co-teacher, we thought that it would be best to wait two weeks before completing the data collection sheet. This would allow us to begin teaching together and be given the chance to get to know one another and observe the behaviors we each exhibited in the classroom. We both liked that fact that this data collection survey required us to not only reflect on each other's actions, but to also self-reflect on our own strengths and ideas about the co-teaching process. After about two weeks of co-teaching, we both discussed our responses to the various questions (see Table 1).

Table 1

Data Collection Sheet Responses

RESEARCHER	CO-TEACHER
<p><u>Strengths:</u></p> <ul style="list-style-type: none"> ➤ Organized with materials ➤ Conscientious ➤ Open to new ideas ➤ Experience in both special and regular education <p><u>Strengths of your colleague:</u></p> <ul style="list-style-type: none"> ➤ Conscientious ➤ Good attention to detail ➤ Assisting students' needs ➤ Organization <p><u>Anticipated Obstacles:</u></p> <ul style="list-style-type: none"> ➤ Learning new science curriculum ➤ Co-planning time ➤ Implementing different models of co-teaching <p><u>Goal:</u></p> <ul style="list-style-type: none"> ➤ Develop a relationship with my co-teacher that is natural and flows when we are teaching 	<p><u>Strengths:</u></p> <ul style="list-style-type: none"> ➤ Recognize student needs ➤ Simplify and modify curriculum ➤ Supplemental materials <p><u>Strengths of your colleague:</u></p> <ul style="list-style-type: none"> ➤ Organized ➤ Maintains pace of instruction ➤ Technologically savvy ➤ Presents lessons with enthusiasm <p><u>Anticipated Obstacles:</u></p> <ul style="list-style-type: none"> ➤ Time to plan effectively ➤ Allow for larger teaching role of special education and regular education teacher <p><u>Goal:</u></p> <ul style="list-style-type: none"> ➤ Could not determine goal for larger teaching roles due to the implementation of new science curriculum and regular education teacher taking on lead teaching role

Surprisingly, we had many similarities between our answers, but I determined that we were a bit awkward sharing our observations. This was definitely a “feeling out” period for us, and our comfort levels were still in the early stages of development.

Personality survey. The day after our initial meeting my co-teacher approached me with a request. She explained that she felt it would be very beneficial to the development of our teaching relationship if we would each complete a self-assessment that would give an overall description of our personalities. Over the course of teaching special education for 20 years, she found one thing to be true; the personalities that exist in a co-teaching relationship will either make you or break you. I took these words to heart and, as a result, we both participated in completing the personality survey (Appendix D). This assessment not only measured one’s personality, but it also provided strategies that could be utilized in order to create better communication with someone who possesses a different personality from your own. In addition to these strategies, the survey included descriptors and stressors for each type of personality. These descriptors and stressors allowed each individual to be more aware of the characteristics of various personalities, which aids in healthier communication. After completing the survey, point totals were assigned a particular color (gold, green, blue, or orange). The color of one’s highest point total is your personality

color. The survey included a detailed description of each personality color. The personality surveys were then compared (see Figure 1).

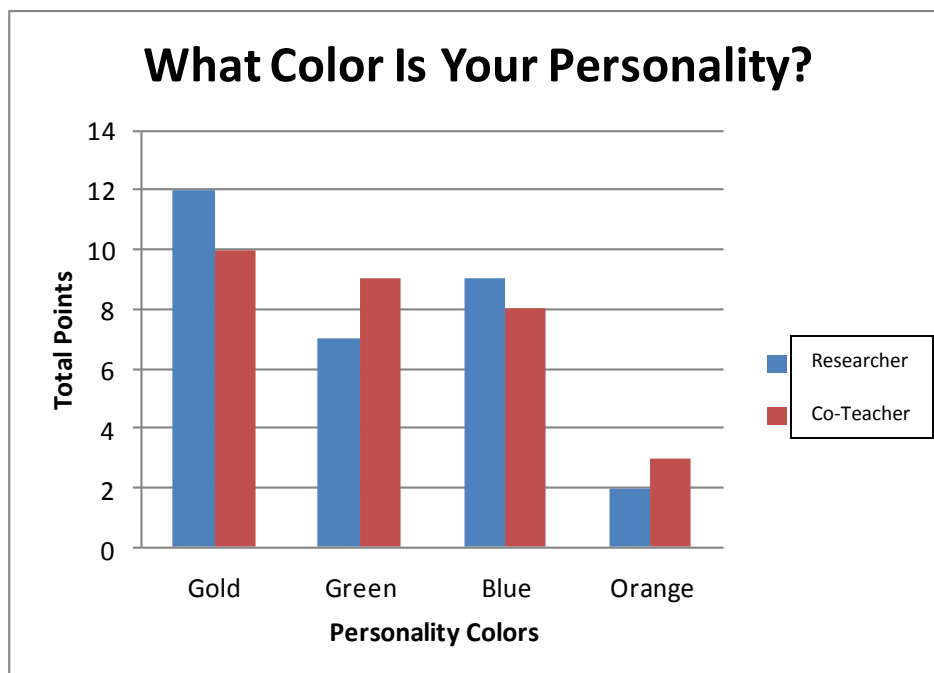


Figure 1. Comparison of Personality Surveys

I could tell from the data that my co-teacher and I had very compatible personalities. According to this survey, we both scored the most points in the gold column. Characteristics of a “gold” personality were thorough, productive, prepared, organized, loyal, dependable, and stable. After sharing this information with each other, we both felt that we were off to a good start due to our compatibility and were put more at ease due to the fact that we realized we shared some of the same personality characteristics.

Inquiry-Based Curriculum

At the beginning of this school year, my school district implemented a brand new science curriculum. The curriculum that was adopted was an inquiry-based program. For my co-teacher and me, this was both a good thing and a bad thing. We felt that it was going to be very important throughout the course of this year to keep students motivated through engaging activities and lab experiments. Over the years, my co-teacher had the opportunity to teach science classes, and she found that differentiating the instruction with inquiry-based activities keeps the students interested and motivated. I absolutely agreed with this fact. So when we realized that the district adopted an inquiry-based science curriculum, this fell right into our plan. However, the bad thing was that we both needed to learn an entirely new curriculum in addition to carrying out many of the beginning of the year formalities, as well as conducting this research study. We knew it would be a challenge, but certainly not impossible.

We decided that each science lesson would revolve around a particular question that would lead students in discussion and cooperative learning activities. We also felt that implementing one lab activity a week would parallel the inquiry-based curriculum nicely and would assist in keeping the students engaged. A lot of these labs would include many different types of inquiry-based activities, such as design challenge, intrinsic data space, discrepant event, product testing, and protocols (see Table 2). Being aware of these various forms of

inquiry-based activities would assist my co-teacher and me in having a better understanding of the curriculum and carrying out the teaching of the material.

