

**Do Co-Teaching Approaches Make a Difference? An Exploratory Study of the Association Between Co-Teaching Approaches and Evidence-Based Instructional Practices**

<sup>1</sup>Amy S. Gaumer Erickson, <sup>1</sup>Jennifer A. Brussow, <sup>2</sup>Shonda Anderson, <sup>3</sup>Richard A. Villa, and

<sup>1</sup>Kasey Monroe

<sup>1</sup>Center for Research on Learning, University of Kansas

<sup>2</sup> Kansas Technical Assistance System Network, Topeka, Kansas

<sup>3</sup>Bayridge Consortium, Inc., San Diego, California

**Author Note**

This research was supported by the U.S. Department of Education, under Grant H323A120021. However, content does not necessarily represent the policy of the U.S. Department of Education, and endorsement by the Office of Special Education Programs should not be assumed.

Correspondence concerning this article should be addressed to Richard Villa, Bayridge Consortium, 113 West G Street, Suite 444, San Diego, CA 92101, United States.

Email: [ravillabayridge@cs.com](mailto:ravillabayridge@cs.com)

**Abstract**

Scholarship predominantly views co-teaching as a dichotomous variable (i.e., teachers either are or are not co-teaching). However, co-teaching proponents further differentiate co-teaching approaches. In this evaluation of a five-year professional development initiative, co-teachers participated in training, observation, and coaching to improve their implementation of parallel, complementary, and team co-teaching approaches as a method to increase their use of student-centered instructional practices in inclusive classrooms. Participating school districts desired to increase the inclusion of students with disabilities in the general education curriculum by prioritizing co-teaching as the preferred method for accomplishing this goal. The evaluation involved 659 co-taught classroom observations across 30 school districts in Kansas. Analyses showed that the use of multiple co-teaching approaches was associated with implementation of evidence-based instructional practices that increase student engagement and performance. Specifically, when co-teachers applied complementary, parallel, and team co-teaching approaches, they were more likely to check for understanding, provide prompts, reinforce behavioral expectations, and provide specific feedback.

*Keywords:* inclusive education, co-teaching, student-centered instructional practices

## **Do Co-Teaching Approaches Make a Difference? An Exploratory Study of the Association Between Co-Teaching Approaches and Evidence-Based Instructional Practices**

Co-teaching is a service delivery option defined as two or more people sharing responsibility for teaching all students assigned to a classroom, providing both the delivery of a rigorous curriculum and specially designed instruction in general education settings (Friend et al., 2015; Villa et al., 2013). Studies on co-teaching have identified positive effects on inclusion, teacher attitudes, and the performance of students with and without special education needs (Bottge et al., 2015; Holbrook, 2017; Solis et al., 2012).

### **Inclusive Education and Inclusive Education Best Practices**

Inclusive education is both the vision and the practice of welcoming, valuing, empowering, and supporting the diverse academic, social/emotional, communication, and language learning of *all* students in shared environments and experiences for the purpose of attaining the goals of education (Villa & Thousand, 2016). Inclusive education is more than just a program, a strategy, or a school; it is a belief system where staff, students, and the community commit to provide “each student...each citizen in a democracy, with the inalienable right to belong” (Villa & Thousand, 2005, p. 6).

Current best practice in inclusive education emphasizes the inclusion of students with intellectual and developmental disabilities in general education environments. For example, “[a]cross all 13 federal special education eligibility categories<sup>1</sup> and racial and ethnic groups, 90% or more of students with disabilities are educated *within general education classrooms* for 80%

---

<sup>1</sup> The Individuals with Disabilities Educational Improvement Act (IDEA) of 2004 identifies 13 different disability categories under which students 3 through 21 may be eligible for special education services: autism, deaf-blindness, deafness, emotional disturbance, hearing impairment, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, and visual impairment.

or more of the day” (Villa & Thousand, 2016, p. 26) and “[a]cross all 13 federal special education eligibility categories and racial and ethnic groups, 80% or more of students with disabilities receive their instruction *in core academic curriculum* (i.e., language arts, mathematics, science, social studies) in general education academic classes rather than in alternative special education content classes” (Villa & Thousand, 2016, p. 27).

### **Federal Law and Inclusive Education**

The federal special education law, the Individuals with Disabilities Educational Improvement Act (IDEA) of 2004, requires school districts to make significant efforts in providing inclusive educational experiences for children. Districts are charged with providing the least restrictive environment to meet a child’s unique educational needs. Collaborative “push in” delivery models, with an emphasis on co-teaching, have become the preferred method many school districts employ to educate students in the least restrictive environment (U.S. Dept. of Education, 2013). The federal special education law (IDEA, 2004) requires the following:

- (ii) Special classes, separate schooling, or other removal of children with disabilities from the regular education environment occurs only when the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily (34 C.F.R. § 300.114 [A] [2]).

Co-teaching is a legally available supplementary support, aid, and service that can be utilized to support a child with a disability to achieve in general education environments and have maximum access to peers rather than removing the child to be taught in a more restrictive environment.

### **Research on Co-Teaching as an Inclusive Practice**

While the research on the academic benefits for students educated in co-taught classrooms is mixed (Boudah et al., 1997; Volonino & Zigmond, 2007), most research suggests a high correlation between learning in a co-taught classroom and increased student academic achievement (Causton-Theoharis & Theoharis, 2009; Santoli et al., 2008). In 2001, Murawski and Swanson conducted a meta-analysis of co-teaching research. They reviewed 89 studies and found only six studies that examined general education and special education co-teachers who instructed in the same classroom and had sufficient quantitative data to calculate an effect size. In these six studies, the average effect size of co-teaching on student academic and behavior performance was found to be 0.40, suggesting that co-teaching has the potential to positively impact students with disabilities and be an effective special education service delivery option. Other studies on co-teaching have found similar positive results for students with disabilities (Eisenman et al., 2011; Idol, 2006; Jang, 2006). For example, Hang and Rabren (2009), in a quasi-experimental study conducted with 58 students with disabilities who participated in co-taught elementary, middle, and high school classrooms, found that these students showed academic growth at the *same rate* as their peers without disabilities as well as a statistically significant increase in class participation compared to the year before when they did not participate in a co-taught class.

