Co-Teaching in Student Teaching of an Elementary Education Program

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Abstract

Successful co-teaching relied on essential elements and different approaches. However, few studies were found on these essential elements and different approaches in student teaching. The objective of this study was to examine how teacher candidates and cooperating teachers used the essential co-teaching elements and co-teaching approaches. Questions were asked: Were there any differences in the use of essential co-teaching elements and co-teaching approaches before and after student teaching? What was the perceived effectiveness of the co-teaching approaches on children's learning and preparation of teacher candidates for their future teaching careers? What were the enjoyment and challenge levels of the co-teaching approaches? Twenty-six teacher candidates and sixteen cooperating teachers completed the Co-Teaching Survey (CTS) by the end of student teaching at a mid-sized state university in the Midwest. Results showed there were differences for teacher candidates and cooperating teachers in the use of co-teaching elements and approaches, in the perceived effectiveness of the co-teaching approaches on children's learning and teacher education programs, and in the enjoyment and challenge levels of the co-teaching approaches.

Student teaching is a core component of teacher education programs (National Council for Accreditation of Teacher Education, 2010). In the traditional model, teacher candidates spend the first few weeks observing cooperating teachers and students in the classrooms so they can take over the class by themselves for the rest of the semester. Given the high-stakes of using state tests in evaluating school performance and teachers' effectiveness, cooperating teachers were worried about students' performance when teacher candidates took over the classes (Darragh, Picanco, Tully, & Henning, 2011; Diana, 2014). Therefore, teacher educators look for different student-teaching models to address the concerns of the cooperating teachers yet also accommodate the needs of teacher candidates.

The National Council for Accreditation of Teacher Education (NCATE, 2010) recommended co-teaching, a new partnership between teacher candidates and cooperating teachers in teacher education programs as a promising model. Bacharach, Heck, and Dahlberg (2008) identified the essential elements of co-teaching (i.e., collaborative planning, communication skills, partnership relationship, classroom application, knowledge base), and Heck and Bacharach (2010) included these essential elements and co-teaching approaches in developing workshops to provide universities and school districts with the background and materials to implement co-teaching in student teaching. Since the co-teaching essential elements and approaches are not static over the course of student teaching, a better understanding of how these essential elements and approaches change during student teaching would encourage teacher education programs to adopt co-teaching in student teaching and give better guidance to teacher candidates and cooperating teachers.

Co-Teaching Approaches

Cook and Friend (1995) defined co-teaching as "two or more professionals delivering substantive instruction to a diverse or blended group of students in a single physical space." Co-teaching is used in special education when a general education teacher works with a special education teacher to include a student with special needs in the mainstream classroom. Most studies on co-teaching focus on special education settings (Murawski & Swanson, 2001), and most show benefits for students, teachers, and schools (Hang & Rabren, 2009; Nevin, Cramer, Salazar, & Voigt, 2008; Pearl, Dieker, & Kirkpatrick, 2012).

Even though co-teaching has a long history in special education, the use of co-teaching in student teaching outside the special education setting is a relatively new initiative. With the support of a United States Department of Education Teacher Quality Enhancement Partnership

Grant in 2003, St. Cloud State University partnered with seventeen school districts and two businesses to develop and implement co-teaching in its student teaching program. The St. Cloud Teacher Quality Enhancement initiative defined co-teaching in student teaching as "two teachers (a cooperating teacher and a teacher candidate) working together with groups of students; sharing the planning, organization, delivery and assessment of instruction, as well as the physical space" (Bacharach, Heck, & Dank, 2004).

Cook and Friend (1995) outlined a variety of classroom arrangements to implement co-teaching. The first approach is *one teaching, one assisting*. With this strategy, one teacher takes the lead in the classroom while the other observes students or assists students as needed. The second approach is *station teaching* which divides instructional content into two or more segments to be presented at separate locations within the classroom. Both teachers teach one segment to one group of students and then repeat the same instruction with the other group of students. The third is *parallel teaching*, in which both teachers deliver the same instructional content to half of the class. The fourth is *alternative teaching*, which has one teacher instructing the large group while the other works with a small group of students who need enrichment or assistance. The fifth is *team teaching*, where both teachers share instruction of the whole class by taking turns leading a discussion or demonstrating a concept.

Heck and Bacharach (2010) modified these co-teaching approaches by Cook and Friend for use in student teaching. They kept *station teaching*, *parallel teaching,* and *team teaching* the same. However, the *one teaching, one assisting* approach was broken into two approaches: *one teach, one observe*; and *one teach, one assist*. *One teach, one observe* is defined as one teacher taking primary responsibility for teaching while the other gathers specific observational information on students or the instructing teacher. *One teach, one assist* is used when one

teacher has primary responsibility for teaching while the other assists students with their work, monitors behaviors, or corrects assignments. In addition, the *alternative teaching* approach also was broken into two approaches: *supplemental teaching* and *alternative teaching*. *Supplemental teaching* is used when one teacher works with students at their expected grade levels while the other teacher works with those students who need to be re-taught, extended, or remediated. *Alternative teaching* is used when students are given different approaches to learn the same information.

Essential Elements of Co-Teaching

The positive impact of co-teaching on students, teacher candidates, and cooperating teachers is supported in various studies. First, the use of a co-teaching model in student teaching showed higher academic achievement for students in co-taught classrooms than in non-co-taught classrooms (Bacharach, Heck, & Dahlberg, 2010). Children in the co-teaching classrooms, where teacher candidates taking science method classes worked with cooperating science teachers, enjoyed science lessons more and showed fewer gender or age differences in their attitudes toward science than children not in the co-teaching classrooms (Murphy, Beggs, Carlisle, & Greenwood, 2004). Second, the teaching efficacy of teacher candidates in the co-teaching model was higher than those in the traditional teaching model (Cheong, 2010), and most teacher candidates perceived co-teaching as a valuable professional practice for both student learning and the teacher candidate's professional training (Darragh et al., 2011). Third, co-teaching was beneficial to cooperating teachers because they could directly verify and develop their own teaching skills, and they had the opportunity to step back and reflect on another person's teaching (Nilsson & Driel, 2010).