Table 2

Inquiry-Based Learning Activities

Type of Inquiry-Based Activity	Lab Activity
Design Challenge	In groups, students used the design process to create paper airplanes. Each airplane was then tested.
Intrinsic Data Space	Students needed to determine how sand can be separated from water.
Discrepant Event	Students completed a lab activity pertaining to chromatography (separation of mixtures).
Product Testing	Students compared the quality of various paper towel brands based on how much water was absorbed.
Protocols	Students used the scientific method to determine a specific sea creature.

Co-Planning

Each week, my co-teacher and I met to co-plan the following week's lessons. During these meetings, we not only discussed lesson plans, but also used the time to discuss any concerns about students, strategies being used, and the progress of our co-teaching relationship. Due to the everyday demands of teaching, my co-teacher and I would sometimes only get a chance to see each other during science class, but then would not be able to meet until we saw each other the following day. These co-planning meetings served as an opportunity for

my co-teacher and me to have genuine discussions about our own observations and the direction in which we felt our co-teaching relationship was heading.

Throughout this study, we both felt a sense of frustration due to the fact that there were several times when we were unable to meet. We discussed this on several occasions.

CO-TEACHER: Tomorrow morning I have an IEP meeting for a student on my caseload. I know that we have a co-planning meeting.

RESEARCHER: Well we will just have to go with it. If you happen to get done early I will be in my room until the kids get here.

CO-TEACHER: It is probably going to be a long meeting due to the fact that it is a high profile case.

RESEARCHER: I completely understand. I have been there. This is just a frustration that goes along with co-teaching.

CO-TEACHER: In all my years of teaching special education this is definitely a drawback. The fact that the special education teacher has certain responsibilities definitely interferes with the co-teaching process and the planning time.

My co-teacher made an additional observation regarding co-planning.

10/1/13 Tuesday, Day 26

I asked my co-teacher if she felt that the co-teaching process suffers due to the obligations that we both have outside of the time we have together when instructing science. She feels that the co-teaching process does suffer. She feels that the consistency of showing up on time for co-planning meetings and science class is jeopardized due to other obligations. Due to the fact that we both contain the same personalities based on the personality surveys we completed, she claims that she feels comfortable with the current situation knowing that my planning and organization will allow for us to have a successful science class even though we may miss a co-planning meeting or she is late for class on occasion.

My co-teacher and I found that there were times when we had to find small chunks of time in order to meet and discuss how things were progressing in the classroom. There was definitely a sense of flexibility that needed to be developed due to the fact that many of the responsibilities that my co-teacher had could potentially interfere with our co-planning time. The willingness to be flexible was an important key in developing and growing our co-teaching relationship.

Self-Reflection

Self-reflection was at the very center of my research study, from beginning to end. Due to the fact that my study only focused on two participants,

my co-teacher and me, self-reflection was a main ingredient in trying to improve the relationship that was forming. Daily reflection on my part and on the part of my co-teacher would lead us in discovering new avenues for growth. Throughout the course of this study, I kept a daily field log of various observations that were made, discussions that took place between my co-teacher and me, and my own personal reflections. The following excerpts were taken from my field log.

9/3/13 Tuesday, Day 6

During the course of class today I felt that at times I was saying “I” too much. I feel that by saying “I,” I am taking too much ownership of the class and students may begin to look at me as the only “real” teacher in the classroom. I mentioned this to my co-teacher and she claimed that she did not notice the terminology I was using. However, I am going to discipline myself to begin using “we” and “our” when talking to the students.

9/13/13 Friday, Day 14

In the past when I was the special education teacher in a co-taught classroom, I remember the regular education teacher using the word “I” quite a bit and I never liked how that came across to the students. I always would say that I would never do that if I was in the position of the regular education teacher. However, I have found myself using the word “I” at various times just out of mistake. So I have learned that being aware of the terminology you use in a co-taught classroom is so important but at the same time is not the easiest thing in the world.

These excerpts are examples of how self-reflection encouraged me to be aware of my surroundings and to constantly question what was going on during the entire co-teaching process. Obviously, these excerpts represent the importance of meaningful and thoughtful inquiry, which assisted in growing the partnership with my co-teacher.

Personal Stories

When beginning this research study, I felt that in order to be as successful as possible, I had to be honest with my co-teacher and myself. The following was a personal discussion that my co-teacher and I had at the beginning of this research study in which we shared our past experiences with co-teaching. We both wanted each other to be completely aware right from the start of our backgrounds, past experiences, and attitudes when it came to co-teaching.

RESEARCHER: In my eight years of teaching experience, I have co-taught for two of those years. Both years I was in the role as the special education teacher. But if I am going to be completely honest, co-teaching has left a bad taste in my mouth.

CO-TEACHER: You wouldn't be the first! It's a tough process.

RESEARCHER: I guess I always felt a sense of uneasiness as the special education teacher in the regular education teacher's room. And it never seemed that the responsibilities were evenly distributed.

CO-TEACHER: In all my years of teaching special education and co-teaching, I have always found that it will never be completely balanced. There always seems to be one teacher who will take a bit more of the lead.

RESEARCHER: I am really looking forward to being in the position as the regular education teacher and being able to examine a co-teaching relationship from both sides.

CO-TEACHER: That's going to be very beneficial for both of us.

RESEARCHER: I am completely open to any ideas or suggestions that you have at any time. Just let me know.

CO-TEACHER: I think that two teachers need to be together for a good amount of time in order to form a comfortable and successful co-teaching relationship.

Sharing personal insights and our past experiences helped my co-teacher and me to form a foundation of understanding and trust as we moved ahead in our relationship and research. Through sharing personal stories, we both realized that we had a lot of the same feelings about certain co-teaching topics, which helped us to connect as educators and teaching partners.

Co-Teaching Methods

Throughout the course of this research study, there were many co-teaching methods that I researched. I shared many of these methods with my co-teacher. However, as our relationship developed, we began to realize that we were very comfortable and successful utilizing the one teach, one assist method. Although we shared many responsibilities, I took on the lead teacher role, while my co-teacher assisted students and took care of the small details during class instruction.

We did experiment with station teaching, one of many co-teaching methods. When using station teaching, my co-teacher and I needed to develop three separate stations that students would rotate through over the course of a class period. My co-teacher would be in charge of one station, I would be in

charge of another, and the third station would be an independent center. The following observations were noted in my daily log.

11/6/13 Wednesday, Day 51

I have found that with station teaching, you must have complete faith in your co-teacher. When you implement station teaching, each co-teacher has a role. They must fulfill that role and are responsible for the entire class when it comes to the material being presented in that center. I have found that I am very capable of fulfilling my role and giving up the control that is necessary for station teaching to be successful.

11/8/13 Friday, Day 53

When utilizing station teaching, there is a lot of planning that must be done beforehand so that the various activities being created relate back to the concepts being taught in class. Also, you have to be comfortable giving up control as a teacher due to the fact that you will be instructing certain students while the co-teacher is instructing other students. I did not have a problem giving up control. I was very happy to give my co-teacher the opportunity to direct her own group and allow the students to be exposed to her teaching style. I just wanted everything to run smoothly and to be organized, which it was.