According to Gable et al. (2004), much of the academic success of students with disabilities realized in co-taught classes can be attributed to the ability of the teachers to meet the range of student needs by working as a collaborative team. While emerging research shows the effectiveness of co-teaching, Cook and colleagues (2011) noted that not enough empirical research exists on the efficacy of co-teaching, and Sweigart and Landrum (2015) recommend that research expand to include quantitative analyses of co-teaching patterns.

When placed in a classroom together, it is assumed that co-teachers apply effective co-teaching approaches that will result in improved instructional practices. However, as Szumski and colleagues note, “[c]o-teaching alone does not guarantee that the modern teaching strategies, beneficial for students both with and without SEN [special education needs], will be introduced in the classroom” (2017, p. 48). Through classroom observations, the current study examines both the co-teaching approaches and the evidence-based instructional practices demonstrated by the co-teachers.

### **Co-Teaching Approaches**

Villa et al. (2013) described multiple co-teaching approaches: supportive, parallel, complementary, and team. In the supportive approach, one teacher provides whole class instruction while the other teacher works with students individually as they need support in understanding the content or maintaining behavioral expectations. In the parallel approach, both teachers facilitate learning at the same time to different groups of students. Learning arrangements may include stations, cooperative learning groups, or different modalities for presenting information. In the complementary approach, one teacher provides instruction while the other teacher enhances this instruction (for example, by paraphrasing, modeling, or pre-teaching). In the team approach, both teachers provide instruction and facilitate access to the content, sharing responsibilities throughout the instruction. In this approach, an observer may have difficulty differentiating the roles of the teachers (e.g., general or special education), as both appear to be experts in content and strategies for accessing the content. Friend and colleagues (1993) provided different terms for similar approaches (e.g., “one teach, one assist” aligns with the supportive approach). These internationally known co-teaching experts agree that supportive

(i.e., one teach, one assist) should be the least employed co-teaching approach, as it provides the least benefit for students.

Studies have shown that special education teachers are frequently placed in the role of assistant (i.e., supportive co-teaching approach) while the general education teacher continues to provide whole group, undifferentiated instruction (Strieker et al., 2013; Szumski et al., 2017). In a study of middle school math classrooms, Bottge and colleagues (2015) found the supportive co-teaching approach to be the most commonly used approach while complementary, parallel, and team co-teaching approaches were rarely observed. In almost a quarter of Bottge's observations, no co-teaching approach was used, even though two teachers were in the classroom. These researchers found that when special education teachers shared teaching responsibilities with general education teachers, students' learning increased. Cook and colleagues (2011) concluded that "the theorized benefits of co-teaching such as high levels of student-teacher interactions, use of individualized instruction, and team-teaching may not commonly occur" (p. 152). Placing two teachers in a classroom together does not automatically lead to increased implementation of learner-focused instructional practices (Szumski et al., 2017).

### **Evidence-Based Student-Centered Instructional Practices**

McLeskey et al. (2017) identify four high-leverage practices in special education—collaboration, assessment, social/emotional practices, and instruction. In terms of instruction, they note that special educators use content and pedagogical knowledge, evidence-based practices, and data collection and analysis to design, deliver, and assess whether instruction is effective. Specifically, high-leverage practice 18 states that teacher should, "Use strategies to promote active student engagement" (McLeskey et al., 2017, p. 24).

In general, *active student engagement* is consistently linked to academic achievement (Brown & Mowry, 2015; Hattie, 2009). This engagement is the result of learner-focused instructional practices such as providing prompts and specific feedback, checking for understanding, and reinforcing student behavior (Cooper et al., 2015). *Prompts* influence student actions in the classroom and help students focus on cognitive or metacognitive processes required for correct understanding (Frey & Fisher, 2010). *Checking for understanding* allows teachers to gather information about their students' progress during instruction and identify misconceptions or missed facts (Frey & Fisher, 2010; Knight, 2013). *Specific feedback* helps students understand their performance in relation to prior performance or a learning target and then close gaps in knowledge or skills (Hattie, 2009; Voerman et al., 2012). *Reinforcing student behavior* not only enables students to meet behavioral expectations and focus upon learning, but also facilitates the development of positive relationships between students and teachers. Positively reinforcing student behavior requires that teachers regularly monitor students' adherence to norms and then "witness the good" (Knight, 2013, p. 315). The presence of two or more teachers in a classroom provides greater opportunity to employ the dynamic engagement structures described above to facilitate students' learning (Cooper et al., 2015; McDuffie et al., 2008; Villa et al., 2013).

### **Installation of Effective Co-Teaching Practices**

Teachers require expertise in assessing and implementing co-teaching pedagogy specifically tailored to their classrooms. To this end, Scruggs and colleagues (2007) found that teachers frequently identified an ongoing need for professional learning that included strategies and skill development specific to co-teaching and different co-teaching approaches, in addition to more general support on effective collaboration, consultation, and communication. Co-



teaching has a depth of complexity, transforming the professional role of the teacher (Murawski & Bernhardt, 2015). One vital piece of supporting and enhancing teachers' growth and engagement is professional development with instructional coaching. McLeskey et al. (2017)

note:

Professionals learn best when they have repeated opportunities to practice the essential components of effective performance, receive feedback on their performance, and receive support in analyzing and improving their performance (p. 9).

