

## **An Investigation of Mentor Teachers' and Student Teacher Candidates' Perceptions of Co-Teaching during the COVID-19 Pandemic**

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Abstract: Educators saw an instant shift from face-to-face to online or hybrid co-teaching and learning during the COVID-19 pandemic. Mentor teachers and student teacher candidates working together during the spring 2020 semester grappled to discover the most effective tools, resources, and strategies to provide quality instruction to P-12 students. The purpose of this study was to investigate mentor teachers' and student teacher candidates' perceptions of co-teaching during the COVID-19 pandemic through the lenses of Charlotte Danielson's (1996) Professional Framework for Teaching, Models of Co-teaching (Friend et al., 2010), and Tuckman's (1965) Model of Small Group Development. Results illustrate the benefits and challenges of co-teaching during the pandemic, technology utilized, and the fluid movement of the co-teachers through the stages of development. This study aligns with the question of how teacher education programs, grounded in school-university partnerships, responded to the need for quality clinical experiences during the shift to virtual learning.

**KEYWORDS:** co-teaching, COVID-19, online learning, student teacher candidate, mentor teacher

### **NAPDS NINE ESSENTIALS ADDRESSED:**

Essential Two: Clinical Preparation. A PDS embraces the preparation of educators through clinical practice.

Essential Four: Reflection and Innovation. A PDS makes a shared commitment to reflective practice, responsive innovation, and generative knowledge.

## **An Investigation of Mentor Teachers' and Student Teacher Candidates' Perceptions of Co-Teaching during the COVID-19 Pandemic**

In-service teachers and pre-service teacher educators around the globe were forced to shift the way they provided instruction to their students due to the COVID-19 pandemic. Traditionally, cooperating mentor teachers and teacher candidates worked together, face-to-face, using a co-teaching model. Abruptly, they had to respond to the crisis and change to co-teaching virtually in order to continue to provide quality instruction to P-12 students and effectively prepare teacher candidates for their future classrooms. In this dramatically changed context, educators were expected to be flexible and willing to change to an online format (Quezada et al., 2020). The purpose of this study was to investigate classroom mentor teachers' and student teacher candidates' perceptions of co-teaching virtually during the COVID-19 pandemic. Specifically, the study investigated the benefits and challenges of co-teaching through the lenses of Charlotte Danielson's (1996) Professional Framework for Teaching, Models of Co-teaching (Friend et al., 2010), and Tuckman's (1965) Model of Small Group Development.

In this study, the researchers investigated the virtual co-teaching relationship between classroom mentor teachers and student teacher candidates. Historically, co-teaching was used by special education teachers who partnered with general educators. Co-teaching was defined as "a coordinated instructional delivery practice in which two or more educators simultaneously work with a heterogeneous group of students in a general education classroom" (Beninghof, 2012, p.7). More recently, the term has been associated with student teacher candidates and mentor teachers (Thompson & Schademan, 2019). Traditional face-to-face co-teaching is often compared to a marriage. Murawski (2010) suggested, "A partnership that works is like a marriage made in heaven" (p. 193). In Spring 2020, educators saw an instant transformation from face-to-face co-teaching to online teaching and learning due to COVID-19. With this change to online learning, co-teaching morphed from a marriage to an online dating relationship and school-university partnerships adapted accordingly.

### **Literature Review**

#### **Historical Context**

The need for co-teaching in the general education classroom increased with the reauthorization of Individuals with Disabilities Education Act (IDEA) in 1990, 1997, and 2004 as well as expectations associated with full inclusion and the No Child Left Behind Act (NCLB) of 2001 (Polloway et al., 2008). As mainstreaming emerged, co-teaching between a special educator and regular educator working together in the regular education classroom became more common. The goal of this co-teaching relationship was to meet the needs of their students with disabilities in the general education setting (Beninghof, 2015). NCLB (2001) set a high standard for all students which increased the need for co-teaching as more students with disabilities were being educated in the regular classroom. The reauthorization of the IDEA (2004) enhanced the need for inclusion as all students were to be educated in their least restrictive environment.

#### **Charlotte Danielson's Framework for Professional Practice**

Since 1996, the Charlotte Danielson Framework for enhancing professional practice has supported the evaluation of teacher performance. The framework is divided into four domains: Planning and Preparation, Classroom Environment, Instruction, and Professional Responsibilities

(Danielson, 1996). The framework for teaching has been used widely in multiple settings including teacher preparation, supervision of student teachers, and teacher assessment (Danielson, 2008; Morris-Mathews et al., 2021; Sandilos et al., 2019).

### **Co-Teaching Partnerships**

Co-teaching is not just the pairing of a special education teacher with a general education teacher. Collaborative partnerships bring together two teachers or specialists with a variety of expertise in teaching, remediation, and behavior management (Beninghof, 2015). Additional unique co-teaching partnerships include same subject teachers, a general education teacher with an English Language Learner (ELL) Specialist, mathematics coach, reading coach, or a Speech and Language Pathologist. Students benefit from the blending of multiple professional backgrounds in one classroom (Murray, 2004). Field experiences for student teacher candidates have been restructured to use a co-teaching format of collaborative planning and instructing in contrast to the traditional model of one-teach and one-observe from the past (Guise et al., 2017).

### ***Mentor Teachers and Student Teacher Candidate Partnerships***

The implementation of co-teaching within innovative teacher preparation programs continues to grow and assist students with and without disabilities as well as enhance the student teacher candidate's learning experience (Darling-Hammond et al., 2019). Mentor and student teacher co-teaching partnerships enhance professional development in the areas of collaboration, instruction, inclusion, and assessment (Guise et al., 2017). Ricci et al. (2019) found that in the beginning both mentors and student teachers felt they had strong collaboration skills that continued to grow and improve throughout their co-teaching partnerships, with flexibility being the most significant area of growth.