Although implementing a different form of co-teaching went well, we both still felt more comfortable and successful with the one teach, one assist model. We discussed the fact that maybe we should force ourselves to implement

other models of co-teaching. But then we both realized that not only had we been successful with the one teach, one assist model, but the students had been very successful as well. Why change something that is working so well? After this revelation, I recorded the following entry into my daily log.

10/22/13 Tuesday, Day 40

I am starting to realize that there are many ways to be successful in a co-teaching relationship. Up to this point, we have been using the one teach, one assist model for pretty much every lesson. My co-teacher will add details and comments throughout the course of a lesson, which I love and welcome with open arms. But I realize that she is more comfortable in the assist role and I am comfortable in the lead role. In all honesty, this does not bother me because it works for us. It may not work for every co-teaching relationship but it works for us.

Personal Questions

According to Freire (1970), “Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other” (p. 72). To me this quote discusses the importance of constantly evaluating and re-evaluating our practices as professionals. While keeping this philosophy in mind throughout my research, there were several different situations that developed, which lead me in forming many different questions. I decided to refer to these

questions as “personal” questions due to the fact that they dealt with issues that co-teachers may ignore in order to avoid awkwardness or tension within their partnership. I felt that it was extremely necessary to ask my co-teacher these “personal” questions in order to better understand her thoughts and feelings about what was occurring within the co-teaching relationship. Also, this honesty would be crucial to the development of our relationship. The following observation led to a “personal” question for my co-teacher.

9/24/13 Tuesday, Day 21

I felt that during the time when the students were not that engaged my co-teacher and I should have been working together to get some more motivation amongst the students. I feel that this is a tough thing to accomplish, especially when you have not been working with a co-teacher for very long. Should my co-teacher and I be working harder to try to motivate the students? This will be something worth asking during our next co-planning period.

The next day I discussed this question with my co-teacher.

RESEARCHER: I want to discuss something I observed yesterday.

CO-TEACHER: Uh-oh!

RESEARCHER: It's nothing major. It seemed that during the lesson students were not engaged. I know that we haven't been working together for very long but should we be doing a better job of trying to motivate? What do you think?

CO-TEACHER: I do feel that if we had more experience working together we would be able to bounce ideas off of each other during lessons, which may create more motivation for the students. Also, working with a new curriculum is difficult. We are both trying to become comfortable with the material that needs to be taught.

RESEARCHER: That's true.

CO-TEACHER: I feel that we need to continue to incorporate labs and hands-on activities, which all the students seem to enjoy. I also think that maybe some of the students feel a bit overwhelmed with the material and shut down. I work with a lot of these kids all day long. Trust me. They can be hard to motivate! They need to do their part and try to participate.

RESEARCHER: I had a lot of the same ideas. I didn't want to create any tension or act like I was blaming you. I just wanted to get your opinion.

CO-TEACHER: Ask anytime!

As these “personal” questions would arise throughout my study, I made sure to discuss all of them with my co-teacher. As my research progressed, I found that it became easier and easier to approach my co-teacher with these questions. As a result, our relationship grew stronger because of the openness and trust we each exhibited towards one another.

Co-Teacher Observations

In order for the relationship to improve and grow between my co-teacher and me, taking into account her daily observations and reflections was absolutely crucial. Her observations usually dealt with a variety of areas including students’ needs, classroom strategies being used, strengths and weaknesses in our relationship, and suggestions for improving the co-teaching partnership. I also understood that a certain level of comfort was necessary before we would be able to honestly share true and genuine observations. As time progressed, her observations become more and more meaningful to our relationship. I kept a detailed collection of my co-teacher’s observations (see Table 3).

Table 3

Co-Teacher Observations

Date	Co-Teacher Observation
8/29/13 Thursday, Day 4	“We should consider rearranging seats due to specially designed instruction accommodations certain students have.”
8/30/13 Friday, Day 5	“I am excited about this research and I will help in whatever way I can.”
9/4/13 Wednesday, Day 7	“I feel that some students were hesitant today questions during guided practice.”
9/12/13 Thursday, Day 13	“I really think students are benefiting by having both of us in class. Students can be given extra attention.”
9/17/13 Tuesday, Day 16	“We should probably revisit today’s lesson. Some students seemed confused.”
10/3/13 Thursday, Day 28	“We are doing a great job keeping the lessons short and concise. I think that things need to keep moving whenever possible.”
11/5/13 Tuesday, Day 50	“If we use centers I think this will benefit the class because of the teacher/student ratio. Plus I would like to experiment with a new co-teaching model.”
11/11/13 Monday, Day 54	“That lesson went great. We both seemed comfortable discussing the material to the entire class.”
11/19/13 Tuesday, Day 60	“When you were busy I decided to step in and keep the students busy so we didn’t lose their focus.”
12/13/13 Friday, Day 73	“I think that we flowed as a team because of our compatibility. I think that we have started to find a comfort level. But the research is over!”

Co-Teacher Attitudes

Going into this study, I definitely had preconceived notions and feelings about the co-teaching process. But I knew that with 20 plus years of experience in special education and with the co-teaching process, my co-teacher most certainly had opinions of her own. Knowing the opinions and attitudes that my partner had towards co-teaching (see Figure 2) would help to give me a greater perspective of where she was coming from and how our previous co-teaching experiences would impact our relationship.