Professional development in co-teaching has been found to increase teachers' confidence in co-teaching practices and improve attitudes toward co-teaching (Holbrook, 2017; Pancsofar & Petroff, 2013). Across disciplines, training paired with coaching has been found to be more effective than training alone (Joyce & Showers, 2002; Knight, 2011; Mitchell et al., 2017). Instructional coaching helps teachers apply newly learned skills and strategies through collegial support. Coaching develops teachers' knowledge and agency while strengthening skill implementation through dialogue and engagement. This ongoing performance feedback has been shown to result in higher levels of implementation of the targeted instructional practices (Knight, 2011; Reinke et al., 2014).

### **Rationale for the Current Study**

While researchers have identified the parallel, complementary, and team co-teaching approaches as more effective than the supportive co-teaching approach, limited empirical research connects the co-teaching approaches to the use of evidence-based instructional practices. Strogilos & Avramidis (2016) observed that "few studies have provided data through quantified observations of students' and teachers' behavior in co-taught classrooms" (p. 25).

Sweigart and Landrum's (2015) study of elementary classrooms with two adults found higher rates of opportunities for students to respond. They noted that the observation of co-teaching approaches was beyond the scope of the study and suggested deeper analysis of the roles of co-teachers in future classroom observation research.

The current study aims to expand prior research by exploring the relationship between the application of co-teaching approaches and the use of evidence-based instructional practices. This study was guided by the following research questions:

- 1) Are co-teachers who incorporate the recommended co-teaching approaches of complementary, parallel, and/or team co-teaching, as opposed to supportive, more likely to use evidence-based instructional practices?
- 2) When teachers transition among co-teaching approaches, are they more likely to enact evidence-based instructional practices that engage learners?
- 3) Are teachers who participate in training more likely to transition among the co-teaching approaches?

## **Methodology**

### **Participants and Context**

The co-teaching professional learning initiative was designed through collaboration between Dr. Richard Villa and the Kansas State Department of Education with coordination led by Shonda Anderson, through a grant from the U.S. Department of Education, Office of Special Education Programs. The external evaluators, Dr. Amy Gaumer Erickson, Dr. Jennifer Brussow, and Kasey Monroe were contracted to conduct an independent, utilization-focused evaluation of the initiative. This evaluation team guided development of an evaluation plan; observed more than 100 workshops or coaching sessions; collected and analyzed data; and reported findings to

participants, coaches, professional development providers, and the state department. The implementation process was informed by implementation science research, intentionally considering the training, coaching, data systems, and technical and adaptive leadership that were necessary for implementation fidelity and sustained practices (Blasé & Fixsen, 2013). Annually, the evaluation team assessed these implementation elements on an evidence-based practices rubric (U.S. Department of Education, Office of Special Education Programs, 2015).

Participants included 567 teachers who were co-teaching one or more classes and 84 educators trained as co-teaching coaches across 30 school districts within Kansas. Participating districts were selected based on their agreed commitment to increasing the inclusion of students with disabilities in the general education curriculum and the prioritization of co-teaching as a service delivery method to accomplish this goal. A six-hour interactive training was provided to teams of teachers and administrators within each district, and classroom observations and coaching sessions were conducted in order to provide follow-up support and guidance to co-teachers. Participants also had available to them additional supplemental trainings by Dr. Villa on effective instruction, cooperative structures, and methods for differentiating content, product, and process demands of the general education classroom for successful inclusion of students with intellectual and developmental disabilities.

Administrators were trained on the co-teaching approaches, agreed to provide necessary organizational supports to their co-teaching teams (e.g., training for co-teachers and coaches, time for local coaches to conduct classroom observations, time for co-teachers to plan together), and were provided with evaluation data throughout the implementation process in order to target areas for improvement.

Local coaches were trained to conduct the classroom observations and feedback sessions. In addition to the co-teaching training, these coaches attended a one-day training to learn and practice the coaching protocol and then shadowed a national or state trainer who modeled the process of providing coaching to co-teaching teams within their schools. The local coaches participated in monthly interactive webinars and annual booster trainings.

Each coaching training and annual booster training included either a mock or a videotaped co-taught lesson that coaches rated using the observation protocol. Average interrater reliability across coaches' trainings was .875 based on two-way fixed interclass correlation coefficients with absolute agreement. Rating differences were resolved through discussions as part of the training. Each local coach conducted multiple classroom observations with a highly skilled national or state trainer, comparing observation findings and debriefing commendations and suggestions for the co-teachers. Feedback sessions with each co-teaching team occurred after the classroom observation. In these feedback sessions, the coach followed a structured coaching process to guide the co-teachers in reflecting on their instructional practices and the co-teaching approaches that they used; then the co-teachers determined specific actions, instructional practices, or co-teaching approaches to incorporate moving forward. After observing the state or regional coach conduct multiple feedback sessions, the local coach was observed conducting these feedback sessions and received debriefing to increase their coaching capacity. Through the gradual release of responsibility, the local coaches developed their capacity to conduct both classroom observations and follow-up coaching sessions to support co-teachers in implementing and refining their co-teaching practices.

While the intent of the professional development initiative was for co-teaching partners to become proficient in each effective co-teaching approach, in some instances, local coaches

conducted observations in classrooms in which only one or neither of the co-teachers had participated in this professional learning. As reported by the coach as part of the observation protocol, of the 659 classroom observations collected, both teachers had received training in 450 cases, one teacher had received training in 50 cases, neither teacher had received training in 49 cases. Data on the co-teachers' professional development were not reported for 110 of the observations.