What exactly happens in co-teaching to make such a difference for students, teacher candidates, and cooperating teachers? Bacharach, Heck, and Dahlberg (2008) invited university faculty involved in the implementation of co-teaching in student teaching to brainstorm on the essential elements of co-teaching. The researchers then developed a survey, *What Makes Co-Teaching Work (WMCW)*, and asked cooperating teachers to examine and modify the elements to the success of co-teaching in a workshop. Additional focus groups were organized for teacher candidates and cooperating teachers to further discuss these essential elements of co-teaching. After analyzing the results, they identified five overriding themes as the essential elements of successful co-teaching in student teaching.

First, planning includes working together to plan for the instruction, sharing ideas and materials, coordinating tasks, and assigning tasks and responsibilities. Second, communication refers to actively listening to suggestions, feedback, and instructions; bouncing ideas off each other for genuine feedback and input prior to implementation; having give-and-take in conversations; intentionally addressing communication strategies; and picking up communication clues. Third, partnership relationship means respecting and trusting each other; knowing when to jump in; accepting different personality and teaching styles; and assisting the teacher candidates to develop rapport with all students. Fourth, classroom applications involve sharing leadership in the classroom, sharing control of the classroom, using co-teaching strategies to differentiate instruction, handling interruptions without stopping the class, and being attentive and present even when not giving instruction. Fifth, the co-teaching knowledge base undertakes getting support and training, understanding the co-teaching strategies, and explaining the benefits of co-teaching to parents and students.

Co-Teaching Essential Elements and Approaches in Student Teaching

These essential elements are used as a framework to understand co-teaching in student teaching. From a focus group with teacher candidates to discuss the pros and cons of the co-teaching model of student teaching, Bacharach and Heck (2012) cited essential elements that led teacher candidates to feel like real teachers. The planning process taught them to become more aware of the resources available to them and to be responsible for directing other adults in the classroom. The classroom application allowed them to share leadership, ownership, and responsibility for teaching and classroom management. In addition, Darragh, et al. stated that communication and partnership relationship determined the success of co-teaching. Establishing clear lines of communication at the outset and developing a positive work relationship were critical. However, no studies are found on the changes of these co-teaching essential elements by the end of student teaching.

The recommendation from the National Council for Accreditation of Teacher Education (NCATE, 2010) encouraged teacher education programs to adopt the co-teaching model in student teaching. Since the use of co-teaching in student teaching is in the beginning stage, not many studies are done. There were studies promoting the adoption of co-teaching in student teaching (e.g., Badiali & Titus, 2010; Diana, 2014; Heck & Bacharach, 2015/2016), sharing experiences and steps of implementing co-teaching in student teaching (e.g., Hartnett, Weed, McCoy, Theiss, & Nickens, 2013), developing surveys to determine the perceived benefits of co-teaching to students, teacher candidates and cooperating teachers (Darragh, et al., 2011), and conducting interviews to examine teacher candidates' and cooperating teachers' professional growth (Merk, Waggoner, & Carroll, 2013). However, no studies are found on the use of co-teaching approaches in student teaching.

The objective of this study was to examine how teacher candidates and cooperating teachers used the essential co-teaching elements and co-teaching approaches. Four research questions were asked:

1. Are there any differences in the use of co-teaching essential elements (planning, communication, relationship, classroom applications, co-teaching knowledge base) at the beginning vs. at the end of student teaching?
2. Are there any differences in the use of co-teaching approaches (one teach, one observe; one teach, one assist; station teaching; parallel teaching; alternative teaching; team teaching) at the beginning vs. at the end of student teaching?
3. What is the perceived effectiveness of the co-teaching approaches on children's learning and preparation of teacher candidates for their future teaching career?
4. What are the enjoyment and challenge levels of the co-teaching approaches?

Method

Participants

Thirty teacher candidates and 29 cooperating teachers were invited to participate in a survey at the end of student teaching. Twenty-seven teacher candidates attempted the survey and 26 completed it (23 women, 3 men, M_{age} = 27.15 years, age range: 23-41 years). Eighteen cooperating teachers attempted the survey, and 16 completed it. The cooperating teachers had at least three years teaching experiences. Even though they hosted teacher candidates before, it was their first time using co-teaching model in student teaching. These teachers were from 4 kindergartens, 5 first-grade, 4 second-grade, 8 third-grade, 6 fourth-grade, and 3 fifth-grade classrooms in 6 different elementary schools. The student population of these elementary

schools was between 410 and 626, and the percentage of students on free and reduced lunch was between 13.1% and 88%.

Procedure

An elementary education program at a mid-sized state university in the Midwest adopted the co-teaching model in student teaching in six schools. At the beginning of the semester, teacher candidates and cooperating teachers participated in a half-day workshop on co-teaching. The workshop introduced the essential elements of co-teaching, i.e., collaborative planning (working together to plan for the instruction), communication skills (listening actively and bouncing off feedback), partnership relationship (respecting and trusting each other), classroom application (sharing leadership), and knowledge base (getting support and training); as well as co-teaching approaches (*one teach, one observe*; *one teach, one assist*; *station teaching*; *parallel teaching*; *alternative teaching*; and *team teaching*). Teacher candidates and cooperating teachers were expected to plan the instruction together, use different co-teaching approaches to teach the class together, and evaluate their instruction together.