### ***Stages of Co-Teaching Partnerships***

Throughout the collaboration process of co-teaching, partner teachers go through stages as time progresses. Gately and Gately (2001) explained the foundation stage as "taking the lead." During this first developmental stage, teachers discuss, review, and choose the models of co-teaching that would work best with their group of students. Teachers also take time during this stage to find common interests and move past the uncomfortable awkwardness of working with someone new. For many years in education teachers were alone in the classroom; adding a co-teacher can be an adjustment for all involved. Teachers who volunteer to co-teach are more likely to have a successful partnership, than those who are forced into a partnership by administrators (Murawski, 2010). Co-teachers work together during the second stage, compromising, to set up classroom rules, behavior management protocols, and implementation of behavior plans (Friend, 2007; Gately & Gately, 2001). Both teachers need to state their preferences early to avoid personality conflicts during or after issues arise. In this stage both teachers share their strengths and weaknesses. The compromising stage can often be difficult, because teachers have different views on behavior management. This stage is often met more quickly when a schoolwide behavior and discipline model is followed by all classrooms. The last stage of co-teaching is identified by Gately and Gately (2001) as the collaborative stage. This stage is often not met because teachers feel they do not have enough time in their schedules set aside for planning and communication to make curricular decisions for their shared students. An essential part of co-teaching is allowing enough planning time (Murawski, 2010).

**Co-Teaching Models**

Co-teaching allows for implementation of innovative teaching techniques using differentiated instruction, scaffolded learning strategies, equal access to curriculum, and progress monitoring that may not have been introduced within a classroom with only one teacher (Ricci et al., 2019). St. Cloud State University’s Quality Enhancement Initiative in partnership with The Department of Education in 2006 developed an alternative to the traditional model of student teaching by taking the literature based definitions of co-teaching from Cook and Friend (1995) and modified them to fit the partnership between a mentor teacher and student teacher candidate (Bacharach et al., 2010). For the purpose of this study, classroom mentor teachers and student teacher candidates are both considered “teachers” in the co-teaching models of Friend and Cook. Friend et al. (2010) models of co-teaching are described in Table 1.

**Table 1**  
*Co-Teaching Models*

| Co-teaching Model      | Description  |
|------------------------|--|
| One Teach, One Assist  | whole group teaching where there is one lead teacher and the other teacher assists               |
| Parallel               | two mixed-ability groups where both teachers are teaching the same content                       |
| Alternative            | two same-ability groups where the two teachers are teaching different content                    |
| Station                | both teachers are monitoring all stations or teaching one station and monitoring another station |
| Team Teaching          | whole group teaching where both teachers teach together  |
| One Teach, One Observe | one teacher is teaching the large group while the other teacher observes and collects data       |

**Theoretical Framework**

The theoretical paradigm used to guide this study is Tuckman’s Model of Small Group Development (Tuckman, 1965). According to Tuckman (1965), effective teams, large and small, go through four stages of team development. A fifth stage was added in 1977 (Tuckman & Jensen, 1977). This theory of team development can be applied seamlessly to co-teaching partnerships in all grade levels (P-12). In Tuckman’s model, high-performing teams go through five stages in their team development: forming, storming, norming, performing, and adjourning. According to Tuckman, it is essential that teams work through all stages so they may grow, face and respond to challenges (such as virtual co-teaching during COVID-19), research solutions, develop plans, and produce results. This model can be applied to virtual teams. During the pandemic, traditional co-teaching partner teams morphed into virtual teams. In 1997, Lipnack and Stamps applied and extended Tuckman’s work to develop a virtual team model. In summary, this framework is helpful in examining the development of the co-teaching mentor teacher and

student teacher candidate teams and additionally how the teams functioned virtually regarding flexibility, roles, openness, cooperation, trust, and self-evaluation.

### **Purpose of the Study**

The purpose of this study was to investigate classroom mentor teachers' and student teacher candidates' perceptions of co-teaching during the COVID-19 pandemic. The researchers explored, through case studies of nine participants, the types of alternative instructional activities used to teach students after physical school buildings were closed, and how the pairs of classroom mentor teachers and student teacher candidates collaborated to provide quality instruction. The Danielson Framework for Professional Practice (1996) and models of co-teaching (Friend et. al, 2010) were the lenses through which investigation occurred. Additionally, participants were asked to identify the benefits and challenges of co-teaching, as well as how their methods of collaboration and instructional delivery changed, during the COVID-19 pandemic.

### **Research Questions**

The following research questions guided this study:

1. Which components of the Danielson Framework did mentor teachers and student teacher candidates utilize during virtual learning required by the COVID-19 pandemic?
2. Which models of co-teaching were utilized during virtual learning required by the COVID-19 pandemic and how were they implemented by mentor teachers and student teacher candidates?
3. What do mentor teachers and student teacher candidates perceive as the benefits to co-teaching during the COVID-19 pandemic?
4. What do mentor teachers and student teacher candidates perceive as the challenges to co-teaching during the COVID-19 pandemic?

### **Methods**

A case study design was used to investigate mentor teachers' and student teacher candidates' perceptions of co-teaching during the COVID-19 pandemic. An electronic instrument was constructed and validated by the researchers to explore answers to the research questions (see Appendix). Once validity was established, the researchers surveyed five pairs of student teacher candidates and their mentor teachers.

### **Participant Selection**

Purposive homogeneous sampling was used to identify the participants with similar co-teaching experiences (Etikan et al., 2016). The researchers selected five pairs of student teacher candidates and mentor teachers from two institutions of higher education in the Eastern United States who they knew co-taught during the COVID-19 pandemic. Participants were invited to participate through initial phone calls and email messages and if interested, received the formal email letter of invitation. The 10 participants (five student teacher candidates and five of their mentor teachers) co-taught in both regular education and special education classrooms at various grade levels. Nine of the 10 participants who were invited chose to participate in the survey (Appendix). Participant demographics are listed in Table 2.