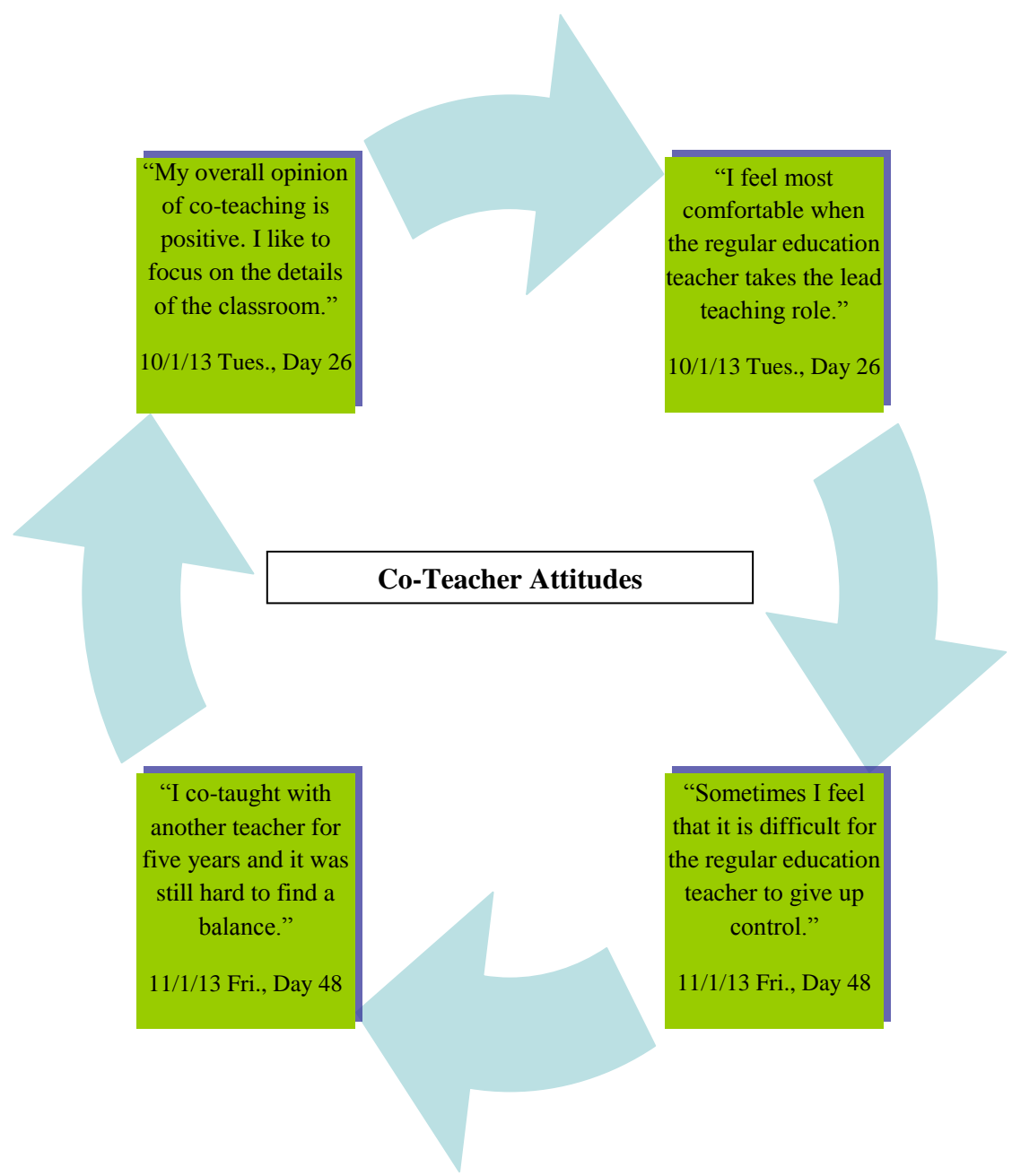


Figure 2. Co-Teacher Attitudes

After having shared these opinions and attitudes, I felt as though a certain amount of uncertainty and anxiety had subsided. I now had a better understanding of how to approach our relationship, and I could make more of a conscience effort to put to rest any concerns she may have had.

Co-Teaching Summaries

At the conclusion of this study, my co-teacher and I each wrote a summary about the experience we had co-teaching together (Appendix E). Within each summary, we described the teaching roles we each fulfilled, the development of our relationship, and reflections on the journey we took in completing this action-based research study. These summaries served as an opportunity for my co-teacher and me to thoughtfully reflect on what we had accomplished during 78 days of research and how we grew as teaching partners. After completing these summaries (see Table 4 and Table 5), we discussed our findings. We were both pleasantly amazed at how many similarities there were between our thoughts and conclusions when describing the co-teaching relationship that developed.

Table 4

*Co-Teacher's Co-Teaching Summary***Co-Teaching Summary**

Below, please provide a summary of the relationship that formed between you and your co-teacher. Be sure to include a description of the roles you each fulfilled, the overall development of your relationship, and any personal reflections that will add to your explanation of the relationship that formed.

*Science Co-Teaching**Co-Teaching Summary*

For the first half of this year, I worked with new fifth grade teacher, William Neal, teaching the brand new Interactive Science curriculum. My name is Jane Smith, and I am a twenty-plus year special education teacher. For the previous five years, I had taught the third grade curriculum with the same third grade, regular education teacher. Bill and I worked together last year when he was hired to be the case manager for the fifth graders on my split-level caseload. So, this year, we were both learning more of the fifth grade curriculum, including the new science curriculum.

Bill took the initiative with science. He was very organized and planned out each week. We met weekly to go over the plans and I offered suggestions, brought in materials, and helped in whatever way I could. Bill was the lead teacher for science. He planned what would be covered each day. Bill made sure

that he had all the needed materials, handouts, and worksheets that were required for the lessons. He also prepared any interactive videos or online references so that they were at his fingertips. The lessons were well planned and he adhered specifically to his time frame. He maintained the pace of the curriculum. He always covered the big picture.

I was the detail person. I provided clarification of terms, simplified explanations, provided modifications, and additional support either to individuals, small groups, or sometimes the full class. My involvement was sometimes a planned part of the lesson, but more often it was a spontaneous response to the observed confusion of one of the eight IEP students (in the class of 26) or by request of any students. I focused on specific student needs: pointing out where we were when they were lost, keeping them caught up and on-task, checking that assignments were recorded, and providing reminders of work that needed to be done or materials they needed for class.

As Bill and I planned each week, he shared his plans and I made suggestions or volunteered to help collect equipment for labs, make copies of worksheets, or teach part of the lesson. Bill presented the lessons, maintaining his pace to keep to his plan in an attempt to complete everything in the plan book for the day. I tended to interrupt to clarify, or simplify, and throw him off his plan, although not on purpose.

Bill was very organized. He began each lesson with a review of what was discussed the previous lesson. Activities were short and to the point. Written work was intermixed with short video clips, discussion, active involvement, and reading from the text. Because Bill and I are of similar personality, I would have done exactly what he did if our roles were reversed. If it was my responsibility to teach the lessons, I would have made sure I had all the materials I needed and would have been completely prepared to present my lesson. Maybe without the use of all the technology that Bill feels completely at ease with. I am still working to develop that comfort level.

Each week included one lab experiment. Because I worked with this fifth grade class in language arts as well, I was in charge of setting up small groups for labs and activities combining learning disabled students with student leaders. I had worked with many of these IEP students in third grade, so I was well aware of their strengths and needs.

Throughout the course of this research study, I found that I played the same role in my previous co-teaching situation. The classroom teacher took the responsibility for planning and presenting the major part of the lesson while I focused on more individualized or small group instruction, addressing specific student needs. I felt that this was the best use of our teaching strengths. Pacing has never been one of my assets. I usually concentrate more on varied presentation and repetition to strengthen student understanding—often running

out of time to cover all the topics that I should. With Bill doing just that, covering all the important information and keeping us on a tight schedule to cover all that we needed to, I was able to check on-task behavior, encourage participation, re-explain or simplify directions, vocabulary, and concepts, and report on student progress. I also had additional paperwork responsibilities outside of the classroom—IEPs, progress monitoring, recording data, consulting with outside service providers, and coordinating team meetings. I had other students outside of this class that were also on my caseload. That is another reason why this particular co-teaching format worked for us. I felt that I didn't have as much time to dedicate to the daily lesson planning as Bill did, so probably would not have done as good of a job. I worked with three different teachers, including Bill, and taught my own language arts and math lessons all during the course of this action-based research study. I was quite comfortable in my role of planning, supporting, and modifying for this science class.