Emails were sent to teacher candidates and cooperating teachers to invite them to participate in the current study during the last week of student teaching. Those who agreed to participate would go to a URL address of Qualtrics, an online survey software and insight platform, to access the online survey.

Instrument

The Co-Teaching Survey (CTS) was developed to examine changes in the use of the co-teaching essential elements and approaches during student teaching. The first five questions were adapted from WMCW (Bacharach, Heck, & Dahlberg, 2008). The content validity was assured by the involvement of university faculty, cooperating teachers, and teacher candidates in

brainstorming, examining, and modifying the statements. The WMCW used a 6-point Likert scale to rate how important these essential elements were (1 = *not at all important*, 6 = *extremely important*), but the CTS used a 5-point Likert scale to rate how often these essential elements were implemented (1 = *never* and 5 = *always*) at the beginning versus the end of student teaching. There was a high internal consistency of the adapted survey with an overall Cronbach's Alpha .948 at the beginning of student teaching and .949 at the end of student teaching. There were 32 statements in five categories: collaborative planning (7 statements), communication skills (6 statements), partnership relationship (7 statements), classroom application (8 statements), and knowledge base (4 statements).

The last five questions of the CTS were added by the researcher to examine the use of co-teaching approaches. First, participants were asked to rate how often (1 = *never* and 5 = *always*) they used the six co-teaching approaches at the beginning versus at the end of student teaching, i.e., *one teach, one observe; one teach, one assist; station teaching; parallel teaching; alternative teaching; and team teaching*. There was also a high internal consistency of this statement with a Cronbach's Alpha of .822 at the beginning of student teaching and .823 at the end of student teaching. Second, they were asked to rank the effectiveness (1 = *least effective*, 6 = *most effective*) of the co-teaching approaches on children's learning and on preparation of teacher candidates for their future careers. Third, they were asked to rank the enjoyment (1 = *least enjoyable*, 6 = *most enjoyable*) and challenge levels (1 = *least challenging*, 6 = *most challenging*) of the co-teaching approaches.

Results

Essential Elements of Co-Teaching

The first five questions on the Co-Teaching Survey (CTS) answered the first research question on how teacher candidates and cooperating teachers used essential co-teaching elements (planning, communication, relationship, classroom applications, co-teaching knowledge base) at the beginning versus at the end of student teaching. Paired *t*-tests were used to compare the findings at the beginning and the end of student teaching. To indicate significant difference (α = .05) from Table 1 to Table 5, the symbol "*" was used for "Teacher Candidates, and the symbol "***" was used for "Cooperating Teachers."

Teacher candidates rated statements in all aspects of planning higher by the end of student teaching (all *p*s < .05) with the exception of "planning together for co-taught instruction" (see Table 1). Cooperating teachers pointed out that teacher candidates assumed more "leadership in planning", $t(12) = 3.77$, $p = .003$, and assigned more "tasks to cooperating teachers and other adults in the classroom", $t(12) = 3.255$, $p = .007$, by the end of student teaching.

Table 1

The Use of Planning in Co-Teaching (1=Never and 5=Always)

Question	Teacher Candidates *N*=24		Cooperating Teachers *N*=13	
1. How often did you and your co-teaching partner participate in the following instructional activities together at the beginning and at the end of student teaching?	Beginning	End	Beginning	End
• Planning together for co-taught instruction	3.79(1.14)	4.08(1.06)	4.54 (.97)	4.38 (.87)
• The teacher candidate assumes leadership in planning and teaching lessons	3.38(.92)*	4.25(.85) *	2.77 (1.3) ***	4.08 (.49) ***
• Sharing creative ideas and materials with each other	4.29(.96) *	4.58(.72) *	4.31 (.75)	4.62 (.51)
• Coordinating tasks	4.08(1.02) *	4.54(.72) *	4.15 (.99)	4.54 (.66)

• When leading instruction, the teacher candidate assigns tasks and responsibilities to the cooperating teacher and other adults in the classroom.	2.96(1.0) *	3.79(.88) *	2.15(1.07) ***	3.38(.96) ***
• Planning specifically not in generalities	3.58(1.1) *	4.21(.78) *	3.31 (1.38)	4 (.91)
• Clarifying or making instructional decisions explicit	4.0(1.02) *	4.5(.66) *	3.31 (1.44)	4 (.91)

Teacher candidates, $t(22) = 2.328$, $p = .03$, and cooperating teachers, $t(13) = 2.857$, $p = .013$, attended more "to their partner's body language and non-verbal cues" by the end of student teaching (see Table 2). Candidates also communicated more "honestly with cooperating teachers even when it was difficult", $t(22) = 2.472$, $p = .022$, and cooperating teachers had more "give and take in conversations with candidates" , $t(22) = 2.188$, $p = .047$, by the end of student teaching.

Table 2

The Use of Communication in Co-Teaching (1=Never and 5=Always)

Question	**Teacher Candidates *N*=23**		**Cooperating Teachers *N*=14**	
2. How often did you communication with your co-teaching partner at the beginning and at the end of the student teaching?	Beginning	End	Beginning	End
• Communicating honestly with my co-teaching partner even when it is difficult	4.39(1.03)*	4.83(.49) *	4.5 (.65)	4.71 (.47)
• Actively listening to suggestions, feedback and instructions from my co-teaching partner	4.87 (.34)	4.96(.21)	4.5 (.65)	4.64 (.5)
• Bouncing ideas off each other for genuine feedback and input prior to implementation	4.48 (.85)	4.74 (.54)	4.43 (.65)	4.43 (.65)
• Having a lot of give and take in conversations between co-teaching partners	4.26 (.96)	4.52 (.90)	3.93(1.0) ***	4.43(.85) ***
• Intentionally addressing communication strategies	3.96 (1.19)	4.22 (1.04)	3.79 (1.12)	3.93 (1.0)
• Attending to each other's body language and non-verbal cues	4.04 (.98) *	4.48(.79) *	3.86(.95) ***	4.5(.65) ***

Table 3 shows cooperating teachers were stronger in all but two aspects of partnership relationship by the end of student teaching (all *p*s< .05): "accepting different personality and teaching styles" and "openly assisting teacher candidates to develop rapport with all students." Both teacher candidates and cooperating teachers rated the areas of "respecting each other," "knowing when to jump in," and "adjusting in the moment-making changes" higher by the end of student teaching (all *ps*<.05).

