Journal of Teacher Education
2023, Vol. 74(1) 23–39

DOI: 10.1177/00224871221105807
journals.sagepub.com/home/jte
SAGE

Preservice Teacher Reflection on Coteaching Implementation: Are We Meeting the Benchmarks?

Megan Guise[1], Eric Ambroso[2], Katie Paulding[1], Courtney Moore[1], and Sarah Hegg[1]

Abstract

This research study shows one teacher preparation program's (TPP) attempt to better gauge coteaching implementation and how a TPP can provide more immediate pair support. We present findings from the analysis of 777 weekly coteaching reflection surveys completed by 44 secondary preservice teachers over 20 weeks of the clinical experience. The research team developed "ideal" benchmarks for the coteaching reflection prompts and analyzed the data in respect to these benchmarks to see how close preservice teachers met coplanning, coinstructing, and coassessing benchmarks. Data are reported according to these benchmarks, presenting these data for the entire cohort and by individual disciplines before providing detailed case studies for two pairs within the English cohort. Recommendations are provided for TPPs who want to use a similar coteaching reflection survey and approach to data analysis to inform more immediate pair support.

Keywords

practice-based teacher education, secondary teacher education, student teaching

Introduction

Teacher preparation programs (TPP) continue to enhance the clinical practice component of their programs, recognizing the value of a rich, school-site experience while preservice teachers are enrolled in coursework. To strengthen the fieldwork component of TPPs, TPPs have not only increased time spent in the field but also have transitioned to more collaborative models for learning how to teach, with coteaching as one such model. Coteaching during the clinical experience consists of a preservice and inservice teacher collaborating on planning, instructing, assessing, and engaging in reflective dialogue to support K–12 student learning, which may result in the professional growth of both teachers. Research shows variety in the extent to which the coteaching model is implemented in line with the intent of the model with TPPs continuing their efforts to better support coteaching implementation to achieve greater levels of collaboration (Gallo-Fox & Stegeman, 2019; Guise et al., 2017; Soslau, Gallo-Fox, & Scantlebury, 2018).

At our institution—a postbaccalaureate 1-year credential program—we have embraced the coteaching model and offer implementation support in the form of quarterly pair workshops, a coteaching website, and twice-a-month newsletters. Although these supports are grounded in the feedback from previous coteachers and yearlong research studies (Guise et al., 2016, 2017), we noticed that most of our supports were less of an immediate "intervention" and often informed our work with *future* coteaching pairs rather than the pairs we were currently supporting. The purpose of this article is to show our attempt to better gauge in real-time coteaching implementation and how a TPP could provide more immediate support. For 5 years, we had administered a weekly coteaching reflection survey that all secondary preservice teachers completed each week of their clinical experience, reflecting on how they implemented coplanning, coinstructing, and coassessing during that week. For the purpose of data analysis for the research described here, we developed and piloted "ideal" benchmarks for the coteaching reflection survey questions and analyzed the data in respect to these benchmarks to see how close we were meeting these ideals. We arrived at these benchmarks by considering (a) the amount of time spent at the school site each quarter, (b) the roles and responsibilities of the preservice teacher, and (c) high-leverage coteaching practices as defined by previous research.

[1]California Polytechnic State University, San Luis Obispo, USA
[2]WestEd, San Francisco, CA, USA

Corresponding Author:
Megan Guise, California Polytechnic State University, 1 Grand Avenue, San Luis Obispo, CA 93407, USA.
Email: meguise@calpoly.edu

We begin with a review of research on coteaching, identifying benefits and challenges, variation in implementation, and methodologies used to research and evaluate implementation. Then, we provide background on our TPP and the weekly reflection data collected, describing how we analyzed these data. We report the data according to the ideal benchmarks, presenting these data for the entire cohort of secondary preservice teachers and by individual disciplines before providing detailed case studies for two pairs within the English cohort. Finally, we provide recommendations for other TPPs who may want to use a similar coteaching reflection survey as a quick indicator of pair implementation and explain where targeted supports (such as providing examples of high-leverage coteaching practices and supporting pairs to co-reflect on implementation) can be provided in real time.