Table 5

*Researcher's Co-Teaching Summary***Co-Teaching Summary**

Below, please provide a summary of the relationship that formed between you and your co-teacher. Be sure to include a description of the roles you each fulfilled, the overall development of your relationship, and any personal reflections that will add to your explanation of the relationship that formed.

*Science Co-Teaching**Co-Teaching Summary*

Having completed 78 days of research, my co-teacher and I have taken the opportunity to reflect on the relationship we have developed over the past few months. Below is my description of the co-teaching relationship that evolved and the roles that we each fulfilled throughout the course of this action-based research. I have divided the following description into three sections: my roles, the roles of my co-teacher, and the development of our co-teaching relationship.

During the course of this study, I took on the role as lead teacher. I usually planned out what needed to be covered every week. Due to the fact that we were implementing a new science curriculum, I felt the need to be even more prepared than usual, due to the fact that there was a lot of information to cover in a short amount of time. Plus, this was my first year in which I was teaching elementary science. I created the activities that went along with a majority of the lessons and created labs that students would complete. We tried to do one lab

every week. Many of the labs that we implemented included inquiry-based learning activities. My co-teacher and I both felt that these activities would keep students engaged throughout the course of this study. Also, due to the fact that the new science curriculum was an inquiry-based program, we thought that the inquiry-based activities would parallel the curriculum nicely. I also implemented all the lessons during each science class and led the day-to-day activities.

My co-teacher focused on the finer details that helped the classroom to run smoothly on a daily basis. Her duties included modifying tests, creating study guides, making sure that students were on task during lessons and activities, adding insight into concepts being presented, and giving me suggestions about activities and teaching strategies that could be used. During the course of a lesson, my co-teacher would often add comments and her knowledge, which the students welcomed and enjoyed. She also served as someone I could interact with during class in order to keep the mood interesting and fun for the students. My co-teacher also had to manage student IEPs, progress monitoring, data collection, and IEP meetings.

It has been quite a journey over the past few months! When we began this research study, my co-teacher and I were both in unfamiliar territory. This was my first year teaching fifth grade, and we both were learning a new science curriculum. From the start, I could tell that my co-teacher was a very experienced teacher and had a make-it-work attitude. After speaking about our

past experiences with co-teaching, I knew that we had a lot in common, which would make the process of getting to know each other a bit easier. As in any relationship, the beginning was a feeling out process. I made sure to constantly communicate my thoughts with her and she did the same. Understanding each other's personalities and expectations were crucial to our success. As the relationship developed, we began to form certain roles in the classroom. It became very clear that our co-teaching relationship began to gravitate towards the one teach, one instruct model. I felt very comfortable taking the lead position in the classroom, and my co-teacher felt very comfortable assisting students and focusing on the smaller details. We experimented for a week with station teaching, which was successful, but not something that we wanted to continue with due to the fact that we were very comfortable and quite successful with the one teach, one instruct model. Our weekly co-planning meetings served as a terrific way to stay in touch and communicate about the progress of our classroom and partnership. I found that the relationship that developed between my co-teacher and me was one of respect and understanding. We both understood our strengths and weaknesses and respected each other's efforts and talents. We also understood what worked for our relationship and realized that there are many ways in which to making a co-teaching relationship successful. There is not only one way! We found a way that worked for us and stuck with it! It was a great experience working with my co-teacher and the relationship that

formed was a valuable one because we both realized that a positive co-teaching relationship cannot exist with the efforts of only one person. It takes two!

All Good Things Must End

As my research study came to a close, I began to think how incredibly lucky I was to have such an experienced, understanding, and cooperative co-teacher. Due to her make-it-work attitude, I knew that we were very compatible from the start. Over the course of the 78 days that we taught together and carried out this research study, I began to understand the crucial elements that must exist in order for a healthy co-teaching relationship to exist. Obviously, there is no such thing as a perfect co-teaching relationship. However, as long as two co-teachers are willing to communicate and do everything in their capabilities to improve individually and support each other, they will be successful. Concluding this study has given me confidence in the future co-teaching relationships I will have and has absolutely taught me that in order for a successful co-teaching relationship to form, it takes two!

Data Analysis

Introduction

According to McNiff and Whitehead (2010), “The aim of research is to create new knowledge that can contribute to new theory” (p. 189). When conducting this action research study, the relationship that was developing between my co-teacher and me was under constant analysis. Analyzing our relationship was achieved through the implementation of data collection worksheets, personality surveys, co-planning meetings, a daily observation log, and co-teaching summaries.

Data Collection Worksheet

A data collection worksheet was completed by my co-teacher and me at the beginning of the study in order to collect information on certain aspects of our future relationship. We each listed what our individual strengths were, which would definitely have an impact on our partnership. We also had to list what we felt were the strengths of our co-teacher. Furthermore, we each included obstacles that may have played a role in the co-teaching relationship. It was also discussed how these assumed obstacles may be dealt with as we progressed through the research study. After completing this data collection worksheets, my co-teacher and I met to discuss the results, which helped in laying the foundation for our relationship and gave us an idea as to which direction to begin.

Personality Survey

My co-teacher and I each completed a personality survey at the beginning of the study. This particular survey required us to choose certain adjectives that would describe our individual personalities. After completing this portion of the survey, point totals were assigned a specific color (gold, green, blue, or orange). Based on their highest point total, one would determine their personality “color.” This survey also supplied descriptors and stressors that proved to be very beneficial in understanding personalities different than your own. My co-teacher and I used this survey to determine the compatibility in our personalities and what areas may have proved to be obstacles.

Co-Planning Meetings

On a weekly basis, my co-teacher and I would meet in order to co-plan the lessons for the upcoming week. However, these co-planning meetings served as a way for us to touch base and reflect on the development of our teaching relationship. During these meetings we would discuss the teaching strategies that we felt were effective and how to improve our teaching styles. We reflected on observations that had been made in regards to the students and our relationship. These meetings also gave me the chance to ask my co-teacher specific questions that would provide me with insight into her thoughts and feelings towards our teaching partnership and the co-teaching process.

Observation Log

During my study, a daily observation log was kept. This observation log served as a place for me to record daily observations, self-reflections, observations from my co-teacher, different co-teaching strategies that were being utilized, important discussions that I had with my co-teacher, and the overall progress that our relationship made over the course of 78 days. I would record these insights at the end of each school day and sometimes during class. My observation log served as the foundation for this research study.

Co-Teaching Summaries

At the conclusion of my action research, my co-teacher and I each wrote a summary in which we described the relationship that we had formed. Within these summaries we commented on the teaching roles we had taken on throughout the course of the study and personal reflections about the relationship that had formed and our research journey.