Table 3

The Use of Relationship in Co-Teaching (1=Never and 5=Always)

Question	**Teacher Candidates *N*=25**		**Cooperating Teachers *N*=16**	
3. How often did you interact with your co-teaching partner at the beginning and at the end of student teaching?	Beginning	End	Beginning	End
• Respecting and trusting each other	4.72(.66)*	4.88(.44)*	4.06(.85) ***	4.63(.62) ***
• Working well as partners-being in sync	4.44 (.92)	4.64 (.76)	4.06 (.85) ***	4.63(.62) ***
• Knowing when to jump in	4.04 (.94)*	4.6 (.71)*	3.5 (.97) ***	4.38(.72) ***
• Adjusting in the moment-making changes as you go along	4.2 (.87)*	4.68(.56)*	3.63(1.03) ***	4.44(.51) ***
• Accepting different personality and teaching styles	4.4 (.87)*	4.6 (.71)*	4.06 (.93)	4.31 (.70)
• The cooperating teacher openly assists the teacher candidate to develop rapport with all students.	4.52 (9.2)	4.6 (.92)	4.63 (.72)	4.69 (.6)
• Allowing my co-teaching partner to take a lesson or unit that I would really love to teach	4.28 (.84)	4.4 (.67)	3.5 (.89) ***	4.5 (.63) ***

Both teacher candidates and cooperating teachers used more classroom applications (all with *p*>.05), with the exception of "being attentive and present during times when not directly providing instruction" (see Table 4).

Table 4

The Use of Classroom Applications in Co-Teaching (1=Never and 5=Always)

Question	Teacher Candidates *N*=25		Cooperating Teachers *N*=13	
4. How often did the following activities take place in the classroom at the beginning and at the end of student teaching?	Beginning	End	Beginning	End
• Students in the class view the teacher candidate as a real teacher.	4.08(1.15)*	4.64(.70)*	3.54(1.05) ***	4.54(.66) ***
• Sharing leadership in the classroom	4.04(1.06)*	4.76(.66)*	4.0(1.0) ***	4.69(.48) ***
• Sharing control of the classroom	4.12(1.09)*	4.68(.69)*	3.62 (.96) ***	4.62(.51) ***
• Using co-teaching strategies to differentiate instruction	3.88(1.24)*	4.32(1.07)*	3.77 (.93) ***	4.54(.52) ***
• The teacher candidate is attentive and present even during times when you are not directly providing instruction.	4.88 (.44)	4.72 (.74)	4.46 (.78)	4.77 (.6)
• Handling interruptions without stopping the class	4.2 (.92) *	4.56 (.92) *	4.0 (.91) ***	4.77(.44) ***
• Starting co-teaching within the first week of the student teaching experience	3.64(1.25)*	4.52(.96) *	3.69 (1.5) ***	4.62(.51) ***
• The cooperating teacher is attentive and present even during times when you are not directly providing instruction.	4.48 (.82)	4.28 (.98)	4.69 (.48)	4.46 (.66)

Teacher candidates were better able to "explain the benefits of co-teaching to parents," $t(25) = 2.848, p = .009$, and to "explain the benefits of co-teaching to students," $t(25) = 2.518, p = .019$, by the end of student teaching (see Table 5). Neither the teacher candidates nor the cooperating teachers mentioned any differences in "receiving support or training from the university" or in "understanding each of the co-teaching strategies" by the end.

Table 5

The Use of Co-Teaching Knowledge Base in Co-Teaching (1=Never and 5=Always)

Question	Teacher Candidates *N*=26		Cooperating Teachers *N*=13	
5. How often did you learn about co-teaching at the beginning and at the end of student teaching?	Beginning	End	Beginning	End
• Getting support and training provided by the university	3.42 (1.1)	3.46 (1.17)	3.0 (1.16)	2.85(1.07)
• Understanding each of the co-teaching strategies	3.73 (1.08)	3.92 (1.06)	3.85 (.9)	4.0 (1.29)
• Being able to explain the benefits of co-teaching to parents	3.27(1.28)*	3.69(1.49)*	4.0 (1.16)	4.62(.51)
• Being able to explain the benefits of co-teaching to students	3.31(1.29)*	3.73(1.43)*	4.08 (.95)	4.54 (.66)

Approaches in Co-Teaching

The six co-teaching approaches used in this study were: *one teach, one observe; one teach, one assist; station teaching; parallel teaching; alternative teaching; and team teaching*. Table 6 presents the results to the last five questions on the Co-Teaching Survey (CTS) about the co-teaching approaches used in student teaching. These results also answered the second research question on the use of co-teaching approaches, the third question on the effectiveness of co-teaching approaches, and the fourth question on the enjoyable and challenging levels of co-teaching approaches.

Table 6

The Approaches Used in Co-Teaching (1=Never and 5=Always)

Question	Teacher Candidates *N*=26	Cooperating Teachers *N*=13
6. Co-teaching approaches *(1=Never and 5=Always)*	Candidates used more *parallel teaching* (2.69 vs. 3.0) and *team teaching* (3.15 vs. 3.5) by the end of student teaching.	Teachers used more *alternative teaching* (3.2 vs. 3.87) and *team teaching* (3.13 vs. 3.67) by the end of student teaching.