The classroom observations represented pre-kindergarten through 12th grade classes. The middle school grades of seven through nine represented the highest number of observations with 251 (38%). On average, 19 students were present, including five students with Individualized Education Programs (IEPs)<sup>2</sup> and two English learners. The content observed was primarily language arts (42.9%) and mathematics (39.9%) but also included science, social studies, and special courses such as music or art. Table 1 provides the classroom descriptive data by grade span.

### **Observation Procedures**

Classroom observations offer a method for linking teacher behavior to student behavior. The *Co-Teaching Observation Measure* developed by Villa et al. (2013) was used for all classroom observations. In collaboration with Dr. Villa, this measure was developed into an online tool and definitions for each variable were created and included in the online form. The observation protocol directed instructional coaches to denote their observation of co-teaching approaches and learner-centered effective instructional practices during 20- to 30-minute classroom observations. The variables in the current study were defined within the observation

---

<sup>2</sup> Researchers in this study did not collect data on the disability eligibility categories of the students with IEPs who were in the classrooms observed, as it was beyond the scope of this study to determine the effect of classroom demographics on the use of co-teaching approaches or effective instructional practices.

protocol in order to support the accuracy of local coaches' observations (Table 2). The online tool provided automatically generated coaching forms and summary reports in real time for the coaches and school administrators. The generated coaching forms used the observation protocol to identify commendations and suggestions for the coaching session. During the coaching session, the co-teachers' self-reflection of strengths and areas for growth, as well as their action steps, were documented. Three weeks after the coaching session, co-teachers completed a coaching satisfaction survey, reported whether they had implemented their action steps, and identified additional coaching or technical assistance necessary to implement and sustain their co-teaching practices. All instructional coaches were trained in both the co-teaching model and the classroom observation protocol before conducting observations. Observation data were collected during the 2013–14, 2014–15, 2015–16, and 2016–17 school years by trained local, state, and national observers.

### **Analysis**

The independent, external evaluation team analyzed the data, consisting of 659 observations of co-taught classes. Co-teaching approaches were coded as 0 (supportive only), 1 (one of the recommended approaches of parallel, complementary, or team co-teaching), 2 (two of the recommended co-teaching approaches), or 3 (all three of the recommended co-teaching approaches). The remaining variables (checking student understanding; providing prompts, cues, and re-teaching concepts; providing feedback; and reinforcing positive behaviors) were dichotomous; these effective teaching practices were either observed (1) or not observed (0).

ANOVA analyses were conducted in order to investigate the relationships between the number of recommended co-teaching approaches observed and the observed learner-centered instructional practices (i.e., checking student understanding, providing prompts and cues,

providing feedback, and reinforcing positive behaviors). All analyses were conducted using the *glm()* and *lm()* functions provided in R version 3.3.2 (R Core Team, 2016). The difference in mean rank of number of co-teaching approaches used by teams with varying amounts of training was evaluated with a Kruskal-Wallis test. The Kruskal-Wallis test is the non-parametric analogue for a one-way ANOVA, and it is used to compare grouped data with an ordinal or rank-ordered dependent variable (Weaver et al., 2017).

### Results

All co-teaching arrangements were observed across each grade span. Of the effective co-teaching approaches, parallel was most frequently observed in the elementary grades (ranging from 55.4% to 63.8%) and complementary in the secondary grades (ranging from 45.0% to 48.5%). The number of recommended co-teaching approaches (i.e., complementary, parallel, and team) observed ranged from zero to three across each grade cluster (see Table 3).

Descriptive statistics explored the general directionality of the relationship between the number of co-teaching approaches and the use of evidence-based instructional practices. As displayed in Table 4, each learner-centered instructional practice was observed in 34% to 55% of classrooms when the supportive co-teaching approach was the only approach used during the observation period. This increased with each recommended co-teaching approach used by the co-teachers. Teachers who used only the supportive co-teaching approach checked for understanding in 54% of the observations. The instructional practice of *checking understanding* increased to 85% of the observations when teachers transitioned among all three effective co-teaching approaches. Similar results were observed regarding *providing prompts or cues* (increase from 55% to 89% of observations), *providing feedback* (increase from 38% to 83% of observations), and *reinforcing behavior* (increase from 34% to 74% of observations).

In the classroom observations, the coaches noted either the presence or absence of the evidence-based instructional practices. The coefficients from the ANOVAs examining the outcome variables of *checking student understanding*, *providing prompts and cues*, *providing specific feedback*, and *reinforcing positive behaviors* were all statistically significant (see Table 5). For teachers who used only the supportive co-teaching approach, the probability of observing the co-teachers *checking understanding* was 0.54. For teachers who used one, two, or three of the recommended co-teaching approaches, the probability of observing the co-teachers *checking understanding* increased by 0.13, 0.28, and 0.31, respectively. As denoted in Table 5, similar results were found for the other variables of *providing prompts or cues*, *providing specific feedback*, and *reinforcing student behavior*. All effects were statistically significant at the  $p < 0.05$  level.

To further explore the results, the Kruskal-Wallis non-parametric test was employed to determine the effect of the training received by the co-teachers. While training data were not reported for 16.7% of the observations, frequencies for the remaining 549 classroom observations showed that when both teachers were trained in co-teaching approaches, they used multiple effective approaches at higher rates than if only one or neither teacher was trained. There was a statistically significant difference between the number of co-teaching approaches used by teams with different amounts of training ( $H(2) = 16.173, p < 0.01$ ), with a mean rank of 79.6 for teams with no training, 93.4 for teams with one educator trained in co-teaching, and 283.8 for teams with both educators trained.