Codes, Bins, and Theme Statements

Coding my field log was a task that I began almost immediately when beginning my research. I decided to color code my field log in order to assist me in determining different themes that emerged from my research. At the conclusion of my research, I reread my entire field log and created various codes and bins (see Figure 3). This allowed me to interpret the data I had collected and

begin to realize the various factors that go into developing a healthy, effective co-teaching relationship. Based on these observations, I created theme statements.



Figure 3. Codes and Bins

Findings

“What are the observed and reported experiences of a co-teaching relationship between a certified regular education teacher and a certified special education teacher when teaching an inclusionary science class?” This is the question I set out to answer at the beginning of my research study. By examining the relationship that formed between my co-teacher and me, I was looking for key factors that would establish an effective and healthy co-teaching relationship. The following theme statements are the findings I made throughout the course of my research.

Co-Teacher Discussions

Meaningful and insightful discussion between co-teachers about personal observations, teaching experiences, concerns, and questions that arise will ultimately lead to growth and understanding within the co-teaching relationship.

Throughout the course of this study I found that communication was a key component in establishing a positive relationship with my co-teacher. I made sure to keep in constant communication with my co-teacher about any concerns I had about our students or about the development of our relationship. For example, at the beginning of my study, my co-teacher and I completed data collection worksheets and a personality survey. These data methods helped us to determine a starting point in our relationship and provided a general overview of our similarities and differences.

Our co-planning meetings served as a way for us to touch base on a regular basis and discuss a variety of topics. These topics included observations that had been made, concerns that we may have had about the students or our relationship, or questions that needed to be discussed and answered. A frustration that we encountered throughout this research was not being able to meet on a consistent basis because of demands that my co-teacher had that went beyond those of co-teaching (e.g. IEP meetings, progress monitoring, and unexpected parent phone calls.) My co-teacher expressed to me that during her years of co-teaching, she has always found that the co-teaching process can suffer if both teachers cannot meet on a consistent basis. During this study, we did our absolute best to make up for the times that we were unable to meet. Keeping those lines of communication open were so important to this study. Communication played the biggest role in carrying out this action research study.

Self-Reflection

Careful and thoughtful self-reflection allows co-teachers to examine their actions and the roles they fulfill in the classroom so that they may explore different ways in which to improve not only as educators for students, but also as teaching professionals in a teaching partnership.

According to John Dewey (1938), “A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but they also recognize in the concrete what

surroundings are conducive to having experiences that lead to growth” (p. 40). To me this quote discusses the importance of personal reflection not only in the field of education, but in any profession. The method of self-reflection was crucial to the success of my research study. By self-reflecting on a daily basis, I would make sure that I was doing my very best to create an environment that was conducive to developing a healthy relationship between my co-teacher and me. I kept my self-reflections in an observation log that I updated on a daily basis. I would also record any self-reflections or observations that my co-teacher brought to my attention. For example, when my study began, I noticed that the terminology I was using when teaching the class did not promote a sense of equality between my co-teacher and me. I would use the pronouns “I” or “me” instead of “us” or “we.” I personally felt that by making an effort to change my verbiage I not only was sending the message to the students that my co-teacher and I were equal partners but it showed my co-teacher that I was taking her feelings into consideration and was conscientious of trying to improve the relationship we had established.

My co-teacher also expressed her reflections and observations all throughout the course of this study. She informed me about her opinions and attitudes towards co-teaching and the ways in which she felt the most comfortable contributing to the co-teaching relationship. Based on her reflections, we formed a relationship that suited both of our styles. I took on the lead teacher role and did

a large amount of the planning, while my co-teacher focused on the details and the needs of individual students. For a majority of this study we adopted the one teach, one assist model, which worked well for us and the students. Knowing our comfort levels allowed us to explore a different type of co-teaching, station teaching, during a period of this study. Although we had a successful experience with station teaching, we felt that the one teach, one assist model was the best match for our personalities and comfort levels.

By the end of this study, my co-teacher and I reached a certain degree of comfort in letting each other know about our personal reflections and observations. However, we both felt that a large amount of time is necessary in order to truly develop an effective co-teaching relationship. The 78 days of this research study provided us with a good start in forming an effective relationship, but more time was definitely necessary.

Personal Perceptions/Observations

When co-teachers examine the attitudes they have towards the co-teaching process and analyze daily observations and interactions that take place within the co-teaching relationship, each teacher can gain a better perspective of what he or she needs to do in order to facilitate the growth of the co-teaching relationship and the students.

When beginning this study, I felt that it was extremely important that my co-teacher and I share our feelings and personal perceptions about the co-teaching

process with each other. This allowed for us to have a better understanding of the areas in which we had a similar outlook and areas in which we would have to compromise. We also shared past personal experiences that we had in co-teaching relationships. For example, my co-teacher explained that she had been in a co-teaching relationship for five years with the same teacher, but still felt that it was very hard to find the balance and an acceptable comfort level. I had a similar experience when co-teaching at the secondary level. I always had an uneasy feeling when going into a regular education teacher's room as a co-teacher. I felt that it would take time in order to establish a co-teaching relationship that felt comfortable. Therefore, sharing these past experiences allowed for us to not only express our feelings and attitudes towards the co-teaching process, but provided a way for us to connect and understand where we were each coming from.

Throughout the course of this study, my co-teacher and I were able to share our thoughts and perceptions with a fair amount of ease due to the fact that we were each considerate and understanding towards one another's feelings and thoughts. Having this support for each other led to increased communication within our relationship and established a comfort level when working together.

Co-Teacher Perceptions/Observations

In order for successful co-teaching relationships to form, each teacher must reach a comfort level with his or her partner that allows for the communication of ideas,

observations, and frustrations, which ultimately leads to developing and improving the co-teaching relationship.

As this study progressed, my co-teacher and I began to feel more comfortable sharing ideas and pointing out errors that made have been made during the course of a lesson. An example of this occurred during one lesson in which I was teaching the concept of interpreting graphs. As I was discussing the graph with the class, I incorrectly interpreted the data that was being displayed on the graph. At the end of class, my co-teacher informed me of the mistake and suggested that we make a quick reference back to that graph the following day. When this happened, I was happy for two reasons. The first was that she caught something that was presented incorrectly and any confusion amongst the students would be cleared up. But most importantly, it showed me that my co-teacher was comfortable enough to come to me and point out the mistake and was not concerned about how I would react. Also, she decided to discuss this with me in private and not make a mention in front of the class. This showed me that she was considerate of my feelings and how this may have been portrayed to the students if she pointed out my mistake in front of them. The next day, I started class by reviewing the concept from the day before and was very honest with the students and gave full credit to my co-teacher for realizing the error. I felt that giving her the credit she deserved was the right thing to do and was a way of developing our relationship.