**Table 2**  
*Participant Demographics*

|  | Mentor 1                 | Mentor 2                    | Mentor 3                    | Mentor 4                  | Mentor 5               |
|--|--------------------------|-----------------------------|-----------------------------|---------------------------|------------------------|
| # years teaching                       | 19                       | 11                          | 13                          | 14                        | 12                     |
| Mentor positions                       | Secondary Social Studies | Learning Support            | First Grade                 | Kindergarten              | Life Skills            |
| # years as mentor teacher              | 7                        | 6                           | 9                           | 11                        | 6                      |
| Student teacher candidate disciplines  | Secondary Social Studies | Early Childhood Special Ed. | Early Childhood Special Ed. | Early Childhood Education | Special Education 7-12 |
| Total # students                       | 161                      | 20                          | 18                          | 20                        | 13                     |
| % Active P-12 students during COVID-19 | 95%                      | 100%                        | 95%                         | 100%                      | 100%                   |

**Data Collection**

The research instrument was constructed by the researchers (Appendix); thus, a pilot study was conducted. The Lawshe (1975) Method was used to validate the instrument. The instrument was sent to nine “experts” on co-teaching including university supervisors, student teacher candidates, and mentor teachers who were not used as subjects in the actual study. They were asked to review each question to determine if the questions addressed the overarching research questions and if the questions were “essential,” “useful but not essential,” or “not necessary.” Substantive changes were not necessary; participants agreed the questions were essential and useful to the study.

Consent to participate was obtained and surveys were sent via email to 10 participants; nine people completed the survey. After analyzing the surveys, follow-up questions regarding demographics and celebration activities were emailed to the participants.

**Data Analysis and Results**

**Danielson Framework**

Question 1 of this study asked, “Which components of the Danielson Framework did mentor teachers and student teacher candidates utilize during virtual learning required by COVID-19?” For each domain and component, participants were asked to rate how frequently they were able to work with their co-teachers. Descriptive statistics and participants’ responses to

interview questions were used to analyze Research Question 1. Tables 3-6 illustrate the results as they pertain to each of the four domains: Planning and Preparation, Classroom Environment, Instruction, and Professional Responsibilities. Each table is followed by a narrative description of the findings.

**Table 3**  
*Planning and Preparation*

| Component  | Frequently (%) | Sometimes (%) | Never (%) |
|--|----------------|---------------|-----------|
| Selecting professional outcomes, goals, and objectives | 77.8           | 22.2          | 0         |
| Selecting appropriate resources                        | 77.8           | 22.2          | 0         |
| Knowledge of students                                  | 55.6           | 44.4          | 0         |
| Designing coherent instruction                         | 77.8           | 22.2          | 0         |
| Designing student assessment                           | 44.4           | 44.4          | 11.1      |

N=9

In the Planning and Preparation Domain, 100% of participants frequently or sometimes collaborated to Select Professional Outcomes, Goals, and Objectives; Select Appropriate Resources; Discuss Knowledge of Students; Design Coherent Instruction; and Design Student Assessment. One co-teacher never collaborated on Design Student Assessment.

Participants were also asked approximately how many hours per week they spent collaborating in the Planning and Preparation Domain. Almost half of the participants (44.4%) perceived spending more than five hours per week collaborating with their co-teachers, 33.3% spent two-three hours collaborating, and 11.1% spent between four-five or zero-one hours collaborating in the Planning and Preparation components.

Finally, participants were asked to give specific examples of co-planning or co-teaching within the Planning and Preparation Domain. Several participants referred to the online tools they used to collaborate including Google Meet, Schoology, Google Docs, and videoconferencing. One mentor teacher shared, “My student teacher and I met weekly if not daily via Google Meet to plan the Science/Social Studies curriculum materials we would be pushing out for our students. We would research ideas and work together on a Google Doc to link videos, songs, ideas, etc.” Another mentor teacher explained, “My student teacher and I were able to communicate via email, phone calls, Google Meet, etc. to plan instruction. She worked with other student teachers to plan online activities for all first graders in the district. She also selected appropriate read aloud stories to share with students on a weekly basis via Google Meet.”

Two teacher candidates noted challenges faced in the Planning and Preparation Domain. One candidate said:

This domain was difficult for my second placement, since I had not been in person with these students since October. I had not made connections with these students, since I mostly observed. When I was planning, I did not know the strengths and weaknesses of the students. The lessons I planned went to all of the classes, regardless of the level (College Bound or Academic). I was concerned the material was too challenging for some, but not enough for others. Many of the students were unmotivated for virtual working, while others were working full time during the pandemic. My mentor teacher knew the students like the back of his hand. They would often reach out to him, rather than myself if they had issues or concerns. He often gave me information on students that might help motivate or challenge the students.

Another teacher candidate noted the challenges faced while planning and uploading documents. Specifically, the candidate said:

While student teaching online, the most time-consuming part was planning the daily/weekly lessons online and uploading the work to a platform called Schoology. It took a lot of time to upload documents and find the proper documents that were at each student's level based on spelling, reading, math, and vocabulary. It was very important to gain knowledge of my students and try to figure out what would keep them interested when working online. I had to find fun and exciting daily activities that would relate to each student to keep them engaged when completing the assignments...It would take me two to three hours just to plan and upload all the documents for one day's plan.

**Table 4**  
*The Classroom Environment*

| Component                                      | Frequently (%) | Sometimes (%) | Never (%) |
|--|----------------|---------------|-----------|
| Creating an environment of respect and rapport | 88.9           | 11.1          | 0         |
| Establishing a culture for learning            | 66.7           | 33.3          | 0         |
| Managing classroom procedures                  | 55.6           | 33.3          | 11.1      |
| Managing student behavior                      | 44.4           | 44.4          | 11.1      |
| Organizing space and managing online classroom | 55.6           | 33.3          | 11.1      |

N=9

All participants frequently or sometimes collaborated in two components, Creating an Environment of Respect and Rapport and Establishing a Culture for Learning, of the Classroom Environment Domain. One participant (11.1%) did not collaborate with the co-teacher in the components of Managing Classroom Procedures, Managing Student Behavior, or Organizing Space/Managing Online Classroom.