### **Discussion**

The current study analyzes the results of a five-year professional development initiative in which co-teachers received training, observation, and coaching to improve their



implementation of parallel, complementary, and team co-teaching approaches as a method to increase their use of student-centered instructional practices in inclusive general education classrooms. The results suggest that there may be differing levels of effectiveness across co-teaching approaches. Teachers who transitioned among the recommended co-teaching approaches of complementary, parallel, and team were more likely to use the evidence-based instructional practices of checking student understanding, providing prompts and cues, providing feedback, and reinforcing positive behaviors. These results may suggest that co-teachers are able to incorporate effective instructional practices by flowing between the co-teaching approaches that best address students' need in the moment. Regardless of the number of co-teaching approaches observed, the use of evidence-based instructional practices was more prevalent when co-teachers demonstrated complementary, parallel, or team approaches as opposed to one teacher remaining in a supportive role. This result aligns with recommendations of co-teaching proponents and previous research findings (Bottge et al., 2015; Friend et al., 2015; Solis et al., 2012; Villa et al., 2013).

Teachers who participated in professional development on co-teaching were more likely to demonstrate the complementary, parallel, and team co-teaching approaches. This finding substantiates research showing that training and coaching facilitate the installation of new practices (Noell et al., 2005; Reinke et al., 2014). An obvious educational implication of this finding is that schools and districts desiring teachers to employ evidence-based instructional practices through their co-teaching need to make teachers aware of the four co-teaching approaches through in-service professional learning experiences that instruct them in how to effectively employ, with integrity, the more impactful co-teaching approaches—complementary, parallel, and team co-teaching. However, as prior research substantiates, training alone does not

guarantee that instructional practices will change (Joyce & Showers, 2002; Reinke et al., 2014; Strieker et al., 2013). Instructional practices are most likely to transfer into the classroom when teachers are provided with performance-based feedback and coaching (Joyce & Showers, 2002). A policy and practice implication of these observations is that school and district leadership need to consider structuring, as part of their professional development program, ongoing performance-based feedback and coaching on co-teaching and other best practices they hope to promote through co-teaching. In order to facilitate access and success in the curriculum for students with intellectual and developmental disabilities, co-teachers also likely may need additional training and coaching in decision-making processes for determining where, when, and how to address IEP goals in general education environments for students with more extensive support needs (Thousand & Villa, 2019). And, as a further research implication, future studies could explore the depth of training and frequency of coaching on the implementation of effective co-teaching practices.

There are teacher preparation implications as well. Preservice professional preparation programs for general and special educators and related services personnel such as speech and language pathologists and psychologists are avenues for preservice development regarding co-teaching and evidence-based practices (Weiss et al., 2017). Increasingly, higher education teacher preparation programs are including co-teaching as part of their program curriculum and clinical practice experiences (Villa et al., 2013).

Since effective teaching practices appear to be associated with the use of recommended co-teaching approaches, teachers' demonstration of these instructional practices should be considered when trying to isolate the effects of co-teaching on student outcomes. The instructional practices examined in this study were selected according to the initiative's focus but

use of other learner-centered instructional practices may also be affected by the implementation of recommended co-teaching practices.

It cannot be assumed that two teachers placed in the same classroom are applying effective co-teaching approaches (Cook et al., 2011; Strieker et al., 2013). To determine whether co-teaching results in improvements in learner-centered practices and student outcomes, the co-teaching approaches should be considered. While it was beyond the scope of this study to examine the influence on students' academic achievement, future research could incorporate academic outcomes as a dependent variable of the co-teaching approaches used by teachers. The classroom observations did not focus specifically on students with disabilities. While participation was based on the districts' desire to increase their inclusion of students with disabilities in the general education curriculum and the numbers of students with disabilities and English learners were noted in the observations, it was beyond the scope of this study to determine the effect of classroom demographics on the use of co-teaching approaches or effective instructional practices. The outcomes of varying co-teaching approaches and effective instructional practices for all categories of students with disabilities and English learners should be further explored.

### **Limitations**

All schools involved in this study were participating in the statewide co-teaching initiative, which follows Dr. Villa's professional development model of co-teaching (Villa et al., 2013; Villa & Thousand, 2016). The classroom observations were an integral part of the coaching process and were conducted by the same individuals who provided the coaching support. It is unknown if the coaching role influenced the observations. Ongoing professional learning for coaches in both the observation protocol and coaching process, as well as the annual

establishment of interrater agreement, were implemented to maintain fidelity to the established observation protocol. Observations were conducted in 20- to 30-minute segments. Depending on the instructional activities during this window, it may not have been appropriate to transition among the co-teaching approaches. Further, the observation protocol directed coaches to denote their observation of co-teaching approaches and effective instructional practices. The length of time, depth, or effectiveness of these practices was not included in the observation. Future research may wish to explore how these relationships may differ for varying settings, different models of co-teaching, and other modes of data collection.

The findings may be influenced by the classes observed. Language arts and math represented the majority of content observed, and approximately one-third of the observations occurred in grades seven through nine. While the current research is meant to be an exploratory study, findings related to the effectiveness of each co-teaching approach could vary based on a deeper examination by grade levels.

The current study is not able to determine the directionality of data. Based on the classroom observations, it is not possible to determine whether the increased use of co-teaching approaches resulted in the observed instructional practices or whether teachers who regularly incorporate learner-centered instructional practices apply more co-teaching approaches. The directionality of the relationship could be determined by future research that examines classroom observations of the same teachers across time or the co-taught and single teacher classes taught by the same teachers. The observed effects may have been influenced by other confounding independent variables, such as the co-teachers' time as a team, available planning time, and the amount of training received on effective teaching practices. While these data were not available for this study, we recommend that future studies incorporate these data into the statistical model.