7. Effectiveness of co-teaching approaches on children learning. (1=Least effective, 6=Most effective)	Most: *Alternative teaching (4.5).* Least: *One teach, one observe (3.0).*	Most: *Alternative teaching (4.33).* Least: *One teach, one observe (3.13).*
8. Effectiveness of co-teaching approaches on preparation of teacher candidates for their future teaching career. (1=Least effective, 6=Most effective)	Most: O*ne teach, one assist (4.32).* Least: *Parallel teaching (3.16).*	Most: *One teach, one assist (4.53).* Least: *Team teaching (3.47).*
9. Enjoyment of co-teaching approaches. (1=Least enjoyable, 6=Most enjoyable).	Most: *Station teaching (4.5).* Least: *One teach, one observe (2.8).*	Most: *Team teaching (4.73).* Least: *One teach, one observe (3.27).*
10. Challenge of co-teaching approaches. (1=Least challenging, 6=Most challenging).	Most: *Team teaching (4.48).* Least: *One teach, one observe (2.44).*	Most: *Parallel teaching (4.0).* Least: *One teach, one assist (2.13).*

Both teacher candidates, $t(25) = 2.368$, $p = .026$, and cooperating teachers, $t(14) = 2.256$, $p = .041$, used more *team teaching* by the end of student teaching. In addition, there were increases in the use of *parallel teaching* for teacher candidates, $t(25) = 2.309$, $p = .029$, and the use of *alternative teaching* for cooperating teachers, $t(14) = 2.646$, $p = .019$, by the end of student teaching.

Both teacher candidates and cooperating teachers ranked *alternative teaching* as the most effective and *one teach, one observe* as the least effective for children's learning. On the other hand, teacher candidates and cooperating teachers ranked *one teach, one assist* as the most effective approach for preparing teacher candidates for their future teaching career. Even though candidates and teachers used *parallel teaching* and *team teaching* more by the end of student teaching, they thought these were the least effective approaches to prepare candidates for teaching careers.

Teacher candidates enjoyed *station teaching* the most, whereas cooperating teachers enjoyed *team teaching* the most. In addition, both candidates and teachers enjoyed *one teach,*

one observe the least. On the other hand, teacher candidates found *one teach, one ob*serve the least challenging, and cooperating teachers found *one teach, one assist* the least challenging. Also, teacher candidates found *team teaching* the most challenging, and cooperating teachers found *parallel teachin*g the most challenging.

Discussion

This study examined how teacher candidates and cooperating teachers used essential co-teaching elements (planning, communication, partnership relationship, classroom applications, co-teaching knowledge base) and co-teaching approaches (*one teach, one observe*; *one teach, one assist*; *station teaching*; *parallel teaching*; *alternative teaching*; *team teaching*) by the end of the student teaching semester.

Essential Elements of Co-Teaching

Results showed there were differences for candidates and teachers in the use of co-teaching essential elements by the end of student teaching. First, for collaborative planning, the participation of candidates in planning together remained the same by the end of student teaching. Bacharach, Heck, and Dahlberg (2010) expected candidates to assume more responsibility and take the lead in planning as the co-teaching experience progressed. However, in most schools where candidates were placed in the current study, teachers of the same grade-level planned together every week for instruction and shared activities to be used in classrooms. Instead of planning together for co-taught instruction with their cooperating teachers, candidates have to plan with other teachers in the placement school. Candidates may not be sure of their roles in this team planning: How much could they be involved in planning? Which ideas are appropriate to share?

Second, for communication skills, candidates might find it intimidating at the beginning of the semester to honestly discuss difficult topics with cooperating teachers. Bacharach, Heck, and Dahlberg (2010) pointed out that candidates in co-teaching received guidance on the importance of strong communication skills and opportunities to practice effective communication strategies with teachers. Therefore, the longer they work together, the better they attend to each other's body language and non-verbal cues. When cooperating teachers have more give and take in conversations with candidates, candidates also feel more comfortable in talking about difficult topics with cooperating teachers.

Third, for partnership relationship, there was significant growth in more aspects of the partnership relationship for teachers than for candidates. Even though the co-teaching model encourages teachers to work with candidates as equal partners (Bacharach, Heck, & Dahlberg, 2010), it takes time to build up the rapport to the extent that teachers are able to work well with candidates as partners in the classrooms and to allow candidates to assume a lesson teachers really love to teach.

Fourth, for classroom application, candidates and cooperating teachers applied more co-teaching activities by the end of student teaching. Bacharach, Heck, and Dahlberg (2010) stated that co-teaching allowed candidates the time to develop instructional and management strategies with the support of their teachers. Therefore, the more they practice co-teaching, the more they are able to share leadership and control of the classroom, handle interruptions without stopping the class, and use co-teaching strategies to differentiate instruction by the end of student teaching.

Fifth, for knowledge base, candidates were better able to explain the benefits of co-teaching to parents and to students. The benefits of co-teaching were included in the training workshop to

promote co-teaching by Heck and Bacharach (2010). However, the co-teaching workshop given to candidates and teachers at the beginning of the student teaching semester was the only training provided by the university. During the semester, university supervisors observed candidates' teaching five times and discussed their observations with candidates, but no further support or training was given. The knowledge base of co-teaching for candidates or teachers remained the same by the end of student teaching. However, with personal experiences of implementing co-teaching, candidates could see the benefits of co-teaching and feel more confident that they could articulate them to parents and students.