Participants were invited to share specific examples of how they co-taught within the Classroom Environment Domain. One teacher candidate noted the importance of establishing a culture of online learning stating:

It was very important to continue to establish a culture of learning online. At times students were becoming comfortable and not working to the best of their abilities because they were at home in a relaxed setting. I was sure to establish high expectations and keep my attitude positive and keep the excitement in the students. The students were always given time to discuss and answer questions to stay engaged and have the chance to voice their opinions.

One teacher candidate shared:

When managing classroom procedures and managing student behavior, we quickly learned how differently that would look like online for us. I worked together with my mentor teacher during live meetings with my students to manage behavior such as unmuting their mic and talking while the teacher is talking or avoiding off topic conversations that were not school-related. We did this in a flexible way, noticing when students needed a break and needed time to socialize with the peers they abruptly couldn't see anymore.

One mentor teacher commented about the advantage of having the teacher candidate in the classroom prior to the pandemic as a year-long resident participant in a Professional Development School (PDS). The mentor wrote:

Many of the areas listed above were translatable to the online environment because my student teacher had spent time in my classroom prior to the pandemic. We were able to collaborate on managing behavior when needed; she was able to establish some respect and rapport, and a culture of learning, before we went online and was able to carry that forward. She was also able to easily manage the online classroom through Google Classroom as well as transfer grades into our PowerTeacher gradebook.

**Table 5**  
*Instruction*

| Component                                    | Frequently (%) | Sometimes (%) | Never (%) |
|--|----------------|---------------|-----------|
| Communicating with students                  | 77.8           | 22.2          | 0         |
| Using questioning and discussion techniques  | 55.6           | 44.4          | 0         |
| Engaging Students in Learning                | 88.9           | 11.1          | 0         |
| Using Assessment in Instruction              | 55.6           | 44.4          | 0         |
| Demonstrating Flexibility and Responsiveness | 100            | 0             | 0         |

N=9

Table 5 shows 100% of participants perceived they frequently or sometimes collaborated in all of the selected components of the Instruction Domain: Communicating with Students, Using Questioning and Discussion Techniques, Engaging Students in Learning, Using Assessment in Instruction, and Demonstrating Flexibility and Responsiveness. All participants collaborated frequently to Demonstrate Flexibility and Responsiveness.

Participants were asked to provide specific examples of utilizing co-teaching in the Instruction Domain. Four of the nine participants noted the importance, and gave examples of, Demonstrating Flexibility and Responsiveness. One mentor shared:

During the time online it was very important to be flexible. At times students were not able to log in to their computers for days at a time. I was sure to contact these students and make sure they were able to keep up with the work. I was also sure to have backup assignments ready for each student or modifications based on the level of the student. It was very important to communicate with the students and be sure to keep them engaged in discussion.

A student teacher candidate stated:

Overall, I think COVID-19 showcased how flexible teachers can be. When I first started virtual, I was required to do 30 minutes of material a day. The following week it was 3, 30-minute lessons. Then towards the end of student teaching it was 3, 15-minute lessons. The work was overwhelming for all involved. My mentor teacher and I were in frequent contact about student concerns. I often answered my emails or comments in Google Classroom within the hour. Students could be working on the lessons whenever they wanted to, so this became somewhat difficult. My mentor teacher often gave me feedback throughout the week on my lessons.

Communication was also mentioned frequently (77.9%) by the participants. One teacher candidate said:

We were always in touch with our families whether it was via Remind, email, or Google Meet. We sent out updates to families via email and our daily calendar video. Parents submitted samples of work through Remind or email. We could track the work students completed via Clever. We also prepared three mailings for students with letters, checking in on them and a flat teacher activity to help keep them engaged in their assignments and have fun. At the end of our year, we did in-person porch or doorway visits to let them know how proud we were of their hard work!

A student teacher candidate remarked, "Each day my mentor classroom teacher and I would communicate with students via Google Hangouts. We had a signup sheet and students would sign up for a half hour period to talk with us and get help with work." Participants mentioned meeting with students as well as communicating with families, with sessions lasting from 15 minutes to more than an hour.

**Table 6**  
*Professional Responsibilities*

| Component                                 | Frequently (%) | Sometimes (%) | Never (%) |
|---|----------------|---------------|-----------|
| Reflecting on teaching                    | 66.7           | 33.3          | 0         |
| Maintaining accurate records              | 88.9           | 0             | 11.1      |
| Communicating with families               | 55.6           | 22.2          | 22.2      |
| Participating in a professional community | 55.6           | 22.2          | 22.2      |
| Growing and developing professionally     | 88.9           | 11.1          | 0         |
| Demonstrating professionalism             | 100            | 0             | 0         |

N=9

Data from Table 6 suggest that co-teachers perceived spending the least amount of time collaborating in the Professional Responsibility Domain. While 100% of the participants frequently or sometimes collaborated in the components Reflecting on Teaching, Growing and Developing Professionally, and Demonstrating Professionalism, 22.2% of participants never collaborated in the components of Communicating with Families and Participating in a Professional Community, and 11.1% (one participant) perceived never collaborating in the component Maintaining Accurate Records.

When asked what co-teaching in the area of professional responsibilities looked like during the pandemic, one teacher candidate shared, “In the life skills classroom it is very important to maintain accurate records. I recorded students' attendance daily based on morning and afternoon Google Meet times. I recorded grades on Schoology and kept all assignments and assessments of each student in their own folder.” A couple other participants also mentioned the importance of careful record keeping.

Working as a professional team was also addressed by some participants. One co-teacher stated, “We worked together as a Kindergarten team across our district. There were 12 teachers working together to prepare instruction.” A second participant wrote, “I was able to participate in a professional community by joining weekly meetings with the first-grade teams from both [my school] and [the other P-3 school] planning instruction for the coming weeks.”