At the conclusion of this study, I was reminded of another quote by Paulo Freire. According to Freire (1970), “Authentic thinking, thinking that is concerned about *reality*, does not take place in ivory tower isolation, but only in communication” (p. 77). This quote once again drives home the importance of communication not only in a co-teaching relationship, but in any relationship you encounter in life. In order to continue the acquisition of knowledge and to grow as educators and individuals, the ideas and observations that we have cannot be kept private and hidden within our minds and thoughts. During this study, the communication between my co-teacher and me led us to greater insights about teachings and opened us up to different ways of thinking and approaching the co-teaching process. At the very heart of any relationship is honesty and communication. This is what we strived for everyday in our co-teaching relationship.

Next Steps

Unfortunately, at the conclusion of this research study, my co-teacher switched to a different classroom due to the fact that the students we taught for science were now going to be taught social studies by another teacher. So at this point, I do not have a co-teacher anymore.

Although I cannot continue with this research and examine the co-teaching relationship that would continue to evolve, I can take the data collected in this research and apply it to future co-teaching relationships that I will have. By the end of this study my co-teacher and I used a variety of methods in order to establish a comfortable, yet meaningful relationship. Developing this relationship with my co-teacher taught me the importance of trust, honesty, communication, support, flexibility, and hard work. Probably the biggest lesson that I have learned when it comes to co-teaching relationships is that there is never only one way to accomplish something. My co-teacher and I found that for us the one teach, one assist model worked incredibly well because it fit well with our personalities. Other co-teaching relationships may implement different styles of co-teaching and in my future co-teaching partnerships I may utilize different methods as well. But it is all about what works for you and your co-teacher.

There is no denying that whichever form of co-teaching is used in a co-teaching relationship, both teachers must have a make-it-work attitude and must take the time to get to know each other's strengths and weaknesses. If both co-

teachers are willing to compromise and openly communicate their ideas, thoughts, and feelings, the foundation can begin to form for an effective co-teaching relationship. But above all else, co-teaching relationships, just like all other relationships, cannot succeed with the efforts of just one person. It takes two!

References

- Arguelles, M., Hughes, M., & Schumm, J. (2000). Co-teaching: A different approach to inclusion. *Principal* 79(4), 48, 50-51.
- Asimov, N. (2007). Science courses nearly extinct in elementary grades, study finds. *SFGate*. Retrieved from <http://sfgate.com>
- Austin, V. L. (2001). Teachers' beliefs about co-teaching. *Remedial and Special Education*, 22(4), 245-255.
- Aydeniz, M., Cihak, D. F., Graham, S. C., & Retinger, L. (2012). Using inquiry-based instruction for teaching science to students with learning disabilities. *International Journal of Special Education*, 27(2), 189-206.
- Bessette, H. J. (2008). Using students' drawings to elicit general and special educators' perceptions of co-teaching. *Teaching and Teacher Education: An International Journal of Research and Studies*, 24(5), 1376-1396.
- Dewey, J. (1938). *Experience and education*. New York: Macmillan.
- Embury, D. C., & Kroeger, S. D. (2012). Let's ask the kids: Consumer constructions of co-teaching. *International Journal of Special Education*, 27(2), 102-112.
- Freire, P. (1970). *Pedagogy of the oppressed*. New York: Continuum.

- Friend, M., Cook, L., Hurley-Chamberlain, D., & Shamberger, C. (2010). Co-teaching: An illustration of the complexity of collaboration in special education. *Journal of Educational & Psychological Consultation, 20*(1), 9-27.
- Gately, S. E., & Gately, F. J., Jr. (2001). Understanding coteaching components. *TEACHING Exceptional Children, 33*(4), 40-47.
- Gaytan, J. (2010). Instructional strategies to accommodate a team-teaching approach. *Business Communication Quarterly, 73*(1), 82-87.
- Hang, Q., & Rabren, K. (2009). An examination of co-teaching: Perspectives and efficacy indicators. *Remedial and Special Education, 30*(5), 259-268.
- Hendricks, C. (2009). *Improving schools through action research: A comprehensive guide for educators*. Upper Saddle River, NJ: Allyn & Bacon.
- Keefe, E. B., Moore, V., & Duff, F. (2004). The four “knows” of collaborative teaching. *TEACHING Exceptional Children, 36*(5), 36-41.
- Kloo, A., & Zigmond, N. (2008). Coteaching revisited: Redrawing the blueprint. *Preventing School Failure, 52*(2), 12-20.
- Luckner, J. L. (1999). An examination of two coteaching classrooms. *American Annals of the Deaf, 144*(1), 24-34.

- Magiera, K., Lawrence-Brown, D., Bloomquist, K., Foster, C., Figueroa, A., Glatz, K., Heppler, D., & Rodriguez, P. (2006). On the road to more collaborative teaching: One school's experience. *TEACHING Exceptional Children Plus*, 2(5).
- McNiff, J., & Whitehead, J. (2010). *You and your action research project*. (3 ed.). New York, NY: Routledge.
- Meyer, D. Z., Kubarek-Sandor, J., Kedvesh, J., Heitzman, C., Pan, Y., & Faik, S. (2012). Eight ways to do inquiry. *The Science Teacher*, 79(6), 40-44.
- Nichols, J., Dowdy, A., & Nichols, C. (2010). Co-teaching: An educational promise for children with disabilities or a quick fix to meet the mandates of No Child Left Behind? *Education*, 130(4), 647-651.
- Rytivaara, A. (2012). Collaborative classroom management in a co-taught primary school classroom. *International Journal of Educational Research*, 53, 182-191.
- Salend, S. J., Gordon, J., & Lopez-Vona, K. (2002). Evaluating cooperative teaching teams. *Intervention in School and Clinic*, 37(4), 195-200.
- Stivers, J. (2008). Strengthen your coteaching relationship. *Intervention in School and Clinic*, 44(2), 121-125.

- Treahy, D. L., & Gurganus, S. P. (2010). Models for special needs students. *Teaching Children Mathematics, 16*(8), 484-490.
- Walther-Thomas, C. (1997). Co-teaching experiences: The benefits and problems that teachers and principals report over time. *Journal of Learning Disabilities, 30*(4), 395- 407.
- Welch, M. (2000). Descriptive analysis of team teaching in two elementary classrooms: A formative experimental approach. *Remedial and Special Education, 21*(6), 366-376.
- Zindler, R. (2009). Trouble in paradise: A study of who is included in an inclusion classroom. *Teachers College Record, 111*(8), 1971-1996.

Appendix A

CONSENT FORM

Dear [REDACTED]

I am completing a Master of Education degree at Moravian College. My courses have enabled me to learn about the most effective teaching methods. One of the requirements of the program is that I conduct a systematic study of my own teaching practices. This semester, I am focusing my research on co-teaching. The title of my research is *It Takes Two: Co-teaching in the Inclusionary Science Environment*. This study will take place in a fifth grade inclusionary science classroom in which an inquiry-based science curriculum will be utilized.