Approaches in Co-Teaching

Results also showed there were differences for candidates and teachers in the use of co-teaching approaches by the end of student teaching. First, both teacher candidates and cooperating teachers used more *team teaching* by the end of student teaching. In order to use *team teaching*, candidates and teachers have to incorporate the essential co-teaching elements in student teaching. No matter whether it is leading a discussion or demonstrating a concept, team teaching requires good collaborative planning, communication skills, and a partnership relationship.

Second, both teacher candidates and cooperating teachers ranked *alternative teaching* as the most effective and *one teach, one observe* as the least effective for children learning. In *alternative teaching*, one teacher instructs the large group while the other works with a small group of students who need enrichment or assistance. All children are able to receive instruction differentiated for their own needs. However, in o*ne teach, one observe,* one teacher has primary responsibility for teaching while the other gathers specific observational information on students

or the instructing teacher. No intervention is given to help those students who excel or those who struggle.

Third, both teacher candidates and cooperating teachers ranked *one teach, one assist* as the most effective for preparing teacher candidates for their future teaching.. This approach is familiar to candidates and teachers because it is used in the field experiences prior to student teaching when candidates serve as teacher aides in the classrooms. When candidates help teachers run the classrooms, they are learning how to be teachers. Candidates ranked *parallel teaching,* and teachers ranked *team teaching,* as the least effective approaches because these were unrealistic to use in classrooms. Teachers use *parallel teaching* when both deliver the same instructional content to half of the class, and they use *team teaching* when both share the instruction of the whole class by taking turns leading a discussion or demonstrating a concept. In a regular classroom, there are not two teachers to do *parallel* or *team teaching*. Candidates have to be able to plan lessons, design activities, deliver curriculum, assess learning, and evaluate instruction by themselves.

Fourth, teacher candidates enjoyed *station teaching* the most, but cooperating teachers enjoyed *team teaching* the most. In *station teaching,* instructional content is divided into two or more segments to be presented at separate locations within the classroom. Candidates found *station teaching* fun to implement because children liked moving around the classroom to participate in different activities in different stations. Even though teachers thought *team teaching* was the least effective approach to prepare candidates for a teaching career, they enjoyed this approach most because it was challenging. Both candidates and teachers enjoyed *one teach, one observe* the least. In *one teach, one observe,* one teacher has primary responsibility for teaching while the other gathers specific observational information on students

or the instructing teacher. This approach requires the least preparation and interaction among children, candidates, and teachers.

Fifth, teacher candidates found *team teaching* the most challenging, and cooperating teachers found *parallel teachin*g the most challenging. *Team teaching* requires candidates to be in sync and to adjust to the moment with teachers, whereas *parallel teaching* requires teachers to make sure candidates teach the same content in the same way. In addition, teacher candidates found *one teach, one ob*serve the least challenging, and cooperating teachers found *one teach, one assist* the least challenging. These two approaches require the least preparation and collaboration between candidates and teachers, thus the ease of implementing these approaches may render them the least challenging.

Implications for Student Teaching

With a better understanding of how candidates and teachers use co-teaching essential elements and co-teaching approaches, Table 7 suggests some strategies for using co-teaching model in field experiences and student teaching.

Table 7

Implications of Co-Teaching for Field Experiences and Student Teaching

1. Expanding co-teaching to field experiences
   - Early field experiences: *one teach, one observe* & *one teach, one assist*
   - Later field experiences: *station teaching* & *alternative teaching*
   - Student teaching: *parallel teaching* & *team teaching*
2. Developing evaluations of co-teaching essential elements
   - Develop a rubric to evaluate how teacher candidates and cooperating teachers utilize collaborative planning, communication skills, partnership relationship, classroom applications, knowledge base, and co-teaching approaches.
3. Offering more university support and training
   - Collaborative planning: a timeline with suggested implementation guideline
   - Communication skills & partnership relationship: a paired workshop between teacher candidates and cooperating teachers handling difficult situations
   - Classroom applications: feedback from university supervisors
   - Knowledge base: articles, research findings and videos
   - Co-teaching approaches: anecdotes, videos or focus groups
4. Modeling co-teaching approaches

- Provide training workshops to faculty and university supervisors.
- Encourage faculty to model co-teaching approaches in methods courses.

Expanding Co-Teaching to Field Experiences

The current study revealed the participation of candidates in planning together remained the same by the end of student teaching, and candidates found *team teaching* the most challenging. Darragh, et al. suggested introducing co-teaching strategy into coursework early on in teacher preparation programs so that candidates would be prepared to use co-teaching in student teaching. In addition, Bennett and Fisch (2013) recommended introducing a co-teaching assignment to engage candidates in a meaningful discussion of the challenges and benefits of co-teaching in field experiences.

In fact, not only can teacher education programs use co-teaching strategy in coursework, they can also extend co-teaching from student teaching to field experiences. Instead of using all of the co-teaching approaches during student teaching, co-teaching approaches could be used in early field experiences when candidates are unfamiliar with the classrooms and in later field experiences when candidates are taking methods classes.

Without much classroom experience, the use of *one teach, one observe* and *one teach, one assist* in early field experiences can help familiarize candidates with the routine of the classrooms since these approaches were ranked as easy and beneficial in this study. In *one teach, one observe,* the role of candidates is more than being peer reviewers to teachers. When teachers teach, candidates can observe students' behavior or teachers' instruction to gather specific observational information. For example, candidates may observe students to determine how well they understand directions or the instructional content. In *one teach, one assist*, candidates can assist students when they don't understand or are experiencing difficulties. For

example, candidates may help teachers passing out worksheets, preparing materials, answering students' questions, assisting students with their work, monitoring students' behaviors, or correcting assignments.