### Conclusions

Through a structured professional development process, including training and job-embedded coaching, co-teachers learned and applied the array of co-teaching approaches. Based on prior research studies, the parallel (i.e., teachers working with different groups of students), complementary (i.e., one teacher providing whole group instruction while the other teacher enhances the instruction), and team (i.e., both teachers sharing responsibilities throughout the instructional process) approaches are considered to be more effective but less used than the supportive (i.e., one teacher providing whole group instruction while the other teacher works with students individually) approach to co-teaching (Villa et al., 2013; see also Bottge et al., 2015; Scruggs et al., 2007; Strieker et al., 2013; Szumski et al., 2017). Through classroom observations, the current study found that teachers who participated in professional development on the co-teaching approaches were more likely to demonstrate the effective co-teaching approaches in their classrooms. While prior studies have found the supportive approach to be the primary co-teaching arrangement (Bottge et al., 2015; Szumski et al., 2017), in the current study, the sole use of the supportive co-teaching approach was found in only 6.7% of observations when both teachers received training and coaching in the co-teaching approaches. Stated otherwise, in 93.3% of observations of co-teachers who had both received co-teaching training and coaching, co-teachers employed at least one of the more impactful co-teaching approaches of parallel, complementary, and team co-teaching.

The goal of co-teaching is not to place two teachers in the classroom together; rather the goal is to meet the range of student learning needs, engaging *all* students in the learning process (Friend et al., 2015; Villa et al., 2013). The current study substantiated research findings that the parallel, complementary, and team co-teaching approaches facilitate the use of student-centered

instructional practices (Cook et al., 2011; Szumski et al., 2017). For each additional co-teaching approach observed, the probability of observing student-centered instructional practices (i.e., checking for understanding, providing prompts, reinforcing behavior expectation, and providing specific feedback) increased. The observed data were consistent across grade levels, from pre-kindergarten through high school. Co-teachers are able to incorporate effective student-centered instructional practices by transitioning among the co-teaching approaches that best address students' needs in the moment.

The latest reauthorization of IDEA in 2004 acknowledged that:

Over 30 years of research and experience has demonstrated that the education of children with disabilities can be made more effective by having high expectations and ensuring students' access in the general education curriculum to the maximum extent possible... [by] providing appropriate special education and related services and aids and supports in the regular classroom to such children, whenever possible" (20 U.S.C. § 1400 [c] [5]).

This study suggests that co-teaching is an appropriate special education and related service, aid, and support for making the education of children with and without disabilities more effective.

### References

- Blasé, K. A., & Fixsen, D. L. (2013). *Core intervention components: Identifying and operationalizing what makes programs work*. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, Office of Human Services Policy, U.S. Department of Health and Human Services.
- Bottge, B. A., Toland, M. D., Gassaway, L., Butler, M., Choo, S., Griffen, A. K., & Ma, X. (2015). Impact on enhanced anchored instruction in inclusive math classrooms. *Exceptional Children, 81*, 158–175. <https://doi.org/10.1177/0014402914551742>
- Boudah, D.J., Schumacher, J.B., & Deshler, D.D. (1997). Collaborative instruction: Is it an effective option for inclusion in secondary classrooms? *Learning Disability Quarterly, 20*, 293-316.
- Brown, C. P., & Mowry, B. (2015). Close early learning gaps with Rigorous DAP. *Phi Delta Kappan, 96*(7), 53–57. <https://doi.org/10.1177/0031721715579041>
- Causton-Theoharis, J. & Theoharis, G. (2009). Creating inclusive schools for all students. *The Education Digest, 74*(6), 43-47.
- Cook, B. G., McDuffie-Landrum, K. A., Oshita, L., & Cook, S. C. (2011). Co-teaching for students with disabilities: A critical analysis of the empirical literature. In J. Kaufmann, D. Hallahan, & P. Cullen (Eds.), *Handbook of special education* (pp. 147–159). New York: Routledge.
- Cooper, J. T., Hirn, R. G., & Scott, T. M. (2015). Teacher as change agent: Considering instructional practice to prevent student failure. *Preventing School Failure: Alternative*

*Education for Children and Youth*, 59, 1–4.

<https://doi.org/10.1080/1045988X.2014.919135>

Eisenman, L., Pleet, A., Wandry, D., & McGinley V. (2011). Voices of special Education teachers in an inclusive high school: Redefining responsibilities. *Remedial and Special Education*, 32(2), 91-104.

Frey, N., & Fisher, D. (2010). Identifying instructional moves during guided learning. *The Reading Teacher*, 64, 84–95. <https://doi.org/10.1598/RT.64.2.1>

Friend, M., Embury, D. C., & Clarke, L. (2015). Co-teaching versus apprentice teaching: An analysis of similarities and differences. *Teacher Education and Special Education*, 38, 79–87. <https://doi.org/10.1177/0888406414529308>

Friend, M., Reising, M., & Cook, L. (1993). Co-teaching: An overview of the past, a glimpse at the present, and considerations for the future. *Preventing School Failure: Alternative Education for Children and Youth*, 37(4), 6–10.  
<https://doi.org/10.1080/1045988X.1993.9944611>

Gable, R. A., Mostert, M. P., & Tonelson, S. W. (2004). Assessing professional collaboration in schools: Knowing what works. *Preventing School Failure: Alternative Education for Children and Youth*, 48(3), 4–8. <https://doi.org/10.3200/PSFL.48.3.4-8>

Hang, Q. & Rabren, K. (2009). An examination of co-teaching: Perspectives and efficacy indicators. *Remedial and Special Education*, 30(5), 259-268.

Hattie, J. A. C. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge Press.