Literature Review

Background on Coteaching and Prior Research

Coteaching has its origins in special education, with pioneers such as Cook and Friend (1995) explicating the model of a general and special education teacher collaborating in planning, instruction, and assessment to meet K–12 student needs. TPPs have adapted the coteaching model for the clinical experience with the pairing of a preservice and inservice teacher, with some TPPs pairing two or more preservice teachers with one inservice teacher (Beers, 2005; Tobin & Roth, 2005). When coteaching, it is important for coteachers to explicitly discuss the teaching role they will assume during each lesson and allow each teacher to bring their unique strengths and areas of interest to coteaching (Tobin & Roth, 2005).

Coteaching has been defined as when both the preservice and inservice teacher engage in student learning at all times through daily coplanning, coinstructing, and coassessing (Bacharach et al., 2010; Badiali & Titus, 2010; Guise et al., 2017). Coplanning includes coteachers discussing, revising existing, and/or creating new lesson plans, activities, and assessments and this coplanning often occurs during a designated planning period. Coinstructing is when coteachers are involved in the teaching of the lesson, implementing coinstructional strategies (e.g., one teach/one assist, team teaching, parallel). Coassessing includes coteachers analyzing and discussing student assessment results and/or reflecting on a cotaught lesson and establishing next steps for instruction.

Studies have found positive gains for the learning of K–12 students (Beers, 2008; Scantlebury et al., 2008), including gains on high-stakes exams in cotaught versus noncotaught classrooms (Bacharach et al., 2010). Additional student benefits include "enhanced instruction, rather than just a second set of hands" (Beninghof, 2015, p. 13). By drawing on expertise of each member of the pair and strategically using this expertise when planning, instructing, and assessing, coteachers can better support struggling students, implement a variety of scaffolds, and differentiate instruction (Beninghof, 2015; Heckert et al., 2013; Mandel & Eiserman, 2015; Murdock et al., 2015; C. A. Tomlinson, 2015).

Research has also examined the affordances for preservice and inservice teachers. Researchers have concluded that by engaging in all facets of coteaching (coplanning, coinstructing, and coassessing), coteachers have an opportunity to reflect on a shared experience and grow professionally through collaboration (Beers, 2008; Scantlebury et al., 2008). Furthermore, research has shown that coteaching can facilitate development of critical reflection skills (Murphy & Carlisle, 2008).

Variation in Coteaching Implementation

Research indicates that coteaching pairs fall on a continuum from more traditional interactions—with the inservice teacher as a "supervisor of practica" (Borko & Mayfield, 1995, p. 9) overseeing the field experience as an evaluator/superior rather than a mentor (Beck & Kosnik, 2002; Koerner et al., 2002)—to embracing increased partnership and mutual engagement (Gallo-Fox & Stegeman, 2019; Guise et al., 2017; Soslau, Gallo-Fox, & Scantlebury, 2018). Although increased partnership and mutual engagement are a goal of coteaching, contributing factors such as power differential and limited opportunities for genuine dialogue and collaboration may prohibit pairs from achieving this outcome.

To achieve higher levels of collaboration, research suggests that pairs work toward dismantling the power differential to create space for learning through collaboration (Guise et al., 2016, 2021; Scantlebury, 2005; Soslau, Gallo-Fox, & Scantlebury, 2018). Research on mentoring during the field experience recommends that when inservice teachers embrace dual roles (i.e., mentor and learner; Soslau, Gallo-Fox, & Scantlebury, 2018), the power differential can be disrupted. In a recent study, Rabin (2020) described how coteaching pairs cultivated caring relationships through recognizing and addressing power dynamics in the coteaching model. Implementing effective mentoring practices such as support and autonomy; opportunities for genuine dialogue (Scantlebury et al., 2008; Thompson & Schademan, 2019); collaborative planning, teaching, and reflecting (P. D. Tomlinson et al., 2010); and building reciprocity allow both teachers' voice and professional growth (Ambrosetti & Dekkers, 2010; Valencia et al., 2009). Tobin and Roth (2005) elaborate on the inclusion of both preservice and inservice teachers' voice through the use of critical inquiries and equal opportunities to contribute in dialogue, especially in the area of coplanning.