Unfortunately, one teacher candidate was not given the opportunity to participate in the professional community stating:

Throughout my student teaching, I was not a part of the professional community at the high school. I did not attend Zoom or phone meetings. Occasionally, my mentor teacher would send me an email with updates about the school. During my time as a student teacher before COVID-19, I attended team meetings, parent teacher conferences, and faculty meetings. I felt more isolated during this time, while I was extremely grateful to be allowed by the school district to continue my student teaching through the COVID-19 pandemic.

### Models of Co-Teaching

Research Question 2 asked, “Which models of co-teaching were utilized during virtual learning required by the COVID-19 pandemic and how were they implemented by mentor teachers and student teacher candidates?” Participants were first asked to identify whether they co-taught prior to the pandemic; a small majority (55.6%) of participants had co-taught before the COVID-19 pandemic. The next question asked which models of co-teaching were used prior to the pandemic. Table 7 summarizes those results.

**Table 7**  
*Co-Teaching Models Prior to the Pandemic*

| Co-Teaching Model       | Percent |
|-------------------------|---------|
| One Teach – One Assist  | 33.3    |
| Parallel                | 22.2    |
| Alternative             | 11.1    |
| Station                 | 33.3    |
| Team                    | 22.2    |
| One Teach – One Observe | 44.4    |

Data from Table 7 suggest that nearly half of the pairs (44.4%) practiced the One Teach – One Observe model of co-teaching prior to the pandemic. Participants (33.35%) selected One Teach – One Assist and Station Teaching. Two participants (22.2%) utilized Parallel and Team Teaching prior to the COVID-19 pandemic. One participant (11.1%) used the Alternative model of co-teaching.

Participants were then asked how their co-teaching experience changed due to the pandemic. Responses included, “Co-teaching was very different online... basically just helping each other in any way possible...” and co-teaching changed “In every possible way... We had to rethink everything in order to meet students’ needs.” One person remarked that online teaching was more one-teach, one observe; another participant shared it became more one-teach, one-assist. No other models of co-teaching were mentioned as being used during the online experience.

A classroom mentor teacher commented on the value of having the teacher candidate as a year-long resident student in a PDS for the entire year and how the teacher candidate assisted with technology:

[Teacher Candidate] was my PDS student teacher for the 2019-2020 school year. We had an incredible relationship and ability to work together from the beginning. We continued our bond and strength of working together as a team over into our distance learning...[Teacher Candidate] carried much of the tech knowledge which was so critical in our distance learning experience. I learned a great deal from her in that area. I had such a strong bond with my PDS student teacher which made going into distance learning not

an issue. We had been working together since August and she was very well established with the students and families. It was incredible and I am forever grateful!

In contrast, a teacher candidate described a challenge of not being in the classroom for the full year:

Co-teaching was still able to be used but the mentor teacher was often the bigger part of my experience. It was the One Teach, One Assist model more often because I came into the first grade class toward the end of the year and right at the beginning of a pandemic. The class had a routine already and knew my mentor teacher so that's who they were more comfortable with when they were having to learn how to do school online the first few weeks. It took a couple weeks for them to become comfortable and engaged with me.

### **Benefits of Co-Teaching**

Research Question 3 asked, "What do mentor teachers and student teacher candidates perceive as the benefits to co-teaching during the COVID-19 pandemic?" In order to answer this question, participants were asked three open-ended questions about the benefits of co-teaching during the COVID-19 pandemic. The first question asked, "How did your co-teaching experience(s) change due to the pandemic?" Eight out of the nine participants spoke of the benefits and challenges of technology when addressing this question. One mentor teacher shared that her student teacher, "... carried much of the tech knowledge which was so critical in our distance learning experience. I learned a great deal from her in that area." One student teacher described the changes she felt:

It took a couple weeks for them to become comfortable and engaged with me, but when that happened, they were more trusting, more willing to participate and more active learners. We were all learning how to do this process of online school together, so I believe we will always share that memory of getting through it together, the humor of technical difficulties and how we made it as positive and fun as we could.

The next question asked, "Besides the obvious safety factor, did you see any benefits to the alternative/on-line/HyFlex method of instruction during the COVID-19 pandemic?" Sixty-seven percent of the participants said yes, and thirty-three percent said no. Six of the participants shared their reasoning for selecting yes and spoke positively about the benefits of becoming more fluent with technology, learning new teaching tools, having access to resources, and becoming more flexible. One student teacher shared:

The environment students learn in is important and during a pandemic or not, I believe they have a sense of comfort at home which puts their mind at ease when they are learning. Technology is a very prominent factor in today's world and our daily life. As a millennial, I thought of myself as comfortable with technology and its uses in the classroom. I quickly found out I was quite wrong! However, because of the need for certain technologies during virtual learning, I gained new skills and training with technology I may not have ever thought to get before and for that I am grateful. The new knowledge I gained of technology is something not only teachers, but students all acquired during this time. I see this as a benefit because technology will only continue to grow and become more complex, so if we grow with it, we can only expand our knowledge more and further facilitate our students learning in universal ways.

One mentor teacher who selected yes, felt remote learning was less effective, but shared, "...the one documented 'advantage' was the obvious decrease in classroom discipline and behavioral referrals."

The third question asked, “What were the advantages of having a co-teacher or co-teachers during the COVID-19 pandemic?” Each of the nine responses to this question referred to the ability to provide additional support to each other and the students. One mentor teacher shared, “Asking her advice with all of the new technology that has changed in the last few years. I’m starting to feel my age and experience the generation gap, but she was so helpful and patient with me in regard to the technology I had to learn to teach students online.”

In summary, student teachers and mentor teachers concluded that their overall experience co-teaching during the COVID-19 pandemic was beneficial. Mentor teachers and student teachers learned to use technologies they may not have investigated prior to the pandemic. They utilized more online teaching tools, resources, and learned the valuable lesson of being flexible.