- Holbrook, J. (2017). *The effects of an online coaching model on secondary co-teaching teams in algebra* (Doctoral dissertation). Retrieved from Electronic Theses & Dissertations.  
<https://stars.library.ucf.edu/etd/5561/>
- Individuals with Disabilities Education Improvement Act of 2004, 20 U.S.C.1400 *et seq.*
- Idol, L. (2006). Toward inclusion of special education students in general education: A program evaluation of eight schools. *Remedial and Special Education, 27*(2), 77- 94.
- Jang, S. (2006). Research on the effects of team teaching upon two secondary school teachers. *Educational Research, 48*(2), 177-194.
- Joyce, B., & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Knight, J. (2011). *Unmistakable impact: A partnership approach for dramatically improving instruction*. Thousand Oaks, CA: Corwin Press.
- Knight, J. (2013). *High-impact instruction: A framework for great teaching*. Thousand Oaks, CA: Corwin Press.
- McDuffie, K. A., Landrum, T. J., & Gelman, J. A. (2008). Co-teaching and students with emotional and behavioral disorders. *Beyond Behavior, 17*(2), 11–16.
- McLeskey, J., Barringer, M-D., Billingsley, B., Brownell, M., Jackson, D., Kennedy, M., Lewis, T., Maheady, L., Rodriguez, J., Scheeler, M.C., Winn, J., Ziegler, D. (2017). *High-leverage practices in special education*. Arlington, VA: Council for Exceptional Children & CEEDAR Center.
- Mitchell, B. S., Hirn, R. G., & Lewis, T. J. (2017). Enhancing effective classroom management in schools: Structures for changing teacher behavior. *Teacher Education and Special Education, 40*, 140–153. <https://doi.org/10.1177/0888406417700961>

- Murawski, W. W., & Bernhardt, P. (2015). An administrator's guide to co-teaching. *Educational Leadership, 73*(4), 30–34.
- Murawski, W. & Swanson, H. (2001). A meta-analysis of co-teaching research: Where are the data? *Remedial and Special Education, 22*(5), 258-267.
- Noell, G. H., Witt, J. C., Slider, N. J., Connell, J. E., Gatti, S. L., Williams, K. L., ... Duhon, G. J. (2005). Treatment implementation following behavioral consultation in schools: A comparison of three follow-up strategies. *School Psychology Review, 34*, 87–106.
- Pancsofar, N., & Petroff, J. G. (2013). Professional development experiences in co-teaching: Associations with teacher confidence, interests, and attitudes. *Teacher Education and Special Education, 36*, 83–96. <https://doi.org/10.1177/0888406412474996>
- R Core Team (2016). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL: <https://www.R-project.org/>.
- Reinke, W. M., Stormont, M., Herman, K. C., & Newcomer, L. (2014). Using coaching to support teacher implementation of classroom-based interventions. *Journal of Behavioral Education, 23*, 150–167. <https://doi.org/10.1007/s10864-013-9186-0>
- Santoli, S.P., Sachs, J., Romey, E.A., & McClurg, S. (2008). A successful formula for middle-school inclusion: collaboration, time, and administrative support. *Research in Middle Level Education Online, 32*(2), 1-13.
- Scruggs, T. E., Mastropieri, M. A., & McDuffie, K. A. (2007). Co-teaching in inclusive classrooms: A metasynthesis of qualitative research. *Exceptional Children, 73*, 392–416. <https://doi.org/10.1177/001440290707300401>

- Solis, M., Vaughn, S., Swanson, E., & McCulley, L. (2012). Collaborative models of instruction: The empirical foundations of inclusion and co-teaching. *Psychology in the Schools, 49*, 498–510. <https://doi.org/10.1002/pits.21606>
- Strieker, T., Gillis, B., & Zong, G. (2013). Improving pre-service middle school teachers' confidence, competence, and commitment to co-teaching in inclusive classrooms. *Teacher Education Quarterly, 40*(4), 159–180.
- Strogilos, V., & Avramidis, E. (2016). Teaching experiences of students with special educational needs in co-taught and non-co-taught classes. *Journal of Research in Special Educational Needs, 16*, 24–33. <https://doi.org/10.1111/1471-3802.12052>
- Sweigart, C. A., & Landrum, T. J. (2015). The impact of number of adults on instruction: Implications for co-teaching. *Preventing School Failure: Alternative Education for Children and Youth, 59*, 22–29. <https://doi.org/10.1080/1045988X.2014.919139>
- Szumski, G., Smogorzewska, J., & Karwowski, M. (2017). Academic achievement of students without special educational needs in inclusive classrooms: A meta-analysis. *Educational Research Review, 21*, 33–54. <https://doi.org/10.1016/j.edurev.2017.02.004>
- [Thousand, J. & Villa, R. \(2019\). \*The early childhood inclusive education checklist : A self-assessment of best practices\*. Naples, FL: Dude Publishing.](#)
- U.S. Department of Education, Office of Special Education Programs. (2015). *Rubric A: SPDG Evidence-based Professional Development Components Rubric*. Retrieved from [http://signetwork.org/content\\_pages/205](http://signetwork.org/content_pages/205)
- U.S. Department of Education. (2013). *Thirty-fifth annual report to congress on the implementation of the individuals with disabilities education act*. Washington D.C.: Author.