After becoming familiar with the classroom routines, candidates can use what they have learned from the methods classes to do *station teaching* or *alternative teaching* since they step up their responsibility and are still scaffolded by small group structure. In *station teaching,* the instructional content is divided into parts, and the students are divided into groups. Teachers can lead a station while candidates can run another station. Students may spend a designated amount of time at each station. In *alternative teaching,* different approaches to learning the same information are provided. Teachers may lead a large group of students at their expected grade level while candidates work with a small group of students who need enrichment or assistance. The small group instruction can prepare candidates for whole-class instruction in student teaching.

With experiences in small group instruction, candidates can use *parallel teaching* and *team teaching* in student teaching since these approaches were ranked challenging in this study. In *parallel teaching,* students are divided into half and given the same instructional material and teaching strategy. When teachers deliver the instructional content to half of the class, candidates can deliver the same instructional content to the other half. In *team teaching,* teachers and candidates share the instruction, freely interject information, assist students, and answer questions. Candidates and teachers may share the instruction of the whole class by taking turns leading a discussion or demonstrating a concept.

Developing Evaluation of Co-Teaching Essential Elements

There were several studies on evaluation of co-teaching in special education setting (e.g., Gately & Gately, 2001; Hang & Rabren, 2009; Magiera, Simmons, Marotta, & Battaglia, 2005; Murawski & Lochner, 2011; Noonan, McCormick, & Heck, 2003). However, only a few studies were related to the evaluation of co-teaching in student teaching (e.g., Bacharach, Heck, & Dahlberg, 2008; Heck & Bacharach, 2010; Villa, Thousand, & Nevin, 2013).

The current findings showed candidates and teachers used co-teaching approaches more often by the end of student teaching. During the semester of student teaching, teacher candidates are evaluated by cooperating teachers and university supervisors. Even though co-teaching is used in student teaching, the evaluation focuses only on teacher candidates' solo instruction. There is disconnect between the use of co-teaching and the evaluation of teacher candidates in student teaching. To evaluate the use of co-teaching in student teaching, the evaluation could incorporate the co-teaching essential elements such as collaborative planning, communication skills, partnership relationship, classroom applications, knowledge base, and co-teaching approaches.

In addition to using a rubric to evaluate teacher candidates' solo instruction, a rubric could be developed by the university supervisors, teacher candidates, and cooperating teachers to see how teacher candidates and cooperating teachers utilize these co-teaching essential elements. Some essential elements may not be in use when university supervisors are observing in the classrooms. Therefore, this rubric could be used by teacher candidates and cooperating teachers to self-evaluate their use of the co-teaching essential elements.

Offering More University Support and Training

Another finding was that neither teacher candidates nor cooperating teachers mentioned any differences in receiving support or training from the university, or in understanding each of the

co-teaching strategies by the end of student teaching. Bacharach, Heck and Dahlberg (2010) stressed the importance of providing professional development and ongoing support for candidates, teachers, and university supervisors, and Heck and Bacharach (2015/2016) suggested providing timely, ongoing refresher courses and updates for university and school personnel.

In addition to co-teaching workshops at the beginning of the student teaching semester, the university could provide more support and training to teacher candidates and cooperating teachers on co-teaching throughout the semester. To foster collaborative planning, a timeline for suggested implementation for teacher candidates and cooperating teachers would help promote planning for co-taught lessons. To strengthen communication skills and establish a partnership relationship, a paired workshop between teacher candidates and cooperating teachers could focus on strategies for handling difficult situations, such as constructive criticism on teaching, disciplines, and behaviors. To encourage the use of co-teaching in classrooms, university supervisors might provide feedback on what they have observed in their visits to classrooms. To increase the knowledge base of co-teaching, articles, research findings, and videos of co-teaching can be distributed to teacher candidates and cooperating teachers, as well as being discussed in the co-teaching workshop. To experience different co-teaching approaches, teacher candidates and cooperating teachers from different classrooms can use anecdotes, videos, or focus groups to share their experiences of successes and challenges in using co-teaching.

Modeling Co-Teaching Approaches

The current study found candidates used *team teaching* more by the end of student teaching, but they ranked *team teaching* the most challenging co-teaching approaches. Ferguson and Wilson (2011) co-taught an undergraduate reading methods course to model co-teaching for their students. Teacher education programs may encourage faculty to model *team teaching* in

methods courses so that candidates would be exposed to this approach before taking the challenge to use it in student teaching.

Before teacher education programs adopt the co-teaching model in student teaching, they could provide training workshops to faculty and university supervisors about the background of co-teaching, data supporting co-teaching, roles of members in co-teaching, co-teaching essential elements, and co-teaching approaches. Even though faculty may not supervise student teaching like university supervisors do, faculty are in a better position to model different co-teaching approaches in methods courses. Some co-teaching approaches are easier to learn than others. *Team teaching* may be one of the approaches that takes longer to perfect. However, candidates would learn much better when they are exposed to it in their coursework.

In order to encourage faculty to model co-teaching approaches, teacher education programs may have to provide incentives and support. Faculty could be able to receive credit hours to team teach the same course. Professional development could also be provided to help faculty improve their teaching.

Limitation and Recommendation for Future Studies

Since the co-teaching model in student teaching has received more attention, other teacher education programs may learn from the results of this study when they are thinking of adopting the co-teaching model. However, the findings may not be generalized to larger or smaller institutions, programs with more diverse student populations, or locations with more urban schools. In addition, there may be social desirability bias in candidates' responses to the survey, and observational data could be used to help triangulate survey results.

With a limited number of studies on the co-teaching model in student teaching, many topics are worth exploring. First, what is the impact of co-teaching on candidates? Would it be easier

for candidates to find a job? Would candidates stay longer in the teaching career? Second, what is the impact of co-teaching on teacher education programs? What curriculum and institutional changes are involved if teacher education programs are adopting the co-teaching model? Third, is co-teaching the best way to do student teaching? What are the advantages of the co-teaching model over the other clinically-based student teaching programs?