Measuring Coteaching Implementation and Data-Driven Change

When researching coteaching implementation, data collected primarily include interviews with coteaching pairs and video

footage of coplanning and coassessing sessions or coinstructing. A few research studies have made use of preservice teacher reflections to capture coteaching in situ (see Guise et al., 2016 and Soslau, Kotch-Jester, et al., 2018). To document coinstructing and the use of huddles—short, focused meetings between coteachers during a lesson—Soslau, Kotch-Jester, et al. (2018) had preservice teachers maintain a self-reported huddle log. This log included identifying every time a huddle occurred and then selecting one huddle to reflect upon for the week. Preservice teachers noted when and why the huddle occurred, who initiated the huddle, what the focus was of the huddle, and how the huddle informed future instruction. Rabin (2020) made use of video-recorded observations and debrief sessions in which coteachers reflected on cotaught lessons and discussed ways to improve collaboration. Although the huddle logs and video footage did not inform the TPPs' immediate pair support, these studies are examples of repeated self-reported data that help a TPP learn more about coteaching implementation.

The field of data-driven instruction and improvement science may provide guidance to TPPs interested in having coteaching data inform immediate coteaching support. Although data-driven instruction is geared toward K–12 classroom teachers developing a process where analysis of student data informs instructional decision-making (Sindelar, 2003), TPPs could also engage in data analysis of coteaching to inform pair support. Drawing on Sindelar's (2003) recommendations of a data-driven cycle where teachers identify patterns in understanding *and* misunderstanding for individuals, subgroups, and the whole class, TPPs could similarly adopt a data-driven reflection cycle specific to coteaching implementation. The benefits to TPPs engaging in a data-driven cycle include providing targeted support, implementing learning interventions, and improving effectiveness through reflection and fine-tuning (Brunner et al., 2005; Halverson et al., 2007).

Similar to data-driven instruction, the field of improvement science could prove useful to TPPs looking to enhance coteaching implementation. Improvement science is defined as the science of applying knowledge to effect improvement in a sector, such as business, industry, health care, or education (Langley et al., 2009; Lewis, 2015). Once a need for improvement has been identified, Langley et al. (2009) delineate three necessary questions one must answer in their model of improvement framework: "What are we trying to accomplish? How will we know that a change is an improvement? What changes can we make that will result in an improvement?" (p. 5). During the improvement cycle, it is vital to collect feedback from stakeholders to determine whether improvement is actually occurring (Langley et al., 2009). To establish and maintain effective feedback loops, project staff typically create a formal reporting cycle as well as informal collaboration and learning opportunities. The goal of the feedback loops is to provide timely feedback to address implementation challenges in a responsive and efficient manner. Within education, and TPPs in particular, improvement science can assist in identification of areas of improvement, feedback collection and analysis, and the resulting modifications to facilitate continued change. For coteaching implementation specifically, TPPs could make a small change to coteaching support and then study through ongoing data collection the impact of such change.

Our Study

Building on prior coteaching research, the purpose of this article is to explore how a TPP could better gauge coteaching implementation and provide more immediate support. Through the administration of a weekly coteaching reflection survey and the identification of ideal benchmarks for implementation, we explored the following research questions:

Research Question 1: To what extent are coteaching pairs within and across disciplines able to achieve the coteaching ideal benchmarks?
Research Question 2: What patterns in implementation are evident in pairs meeting or not meeting these benchmarks? Do the benchmarks correspond with the nature of coteaching described by the preservice teachers?
Research Question 3: How might these implementation patterns inform TPP support provided to pairs?