- Villa, R. & Thousand, J. (2016a). *A guide to co-teaching PD resource center*. Thousand Oaks, CA: Corwin Press, Inc.
- Villa, R.A. & Thousand, J.S. (2016b). *The inclusive education checklist: A self-assessment of best practices*. Naples, FL: Dude Publishing.
- 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 Press, Inc.
- Villa, R. & Thousand, J. (2005). *Creating an inclusive school*. (2<sup>nd</sup> ed.) Alexandria, VA: Association for Supervision and Curriculum Development.
- Voerman, L., Meijer, P. C., Korthagen, F. A. J., & Simons, R. J. (2012). Types and frequencies of feedback interventions in classroom interaction in secondary education. *Teaching and Teacher Education*, 28, 1107–1115. <https://doi.org/10.1016/j.tate.2012.06.006>
- Volonino, V. & Zigmond, N. (2007). Promoting research-based practices through inclusion?. *Theory Into Practice*, 46(4), 291-300.
- Weaver, K. F., Morales, V., Dunn, S. L., Godde, K., & Weaver, P. F. (2017). *An introduction to statistical analysis in research: With applications in the biological and life sciences*. Hoboken, NJ: John Wiley & Sons, Inc. <https://doi.org/10.1002/9781119454205>
- Weiss, M. P., Pellegrino, A., & Brigham, F. J. (2017). Practicing collaboration in teacher preparation: Effects of learning by doing together. *Teacher Education and Special Education*, 40, 65–76. <https://doi.org/10.1177/0888406416655457>

**Table 1***Observed Classrooms by Grade Span*

Grade	Observations	Average Number of Students Present			Percentage of Observations by Subject				
		Total	IEP	English Learner	Language Arts	Math	Science	Social Studies	Special Course
Pre-K to K	58	15.62	3.39	1.02	36.2	50.0	1.7	1.7	10.3
Grades 1-3	134	17.83	3.99	2.57	55.2	41.8	0.7	1.5	0.7
Grades 4-6	148	19.87	4.82	3.74	43.9	45.9	6.1	3.4	0.7
Grades 7-9	251	20.26	6.38	2.20	39.4	40.2	11.2	7.2	2.0
Grades 10-12	68	18.07	5.42	1.07	35.3	13.2	20.6	30.9	0.0
All Grades	659	19.05	5.22	2.39	42.9	39.9	8.0	7.1	2.0

**Table 2**

*Variables from the Co-Teaching Observation Measure (Author et al., 2013)*

<i>Construct/Item</i>	<i>Definition</i>
Supportive Approach	One teacher takes the lead, and the other(s) rotate among the students to provide support.
Parallel Approach	Two or more people work with different groups of students in different sections of the classroom. The co-teachers teach, monitor or facilitate the learning of the different groups of students.
Complementary Approach	Co-teachers do something to enhance the instruction provided by the other co-teacher (e.g., model note-taking, ask questions to check understanding, provide visual supports).
Team Approach	Shared leadership and responsibilities in planning, teaching and assessing; the teachers have equal voice and it is difficult to distinguish who is the master of content. Both are teachers of content and facilitators of access.
Checks for understanding of concepts, principles, facts	Teacher(s) employ strategies for assessing student understanding (e.g., white boards, answer questions, signals).
Provides prompts, cues, redirection, re-teaching	Provides verbal or visual clues to guide students away from an incorrect answer, behavior, or response.
Provides specific feedback	Teacher describes what a student does and why it is correct or incorrect. Teacher restates student response. Teacher asks a question to clarify or illuminate student thinking.
Reinforces behavior	Positive reinforcement of effort and/or improvement in behavior. Attributing improvement and success to effort increases motivation.

**Table 3***Observed Co-Teaching Approaches by Grade Span*

Grade	Observations	Percentage of Observations by Co-Teaching Approaches			
		Supportive Co-Teaching Only	1 Recommended Approach	2 Recommended Approaches	3 Recommended Approaches
Pre-K to K	58	1.7	43.1	43.1	12.1
Grades 1-3	134	3.0	43.3	35.8	17.9
Grades 4-6	148	16.9	39.2	36.5	7.4
Grades 7-9	251	20.7	54.2	21.5	3.6
Grades 10-12	68	27.9	47.1	20.6	4.4
All Grades	659	15.3	46.9	29.6	8.2

**Table 4**

*Proportion of Classes with Instructional Practices Observed by Co-Teaching Approaches*

Instructional Practices	Co-Teaching Approaches			
	Supportive Co-Teaching Only	1 Recommended Approach	2 Recommended Approaches	3 Recommended Approaches
Checking understanding	.54	.68	.82	.85
Providing prompts & cues	.55	.78	.81	.89
Providing feedback	.38	.63	.62	.83
Reinforcing behavior	.34	.45	.56	.74



**Table 5***Results of ANOVA Analyses for Instructional Practices (N = 659)*

Variable	Mean	SD	Variance	Estimate	SE	t-value	Sig. (t)
Checking understanding	0.713	0.453	0.205				
Intercept (0 approaches)				0.545	0.044	12.369	<0.01**
1 Co-teaching approach				0.132	0.051	2.599	<0.01**
2 Co-teaching approaches				0.276	0.054	5.088	<0.01**
3 Co-teaching approaches				0.307	0.075	4.120	<0.01**
Providing prompts and cues	0.762	0.426	0.182				
Intercept (0 approaches)				0.554	0.415	13.362	<0.01**
1 Co-teaching approach				0.225	0.048	4.717	<0.01**
2 Co-teaching approaches				0.251	0.051	4.903	<0.01**
3 Co-teaching approaches				0.334	0.071	4.757	<0.01**
Providing feedback	0.605	0.489	0.239				
Intercept (0 approaches)				0.386	0.048	8.121	<0.01**
1 Co-teaching approach				0.242	0.055	4.413	<0.01**
2 Co-teaching approaches				0.234	0.059	4.001	<0.01**
3 Co-teaching approaches				0.447	0.081	5.551	<0.01**
Reinforcing behavior	0.489	0.500	0.250				
Intercept (0 approaches)				0.337	0.049	6.905	<0.01**
1 Co-teaching approach				0.110	0.056	1.958	0.05*
2 Co-teaching approaches				0.227	0.060	3.787	<0.01**
3 Co-teaching approaches				0.404	0.083	4.892	<0.01**

*Note:* Significance at the <0.05 level is denoted by \*; significance at the <0.01 level is denoted by \*\*.