### **Challenges of Co-Teaching**

Research Question 4 asked, “What do mentor teachers and student teacher candidates perceive as the challenges to co-teaching during the COVID-19 pandemic?” In order to answer this question, participants were asked three open-ended questions where they shared the challenges of co-teaching during the COVID-19 pandemic. The first question asked, “How did your co-teaching experience(s) change due to the pandemic?” Each of the participants spoke of the transition from hands-on learning to online learning, listing technology as a benefit and a challenge in terms of planning and time. One mentor teacher shared:

We had to find times to meet online, send each other digital versions of materials, and pretty much rethink everything in order to meet students' needs while they were home on computers. For children who are only six years old this was challenging, but my student teacher made the best of it and was there to offer her support and advice for two whole months.

The next question asked, “What were the biggest differences in your co-teaching experience from in-person to alternate, online, or HyFlex teaching?” Six of the nine participants mentioned interaction as being the biggest difference in their co-teaching experience. The student teachers described challenges with interacting online. One student teacher shared, “It is much harder to grab the students’ attention at times because you are not face-to-face.” A second candidate said, “The biggest difference was the challenge of trying to make personal bonds with my teacher and students and the environment we were communicating in.” One mentor teacher shared concerns about interaction:

Not being able to communicate face-to-face and share our experiences in person. I so wished I could have seen my student teacher in action in front of our students. I know in my heart she would've been amazing, because she was online, but I still wish she could've been with our students physically. Not being able to work side-by-side with students, help them with their math, writing, reading, etc. was the biggest difference.

The last question posed was, “What were the challenges of having a co-teacher or co-teachers during the COVID-19 pandemic?” Six of the nine participants stated they did not have any challenges and spoke positively about co-teaching during the pandemic. Three participants shared challenges related to time, engagement, socialization, and progress monitoring. One mentor teacher shared:

Although technology can be used effectively to support instruction, full remote online learning proved inferior to face-to-face, in-person educational programming. The Spring 2020 COVID-19 programming was "ungraded" and largely asynchronous (with the exception of live video tutorial/support sessions), and this contributed to some students

being less engaged. A few students were almost non-participatory during the final quarter. Furthermore, working from basements, bedrooms, kitchens, etc. proved often to be more distracting than a structured school environment. A few students seemed to love the personalized, 1:1 video conferences and completed their work with some measure of success. However, many struggled, especially those with significant deficits. It was also difficult to provide meaningful progress monitoring for students' IEP goals. Assessment integrity was compromised in remote learning environments. The current synchronous/hybrid model being used in Fall 2020 is proving to be more effective than the ungraded, asynchronous model used in Spring 2020.

In summary, challenges were noted by student teachers and mentor teachers related to time, planning, and ever-changing technology. Although challenges were expressed, a positive outcome was noted in each participant's response. Student teachers and mentor teachers learned from each other and supported each other through this new wave of learning.

## Discussion

### Tuckman's Model of Small Group Development

Tuckman (1965) and Tuckman and Jensen's (1977) sequential model of team development was utilized to connect the survey results back to a theoretical framework as applied to the co-teaching teams of mentor teachers and student teachers. The flexibility of Tuckman's stages of team development made it easily applicable to virtual teams who use technology to function across time and space (Nestor, 2013). Just as in-person teams go through stages in their development and performance, these high-performing virtual teams moved through the same stages: forming, storming, norming, performing, and adjourning (Tuckman & Jensen, 1977). However, the stages in this study may not have occurred in sequential order.

The forming stage is a time marked by uncertainty. It is a time for getting acquainted and organized, creating clear goals and expectations, and detailing tasks, rules, and work distribution. Team members are highly motivated and enthusiastic at this time but can also be anxious about future work. Maqtary et al. (2019) added that the group leader (in this case the mentor teacher) should clarify goals, roles, and responsibilities at this time. In a virtual setting, examples could include the following: group members establishing connections via technology, creating ground rules for netiquette, actively brainstorming in an online workspace such as a shared drive or shared document, and utilizing asynchronous and synchronous virtual collaboration methods (Crites et al., 2020). The results of this study indicated 100% of the participants frequently or sometimes collaborated to select outcomes, goals, objectives, and appropriate resources for teaching using online collaborative tools such as the Google Meet, Google Docs, Google Drive, Google Classroom, Google Slides, Schoology, Power Teacher, email, and other video conferencing software.

Crites et al., (2020) described the storming stage as a time for groups to solidify goals but conflicts may arise and need to be resolved through negotiations. Different working styles and personalities become obvious. The team's limitations become evident and the team should start to focus on the most critical problems (virtually this would encompass accessibility/internet issues and computer access). It is also a time for dividing bigger goals into small tasks, so members are not overwhelmed. The storming stage is especially essential for student teacher candidates who are moving from an in-person experience to a virtual experience. In transitioning to a virtual environment, the following questions could be posed: Has a virtual moderator role

been defined and assigned? Do teams engage regularly online? Have struggles with virtual technology been discussed and have resources been shared? (Crites et al., 2020). Struggles that were apparent in the data included a student teacher who had not been able to make a lot of connections with the students. She felt like she did not know the strengths and weaknesses of the students so the mentor teacher often shared information about the students that helped her to challenge and motivate them. Student teachers additionally mentioned the enormous workload associated with teaching online and how their mentor teachers assisted them in managing the workload related to creating lessons, uploading content, managing students, and assessing work.

In the norming stage of group development, Tuckman (1965) stated there is an open exchange of views by members and members become more accepting of one another. Mutual trust is established, cooperation is evident and new, and stable roles have been formed (Nestor, 2013). Group members are comfortable giving and receiving constructive feedback as they work towards larger goals. The team becomes more productive and a sense of unity and cohesion emerges. In a virtual environment, norming could look like teams celebrating small, short term victories and assuring each member has his/her virtual “moment” during discourse. Lastly, frequent check-ins are seen at this stage to assure virtual messages are received and understood. Text-based apps can be used for basic communication and real-time technologies can be used for deeper discourse (Crites et al., 2020). Mentor teachers and student teachers discussed numerous ways in which they were productive at this stage including taking time to collaborate over Google Meet and Google Hangouts. All participants (100%) perceived they frequently or sometimes collaborated on communicating with students, used questioning and discussion techniques, engaged students in learning, and used assessment in instruction. Additionally, 100% of participants collaborated frequently to demonstrate flexibility and responsiveness. Flexibility was a term repeated frequently in the qualitative results. Mentors and student teachers used communication tools such as Google Classroom and Clever. Student teachers had the opportunity to work on Individual Educational Plan (IEP) goals and plan virtual field trips with the mentor teacher.