Method

Teaching Context

The TPP for this study was a secondary postbaccalaureate credential program in the United States. During this study, 44 preservice teachers were enrolled, including English, history/social science, math, and science teachers. Preservice teachers enrolled in three quarters of coursework and completed a yearlong clinical experience at a middle/high school. Each preservice teacher worked with an inservice teacher, and a university supervisor (university faculty or a retired teacher) observed the preservice teacher on 12 occasions.

During Quarter 1 (fall quarter), preservice teachers were at their school site all day on Tuesdays and Thursdays and were actively involved in coinstructing and supporting small groups of student learning. For the second quarter (winter quarter), preservice teachers were at their school site every day for two full periods and one planning period. In Quarter 2, preservice teachers collaborated on planning, instructing, and assessing. For the third and final quarter (spring), preservice teachers were at their school site all day, every day, and continued to collaborate on planning, instructing, and assessing.

At the time of this study (2019–2020 academic year), coteaching had been implemented by the TPP for over 5 years. During the 2019–2020 academic year, preservice teachers were placed within six districts. Approximately

Table 1. Coteaching Reflection Data by Quarter.

Quarter	No. of preservice teachers	No. of reflections	Average reflections per preservice teacher
Fall 2019	41	455	11.1
Winter 2020	39	322	8.3

67% of the inservice teachers had hosted a previous year under the coteaching model and 11% were alumni of the TPP and had experienced the coteaching model during their own clinical experience. District administrators supported the coteaching model and this model mirrored their own school-site collaborative efforts, including professional learning communities (PLCs), critical friends as a part of project-based learning, and coteaching between a general educator and special education educator.

Coteaching pair support included quarterly workshops, coteaching newsletters emailed twice-a-month to supplement workshops, and a coteaching website with resources (e.g., tips for coplanning efficiently, characteristics of effective coinstructing). A previous yearlong research study on coteaching implementation at the TPP—including interviews and survey data from pairs—as well as coteaching research from the field informed the content and format of the provided supports. Coteaching pairs were not made aware of the ideal benchmarks prior to coteaching. We chose not to share the benchmarks with pairs because this was the TPP's first attempt at piloting the benchmarks for the purpose of data analysis and we wanted to be confident in the utility of the benchmarks before sharing with pairs.

Data Collection

Data collected included a weekly coteaching reflection survey that preservice teachers completed at the end of each week of the clinical experience. The weekly coteaching reflection was an online survey that consisted of six sections with questions pertaining to the general experience in the clinical practice for that week as well as coteaching-specific questions related to coplanning, coinstructing, and coassessing implementation. Survey questions included a mix of open-ended questions (e.g., What was your most memorable moment this week? What was your biggest challenge this week? Please provide a specific example of how coteaching was implemented. If coteaching was not implemented, what was a barrier to implementation?) and closed-ended questions (e.g., Approximately how much time was spent coplanning? Coinstructing? Coassessing?). Preservice teachers were introduced to this weekly reflection during program orientation. See the appendix for the complete weekly coteaching reflection survey.

Weekly coteaching reflections were collected for each quarter of the three-quarter program. We chose to collect reflections by quarter as each quarter of the clinical experience varied in terms of the number of hours spent in the field and the expectations for coteacher roles. As preservice teachers progressed through the clinical experience, they took on more leadership in planning, instructing, and assessing while still being encouraged to collaborate with their coteacher throughout all phases. For the purpose of this study, we decided to omit spring quarter reflection data because spring quarter occurred during the pandemic when school districts transitioned to virtual instruction. Although we still collected the weekly reflections, we adjusted the prompts to be specific to virtual teaching. Having different prompts and the nature of the pandemic itself made it difficult to compare spring reflection data to the previous two quarters.

Table 1 shows the number of reflections submitted by discipline for fall and winter. If a preservice teacher submitted three or fewer reflections per quarter, their reflections were omitted from the data set. For fall, three preservice teachers were omitted, and in winter, five were omitted. In total, 41 of the 44 preservice teachers submitted a combined 777 reflections, for an average of 9.7 reflections submitted per preservice teacher. Participants submitted fewer reflections in winter with a noticeable decline in survey responses observed in late February. The decline may be attributed to rising anxiety and concerns about the COVID-19 pandemic, which became common themes in the qualitative data collected during that time.