Conclusion

Successful co-teaching relied on essential elements (collaborative planning, communication skills, partnership relationship, classroom application, knowledge base) and different approaches. There is an increase for teacher candidates and cooperating teachers in adopting these essential elements and approaches by the end of student teaching. To promote the co-teaching model, teacher education programs may expand the co-teaching model to field experiences, develop evaluation of co-teaching essential elements, offer more university support and training, and model co-teaching approaches. More studies can be done on the co-teaching model to benefit teacher education programs.

References

Bacharach, N. L., & Heck, T. W. (2012). Voices from the field: Multiple perspectives on a co-teaching in student teaching model. *The Renaissance Group, 1*, 49-61.

Bacharach, N. L., Heck, T. W., & Dahlberg, K. (2008). What makes co-teaching work? Identifying the essential elements. *College Teaching Methods & Styles Journal, 4,* 43-48.

Bacharach, N. L., Heck, T. W., & Dahlberg, K. (2010). Changing the face of student teaching through co-teaching. *Action in Teacher Education, 32,* 3-14.

Bacharach, N., Heck, T., & Dank, M. (2004, February). *Co-teaching in student teaching: A case study*. Paper presented at the annual meeting of the Association of Teacher Educators, Dallas, Texas.

Badiali, B. & Titus, N. E. (2010). Co-teaching: Enhancing student learning through mentor-intern partnerships. *School-University Partnerships, 4*, 74-80.

Bennett, D. J., & Fisch, A. A. (2013). Infusing co-teaching into the general education field experience. *Interdisciplinary Journal of Teaching and Learning, 3*, 18-37.

Cheong, D. (2010). The effects of practice teaching sessions in second life on the change in pre-service teachers' teaching efficacy. *Computers & Education, 55*, 868-880.

Cook, L., & Friend, M. (1995). Co-teaching: Guidelines for creating effective practices. *Focus on Exceptional Children, 28,* 1-16.

Darragh, J. J., Picanco, K. E., Tully, D., & Henning, A. S. (2011). "When teachers collaborate, good things happen": Teacher candidate perspectives of the co-teach model for the student teaching internship. *AILACTE Journal, 8,* 83-104.

Diana, T. J. (2014). Co-teaching: Enhancing the student teaching experience. *Kappa Delta Pi Record, 50,* 76-80.

Ferguson, J., & Wilson, J. C. (2011). The co-teaching professorship: Power and expertise in the co-taught higher education classroom. *Scholar-Practitioner Quarterly, 5*, 52-68

Gately, S. E., & Gately, F. J. (2001). Understand co-teaching components. *Teaching Exceptional Children, 33*, 40-47.

Hang, Q., & Rabren, K. (2009). An examination of co-teaching: Perspectives and efficacy indicators. *Remedial and Special Education, 30*, 259-268.

Hartnett, J., Weed, R., McCoy, A., Theiss, D., & Nickens, N. (2013). Co-teaching: A new partnership during student teaching. *SRATE Journal*, 23, 5-12.

Heck, T., & Bacharach, N. (2010). *Mentoring teacher candidates through co-teaching: Collaboration that makes a difference*. St. Cloud, MN: St. Cloud State University.

Heck, T., & Bacharach, N. (2015/2016). A better model for student teaching. *Educational Leadership*, *73*, 24-29.

Magiera, K., Simmons, R., Marotta, A., & Battaglia, B. (2005). A co-teaching model: A response to students with disabilities and their performance on NYS assessments. *School Administrators Association of New York Journal, 34*, 9-12.

Merk, H., Waggoner, J., & Carroll, J. (2013). Co-learning: Maximizing learning in clinical experiences. *AILACTE Journal, 10*, 79-95.

Murawski, W. W., & Lochner, W. W. (2011). Observing co-teaching: What to ask for, look for, and listen for. *Intervention in School and Clinic, 46,* 174-183.

Murawski, W. W., & Swanson, H. L. (2001). A meta-analysis of co-teaching research: Where are the data? *Remedial and Special Education, 22*, 258-267.

Murphy, C., Beggs, J., Carlisle, K., & Greenwood, J. (2004). Students as "catalysts" in the classroom: the impact of co-teaching between science student teachers and primary

classroom teachers on children's enjoyment and learning of science. *International Journal of Science Education, 26*, 1023-1035.

National Council for Accreditation of Teacher Education (NCATE, 2010). *Transforming teacher education through clinical practice: A national strategy to prepare effective teachers-Report of the Blue Ribbon Panel on clinical preparation and partnerships for improved student learning*. Washington, DC: NCATE.

Nevin, A., Cramer, E., Salazar, L., & Voigt, J. (2008). Instructional modifications, adaptations, and accommodations of co-teachers who loop: A descriptive case study. *Teacher Education and Special Education, 31*, 283-297.

Nilsson, P., & Driel, J. V. (2010). Teaching together and learning together-Primary science student teachers' and their mentors' joint teaching and learning in the primary classroom. *Teaching and Teacher Education, 26*, 1309-1318.

Noonan, M. J., McCormick, L., & Heck, R. H. (2003). The co-teaching relationship scale: Applications for professional development. *Education and Training in Developmental Disabilities, 38*, 113-120.

Pearl, C., Dieker, L. A., & Kirkpatrick, R. M. (2012). A five-year retrospective on the Arkansas Department of Education co-teaching project. *Professional Development in Education, 38*, 571-587.

Villa, R. A., Thousand, J. S., & Nevin, A. I. (2013). *A guide to co-teaching: New lessons and strategies to facilitate student learning* (3rd ed.). Thousand Oaks, CA: Corwin.