The performing stage showcases an effective team characterized by successful performance, openness, informality, close, and supportive collaboration. This stage is the core of where the real work is accomplished and a time when members are satisfied with the teams’ performance. The team is well-functioning with the mission and goals in mind. Team members have deepened their knowledge and skills and have a shared responsibility and feeling of pride. As shown in one experienced mentor teacher’s response quoted in research question three above, student teacher candidates were invaluable resources in regard to innovative practices in technology integration. According to Bonebright (2010), at the performing stage “the group is a ‘problem-solving instrument’ as members adapt and play roles that will enhance the task activities. Structure is supportive of task performance. Roles become flexible and functional, and group energy is channeled into the task” (p.114). In an online, collaborative environment this stage is characterized by group members maintaining virtual tools and repositories that can be shared and utilized by all members. Virtual meetings discussed outcomes which were valued by each member and their institution/organization (Crites et al., 2020). In this study, participant responses indicated all teams reached this stage evidenced by responses regarding mentors and student teachers being able to provide additional support to the students and each other. The teams engaged with families via the Remind app and attended parent-teacher conferences together. One student teacher was able to participate in a Kindergarten team across the district that worked together to provide instruction for students. An additional participant noted trust was

built between the mentor and student teacher as they both learned about navigating the online learning environment simultaneously.

In 1977, Tuckman and Jensen “revisited the original model and reviewed the subsequent literature on team development” (Bonebright, 2010, p. 114) and identified a fifth stage called the adjourning stage. During this time of disbanding, there may be sadness but there are positive characteristics such as a time for self-evaluation, positive feelings towards the team’s accomplishments, satisfaction with the work completed, and reviews of the outcomes of the team. This stage is also referred to as the “mourning stage” in the literature (Natvig & Stark, 2016). Tuckman and Jensen (1977) reviewed literature which included terms such as separation and termination and summarized by stating “the Tuckman model is hereby amended to include a fifth stage: adjourning” (p. 423). In the virtual team environment, adjourning could include a virtual celebration like a virtual classroom goodbye with students and the mentor teacher’s attendance at virtual graduations or department award ceremonies. Mentor teacher and student teacher participants in this study shared a plethora of activities they engaged in at the end of the semester. These “adjourning” activities included: Zoom calls between student and mentor teacher, a goodbye post created by the student teacher for all classes, a goodbye video by the student teacher for the students, time during a live video conference for the student teacher and students to say goodbye to each other, mentor and student teacher exchanging gift cards virtually, mentor teacher offering to serve as a reference, student and mentor teacher attending an end of the school year parade together where parents and students drove through the driveway loop of the school and waved to their teachers who were holding signs, and candidates and mentor teachers completing home (porch) visits together where they dropped off end of the school year treats to the students. One mentor teacher collected special thank you messages from students for the student teacher, wrote them on the inside cover of her favorite book, and gifted the book to the student teacher at the end of the experience. Another mentor teacher set up a Google Meet on the last day of school where the entire class joined, read a story together, distributed class awards, and shared memories. Finally, one mentor teacher delivered dinner to her student teacher who was graduating.

In conclusion, the Tuckman model served as an effective framework for analyzing the survey results from cooperating teachers and student teachers in this study. Reflecting on Tuckman’s model of team development in relation to virtual team development can serve as a model of best practices for virtual student teaching experiences in the future.

### **Conclusion**

For over a quarter of a century, educators have been using the Charlotte Danielson Framework for Teaching (1996) as a model for best practices in classrooms. This study used the framework as a backdrop for survey questions and open-ended responses related to the transition to teaching and learning in the virtual world during the COVID-19 pandemic. Additionally, research on co-teaching (Friend et al. 2010) was utilized to explore the nature of the co-teaching relationship between mentor teacher and student teacher. Lastly, Tuckman’s Model of Small Group Development (1977) framed the results and was applied to the development of the co-teaching teams and the process of transitioning from in-person teams to virtual teams. Although this research was grounded in those three main conceptual frameworks, limitations emerged including a small sample size and starting the research later in the academic year.

The results of this study provide several implications for professional practice. First, it was clear that the pairs of teacher candidates and mentors who worked together in year-long

residencies in PDS partnerships prior to the pandemic had smoother transitions to the virtual format. One mentor noted her student teacher candidate had already established respect and built rapport with the students because she spent a prior semester in her classroom; thus, the transition was easier. Whereas one teacher candidate who had just entered the placement in the spring semester noted how difficult it was to build respect and rapport, and keep students engaged, due to not knowing the students.

A second implication from this study is that educator preparation programs should prepare student teacher candidates in the areas of technology and provide virtual learning experiences particularly when co-teaching. Candidates noted the exorbitant amount of time it took for them to learn the technologies and upload documents/materials appropriately. Additionally, school districts need to provide professional development experiences for classroom teachers in the area of technology, specifically online teaching and learning. Results of this study illustrated that teacher candidates were more proficient with the technology tools and taught their classroom mentor teachers how to utilize technology effectively. It is also imperative for partnerships to discuss including teacher candidates as part of the district's professional learning community even in an online, co-teaching learning environment. One teacher candidate voiced frustration that he was included prior to the pandemic during an in-person format but was not included in the virtual community. Finally, this study revealed the need for additional research in the following areas: co-teaching in a virtual environment, technology and infrastructure needs of public school districts, additional training in the use of instructional technology, and student engagement in the virtual classroom.