The weekly reflection survey had been implemented for 5 years prior to this study and was updated annually to refine the questions in hopes of collecting data that could be more easily interpreted. Survey items included in the analysis of this study had remained the same since the 2017–2018 academic year. Although the survey instrument had not been validated outside of this research context, similar responses were elicited from cohorts in years prior. The alpha reliability coefficient of our instrument across three cohorts (2017/2018–2019/2020) and 4,120 reflection responses was .74, suggesting an acceptable level of internal consistency (Taber, 2018).

Once completed by the preservice teacher, this survey was automatically emailed to both the content-specific advisor and university supervisor working with the preservice teacher. Although the advisor and supervisor would read the reflections and often respond via email to the preservice teacher with reactions or advice, prior to this research study there had not been a program-wide review of the data. Coteaching implementation data had been routinely collected for over 5

Table 2. Benchmark for Each Component and Quarter of Coteaching.

Reflection question[a]	Fall quarter benchmark (%)	Winter quarter benchmark (%)	Rationale
Approximately how much time was spent coplanning?	25	50	For fall quarter, preservice teachers were at the school site twice a week. There was one planning period a day, so we would expect to see collaboration in two planning periods a week, consisting of about 20% of the inservice teacher's overall teaching schedule. For winter quarter, the number of planning periods was doubled because the preservice teacher was at the school site every day.
Approximately how much time was spent coinstructing?	75	75	As the coinstructional strategy of one teach/one assist was included on the weekly reflection, we would expect to see the majority of instruction each quarter utilizing one of the coinstructional strategies. However, there were opportunities within the coteaching model for strategic solo time, so we would not expect 100% of pair time spent coinstructing.
Approximately how much time was spent coassessing?	50	75	Regardless of whether the pair was coplanning or coinstructing, we hoped the pair consistently engaged in collaborative reflection.

[a]For each question, possible responses included 0%, 25%, 50%, 75%, and 100%.

years, but a system had not been established for analyzing these data that would allow the data to inform program improvement. In the section that follows, we describe the process for establishing the ideal benchmarks, which were used for data analysis.

Arriving at the Benchmarks

Our research team wanted to explore whether establishing benchmarks for certain coteaching reflection questions could help us to quickly identify pairs that were aligned with the coteaching model versus those who were implementing a more traditional "sink or swim" model. We first identified which reflection questions lent themselves to benchmarks and chose the three quantitative questions pertaining to percentage of time engaging in the three components of coteaching (i.e., coplanning, coinstructing, and coassessing) and the inservice teacher's openness to new ideas. One reason for selecting these questions was because they directly aligned with previous research on coteaching. Although previous research has not explicitly identified a percentage of time engaged in these three components of coteaching, this research does emphasize the importance of collaborative planning, teaching, and reflection (P. D. Tomlinson et al., 2010) and building reciprocity and space for both teachers' voices (Ambrosetti & Dekkers, 2010; Valencia et al., 2009). Within the coteaching model, there is also a need for space for mentoring that includes collaboration and autonomy (Scantlebury et al., 2008; Thompson & Schademan, 2019). Given these identified characteristics of effective coteaching, when determining percentage of time, we knew that the goal was not 100% coteaching but that intentional opportunities for solo time and preservice teacher in lead were also important to the model.

In addition to these characteristics identified in previous studies, our research team took into consideration contextual factors that affected the quantity of time engaged in each coteaching component. Therefore, we established different benchmarks for fall and winter because preservice teachers spent more time in the field during winter and their roles and responsibilities looked different when compared with fall. Table 2 identifies ideal benchmarks for each coteaching component and quarter with a rationale explaining the contextual factors that informed each benchmark.