As part of this qualitative study, the co-teaching relationship between a regular education and special education teacher will be examined. Each teacher will be questioned about their views and opinions on working in the co-taught environment and will record their observations both as educators and as teachers who are in a co-teaching relationship. The curriculum that has been approved by the school district will continue to be implemented throughout the course of this study as well as class assignments, projects, quizzes, tests, and assigned homework. At no time will individual student work, grades, or behaviors be included within this study. The study will take place from 9/1/2013-12/24/2013.

The data will be collected and coded, and held in the strictest confidence. No one except me will have access to the data. At no time will my co-teacher's name be used. I will store the data in a locked cabinet. At the conclusion of the research, the data will be destroyed.

My co-teacher may choose at any time not to participate in this study. All students will participate in regular class activities such as classroom discussion, tests, quizzes, homework assignments, and small group instruction throughout the course of this study. However, individual student results pertaining to these areas will not be included in my research.

We welcome questions about this research at any time. My co-teacher's participation in this study is strictly voluntary; refusal to participate will not impede our responsibilities as professionals to educate the children in our class. Any questions you have about the research can be directed to me, William Neal, 610-262-6430 Ext. 15306, nealw@nasdschool.org, or my advisor, Dr. Joseph Shosh, Education Department, Moravian College, 610-861-1482, jshosh@moravian.edu. Any questions about your rights as a research participant may be directed to Dr. Virginia O'Connell, Chair HSIRB, Moravian College, Bethlehem, PA 18018, 610-625-7756.

Sincerely,

William Neal

I agree to allow William Neal to conduct this project within his classroom.

[REDACTED]

Principal Signature

[REDACTED]

Date

Appendix B

CONSENT FORM

Dear [REDACTED]

I am completing a Master of Education degree at Moravian College. My courses have enabled me to learn about the most effective teaching methods. One of the requirements of the program is that I conduct a systematic study of my own teaching practices. This semester, I am focusing my research on co-teaching. The title of my research is *It Takes Two: Co-teaching in the Inclusionary Science Environment*. This study will take place in our fifth grade inclusionary science classroom in which an inquiry-based science curriculum will be utilized.

As part of this qualitative study, the co-teaching relationship between you and I will be examined. We will each be questioned about our views and opinions on working in the co-taught environment and will record our observations as both educators and as teachers who are in a co-teaching relationship. The curriculum that has been approved by the school district will continue to be implemented throughout the course of this study as well as class assignments, projects, quizzes, tests, and assigned homework. At no time will individual student work, grades, or behaviors be included within this study. The study will take place from 9/1/2013-12/24/2013.

The data will be collected and coded, and held in the strictest confidence. No one except me will have access to the data. At no time will your name be used. I will store the data in a locked cabinet. At the conclusion of the research, the data will be destroyed.

As my co-teacher you may choose at any time not to participate in this study. All students will participate in regular class activities such as classroom discussion, tests, quizzes, homework assignments, and small group instruction throughout the course of this study. However, individual student results pertaining to these areas will not be included in my research.

I welcome questions about this research at any time. Your participation in this study is strictly voluntary; refusal to participate will not impede our responsibilities as professionals to educate the children in our class. Any questions you have about the research can be directed to me, William Neal, 610-262-6430 Ext. 15306, nealw@nasdschool.org, or my advisor, Dr. Joseph Shosh, Education Department, Moravian College, 610-861-1482, jshosh@moravian.edu. Any questions about your rights as a research participant may be directed to Dr. Virginia O'Connell, Chair HSIRB, Moravian College, Bethlehem, PA 18018, 610-625-7756.

Sincerely,

William Neal

I agree to participate with William Neal in this research project.

[REDACTED SIGNATURE] [REDACTED DATE]

Co-teacher Signature

Date

Appendix C

Co-Teaching Worksheet

List the strengths you bring to a co-teaching situation:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

List the strengths of your colleague:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

List 3 obstacles that you anticipate as you begin to develop this co-teaching relationship.

- 1. _____
- 2. _____
- 3. _____

Star the one obstacle that you believe will be the most difficult to overcome.

Write a goal for how you plan to overcome this obstacle. What outcome do you hope to achieve by the end of this semester/year?

How and when will you evaluate if you have met this goal?

Whitten, Dieker & Barnett, 1993

Appendix D

What Color is Your Personality?

Self Assessment – Describe yourself by completing the following. In each set of words/phrases, mark TWO that best describes you MOST of the time.

1.
 - A) Expressive
 - B) Impulsive
 - C) Realistic
 - D) Analytical
2.
 - A) Organized
 - B) Adaptable
 - C) Critical
 - D) Spontaneous
3.
 - A) Debating
 - B) Planning
 - C) Creating
 - D) Relating
4.
 - A) Personal
 - B) Practical
 - C) Scholarly
 - D) Adventurous
5.
 - A) Precise
 - B) Flexible
 - C) Systematic
 - D) ~~Easy~~ *Gutsy*
6.
 - A) Sharing
 - B) Orderly
 - C) Questioning
 - D) Skillful
7.
 - A) Competitive
 - B) Perfectionist
 - C) Cooperative
 - D) Logical
8.
 - A) Intellectual
 - B) Sensitive
 - C) Hard-working
 - D) Risk-taking
9.
 - A) Read/Research
 - B) People Person
 - C) Witty
 - D) Sensible
10.
 - A) List Maker
 - B) Relationship-seeker
 - C) Thought-provoker
 - D) Troubleshooter
11.
 - A) Changer
 - B) Wonderer
 - C) Feeler
 - D) Judger
12.
 - A) Communicating
 - B) Discovering
 - C) Cautious
 - D) Reasoning
13.
 - A) Challenging
 - B) Practicing
 - C) Caring
 - D) Examining
14.
 - A) Complete Tasks
 - B) Seek Excitement
 - C) Gain Ideas
 - D) Be Encouraging
15.
 - A) Doing
 - B) Feeling
 - C) Thinking
 - D) Experimenting

Appendix D

Scoring Grid

After completing the Self Assessment, circle the letters of the words you chose for each number in the grid below:

1.	C	D	A	B
2.	A	C	B	D
3.	B	A	D	C
4.	B	C	A	D
5.	A	C	B	D
6.	B	C	A	D
7.	B	D	C	A
8.	C	A	B	D
9.	D	A	B	C
10.	A	C	B	D
11.	D	B	C	A
12.	C	D	A	B
13.	B	D	C	A
14.	A	C	D	B
15.	A	C	B	D
TOTAL CIRCLED				
	GOLD	GREEN	BLUE	ORANGE

Appendix E

Co-Teaching Summary

Below, please provide a summary of the relationship that formed between you and your co-teacher. Be sure to include a description of the roles you each fulfilled, the overall development of your relationship, and any personal reflections that will add to your explanation of the relationship that formed.

Science Co-Teaching

Co-Teaching Summary

Signature: _____

Date: _____