Hopefully, school-university partnerships will never again experience the crisis of a deadly, global pandemic; however, it is our contention that the way teachers teach, and the way children learn, have changed forever. Our responsibility as teacher educators lies in preparing future teachers for the flexibility and adaptability educators will need to be impactful throughout their professional careers. Strong partnerships utilizing co-teaching strategies may serve as catalysts for preparing teachers to serve every child.

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## Appendix

### Co-Teaching Survey for Mentor Teachers and Student Teacher Candidates

#### Consent

1. As per the email, do you give your consent to participate in this survey?  
Yes  
No. If you select no, please exit the survey.

#### Survey

In this survey, the research investigators are using Charlotte Danielson's (1996) Framework for Teaching (Planning and Preparation, Instruction, Classroom Environment, Professional Responsibilities) and Friend, Cook, Hurley-Chamberlain, and Shamberger's (2010) models of co-teaching. For the purpose of this study, classroom mentor teachers and student teachers are both considered "teachers" in the co-teaching models. The co-teaching models are defined as follows:

- One Teach, One Assist – whole group teaching where there is one lead teacher and the other teacher assists.
- Parallel – two mixed-ability groups where both teachers are teaching the same content
- Alternative – two same-ability groups where the two teachers are teaching different content
- Station – both teachers are monitoring all stations or teaching one station and monitoring another station
- Team Teaching – whole group teaching where both teachers teach together
- One Teach, One Observe – one teacher is teaching the large group while the other teacher observes and collects data

For each Domain and Component, please rate how frequently you were able to work with your co-teacher(s) to address the components of the Danielson Framework during the COVID-19 pandemic: (Never, Sometimes, Frequently)

2. Planning and Preparation: Selecting Professional Outcomes, Goals, Objectives
3. Planning and Preparation: Selecting Appropriate Resources
4. Planning and Preparation: Knowledge of Students
5. Planning and Preparation: Designing Coherent Instruction
6. Planning and Preparation: Designing Student Assessment
7. Select at least one of the Planning and Preparation Components above and describe, specifically (with at least one example), what co-planning and/or co-preparation looked like for you and your co-teacher(s) (student teacher candidate, classroom mentor teacher, and support personnel, if appropriate).
8. Approximately how much time each week did you spend co-planning or in co-preparation activities?
  1. hour/week
  - 2-3 hours/week
  - 4-5 hours/week
  - more than 5 hours/week

For each Domain and Component, please rate how frequently you were able to work with your co-teacher(s) to address the components of the Danielson Framework during the COVID-19 pandemic: (Never, Sometimes, Frequently)

9. The Classroom Environment: Creating an Environment of Respect and Rapport
10. The Classroom Environment: Establishing a Culture for Learning
11. The Classroom Environment: Managing Classroom Procedures
12. The Classroom Environment: Managing Student Behavior
13. The Classroom Environment: Organizing Space/Managing Online Classroom
14. Select at least one of the Classroom Environment Components above and describe, specifically (with at least one example), what co-teaching in regards to the classroom environment looked like for you and your co-teacher(s) (student teacher candidate, classroom mentor teacher, and support personnel, if appropriate).

For each Domain and Component, please rate how frequently you were able to work with your co-teacher(s) to address the components of the Danielson Framework during the COVID-19 pandemic: (Never, Sometimes, Frequently)

15. Instruction: Communicating with Students
16. Instruction: Using Questioning and Discussion Techniques
17. Instruction: Engaging Students in Learning
18. Instruction: Using Assessment in Instruction
19. Instruction: Demonstrating Flexibility and Responsiveness
20. Select at least one of the Instruction Components above and describe, specifically (with at least one example), what co-teaching in regards to instruction looked like for you and your co-teacher(s) (student teacher candidate, classroom mentor teacher, and support personnel, if appropriate).

For each Domain and Component, please rate how frequently you were able to work with your co-teacher(s) to address the components of the Danielson Framework during the COVID-19 pandemic: (Never, Sometimes, Frequently)

21. Professional Responsibilities: Reflecting on Teaching
22. Professional Responsibilities: Maintaining Accurate Records
23. Professional Responsibilities: Communicating with Families
24. Professional Responsibilities: Participating in a Professional Community
25. Professional Responsibilities: Growing and Developing Professionally
26. Professional Responsibilities: Showing Professionalism
27. Select at least one of the Professional Responsibilities above and describe, specifically (with at least one example), what co-teaching in regards to professional responsibilities looked like for you and your co-teacher(s) (student teacher candidate, classroom mentor teacher, and support personnel, if appropriate).

28. Did you and your co-teacher(s) work together prior to the COVID-19 pandemic?

Yes

No

29. If yes, select which model(s) of co-teaching you used prior to the pandemic. Check all that apply.

One Teach, One Assist – whole group teaching where there is one lead teacher and the other teacher assists.

Parallel – two mixed-ability groups where both teachers are teaching the same content

Alternative – two same-ability groups where the two teachers are teaching different content

Station – both teachers are monitoring all stations or teaching one station and monitoring another station

Team Teaching – whole group teaching where both teachers teach together

One Teach, One Observe – one teacher is teaching the large group while the other teacher observes and collects data

Other:

30. Please provide at least one example of what co-teaching (student teacher candidate, classroom mentor teacher, and support personnel if appropriate) looked like in your classroom prior to the COVID-19 pandemic.
31. How did your co-teaching change due to the pandemic?
32. What were the biggest difference in your co-teaching experience from in-person to alternate, on-line, or HyFlex teaching?
33. Besides the obvious safety factor, did you see any benefits to the alternate/on-line/HyFlex method of instruction during the COVID-19 pandemic?  
Yes  
No
34. If yes, what benefit(s) did you see?
35. What were the advantages of having a co-teacher or co-teachers during the COVID-19 pandemic?
36. What were the challenges of having a co-teacher or co-teachers during the COVID-19 pandemic?
37. Please use this space to provide any other information you would like the researchers to know about co-teaching during the COVID-19 pandemic.

Thank you for your participation!