The survey item pertaining to the inservice teacher's openness to new ideas (i.e., To what extent was the inservice teacher willing to incorporate new ideas/techniques?) was answered using a scale of 1 to 5, with 5 equating to the inservice teacher always being willing to incorporate new ideas/techniques. For fall, we selected three as the ideal benchmark as the preservice teacher was not responsible for much planning outside of the school day, therefore creating fewer opportunities for the preservice teacher to share original ideas. By winter, however, the benchmark shifted to a four because the preservice teacher was more involved in all aspects of teaching and was expected to share more ideas.

These benchmarks were used solely for the purpose of data analysis and had not been shared with pairs at coteaching workshops. Through our research, we wanted to explore whether these benchmarks had potential in quickly identifying a level of coteaching implementation that could inform program support. We also were cautious not to overemphasize the percentage of time spent coplanning, coinstructing, and coassessing because we recognize that effective coteaching

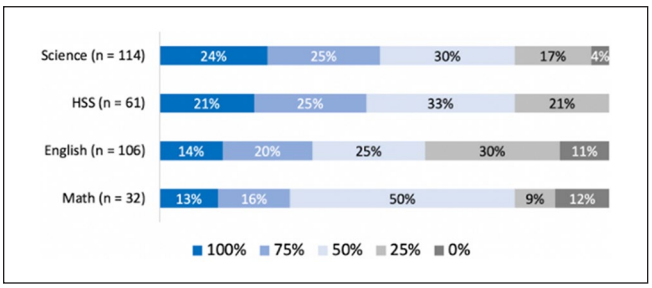

Figure 1. Approximate time spent coplanning by discipline (collected in winter quarter).

implementation is not just quantity of time engaged in the model but the quality of that engagement. Therefore, we also analyzed the qualitative data from the reflection survey to confirm and/or disconfirm what the benchmarks revealed about coteaching implementation.

Data Analysis

The analysis in this study focused primarily on preservice teachers' experiences with the coteaching model. Specifically, we wanted to understand how much time was devoted to each component of coteaching (i.e., coplanning, coinstructing, and coassessing), the most prevalent strategies utilized within each coteaching component, and the willingness of inservice teachers to incorporate new ideas or techniques. Initial analysis of the quantitative data consisted of Author 2 producing memos detailing the descriptive statistics of responses to each survey item—presented overall, by discipline, and by week in the program. The memos included data visualizations (see Figure 1) for each survey item to allow the research team to efficiently compare and contrast responses. We present Figure 1 to document the stages in our data analysis process.

The second round of quantitative analysis consisted of the research team reporting the data according to the established benchmarks as previously described.

Analysis of qualitative data included Author 2 reading through all qualitative survey responses, noting themes that were identified in preservice teachers' responses to questions such as their most memorable moment, most challenging moment, and a specific coteaching example from the week. Author 2 then uploaded the qualitative data to the coding software NVivo 11.4, which was used to examine each preservice teacher's unique experiences and cut across all participants' survey responses in comparative and contrastive ways (Mason, 2017; Saldaña, 2015). This first phase of qualitative coding was then followed by Author 1 coding data that were explicitly coded for coteaching. Codes included identifying whether the coteaching comment pertained to coplanning, coinstructing, coassessing or a different aspect of coteaching (e.g., power dynamic). This was then followed by adding subcodes. For example, subcodes for coinstructing included the six different instructional strategies (e.g., parallel, team teaching). Subcodes for coassessing, on the contrary, consisted of codes related to different types of coassessing, including grading or reflecting on a lesson.

A final round of analysis consisted of identifying one coteaching pair who consistently met the ideal benchmarks and one coteaching pair who did not meet benchmarks. We analyzed both the quantitative and qualitative data to present a more in-depth case study of implementation for each pair and to determine whether our benchmarks accurately categorized pair practice. We chose to focus on two English pairs for these case studies as Author 1's background was in English and we felt that having background in the content being taught could lead to a more accurate analysis of the data.

Findings

In the sections that follow, we report the quantitative reflection data for the entire cohort as well as by discipline and quarter. Each bar graph denotes the ideal benchmark and what preservice teachers self-reported in relation to those benchmarks. Then, we present two case studies for the discipline of English, showing a pair who consistently met the benchmarks and a pair who did not. In these case studies, we provide the quantitative data in respect to the benchmarks as well as qualitative data to provide more descriptive details about coteaching implementation.

Coplanning

Survey data suggest that coteaching pairs generally met benchmarks established for coplanning in the fall and winter (Figure 2). In fall, the average time reported for coplanning exceeded the benchmark of 25% in each of the 12 weeks. A slight decrease in reported coplanning time (33%) was observed in Week 7, but the average reported coplanning time increased to 51% by Week 9. In winter, the average coplanning time reported surpassed the benchmark (50%) every week except for Weeks 3 and 5, with 48% and 47% of time reported, respectively. Preservice teachers described spending the greatest amount of time coplanning in Week 2 of winter, with the average reported time of 69%. Comparing the average amount of time coplanning over time, an increase of reported time was observed from fall to winter in each week of the program.

Analyzing the survey responses across disciplines, data indicate that all but one discipline (English) met each benchmark established for the amount of time coplanning (Figure 3). All four disciplines met the benchmark of 25% in the fall. In winter, preservice English teachers reported spending 49% of their time coplanning, falling one percentage point under the ideal of 50%. Preservice teachers in all four disciplines reported spending more time coplanning in the winter than the fall, with the greatest increase reported by history/social science (HSS) participants (24%).

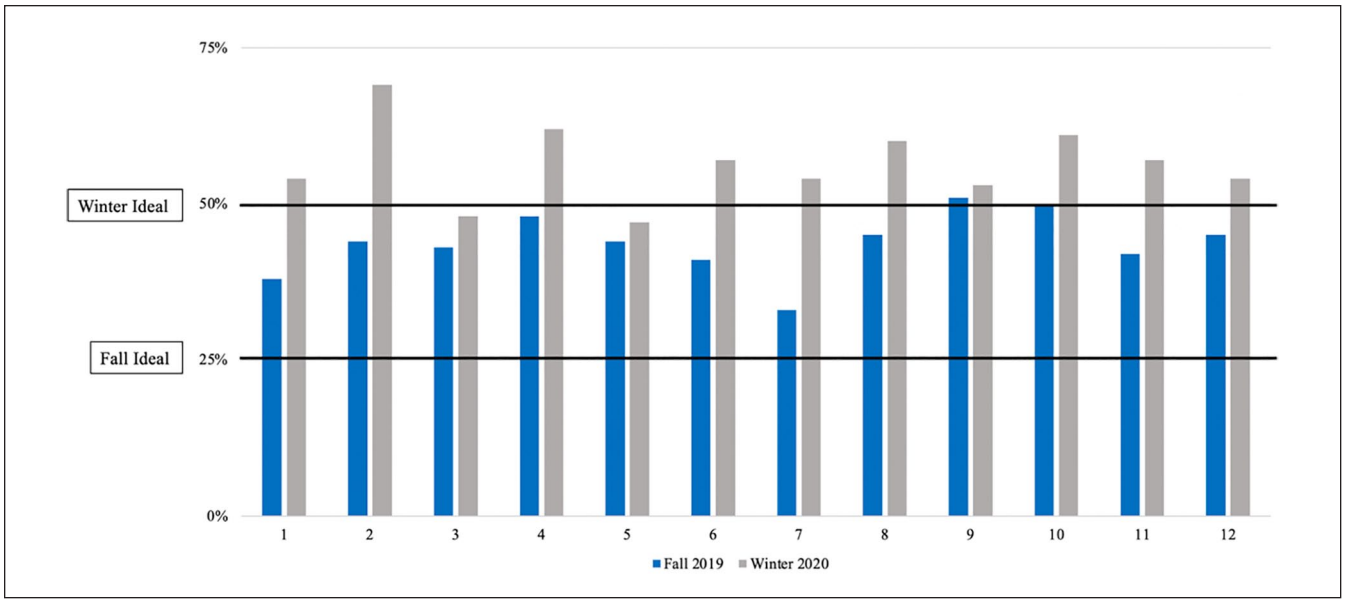

Figure 2. Average time spent coplanning by week across all disciplines.

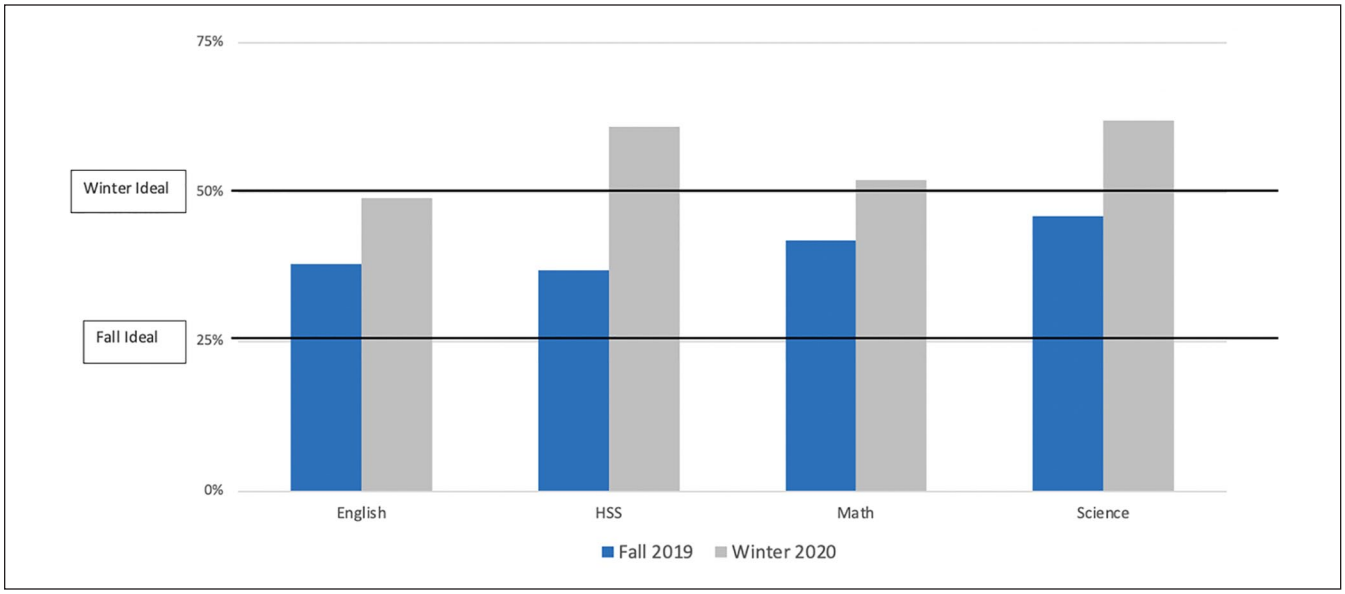

Figure 3. Average time spent coplanning by discipline.

Coinstructing

Survey responses on the amount of time spent coinstructing suggest that coteaching pairs did not meet the standards established for fall or winter in any discipline (Figure 4). The average reported time spent coinstructing fell below the 75% benchmark throughout all 12 weeks of both quarters. The highest percentage of time spent coinstructing was 63%, reported by preservice teachers in Week 12 of winter. The lowest percentage of time was reported in Weeks 1 and 6 of fall, with responses averaging 42%. As with coplanning, however, the amount of time coinstructing generally increased from fall to winter, with decreases observed only in Weeks 5 and 9.

An analysis of the survey data paints a similar story regarding the amount of time spent coinstructing by discipline (see Figure 5). In fact, the highest percentage of time spent coinstructing was 59%, reported by science teachers in winter. Preservice teachers in every discipline reported spending more time coinstructing in the winter than the fall except for history/social science, who averaged the lowest amount of time coinstructing (43%) in winter.

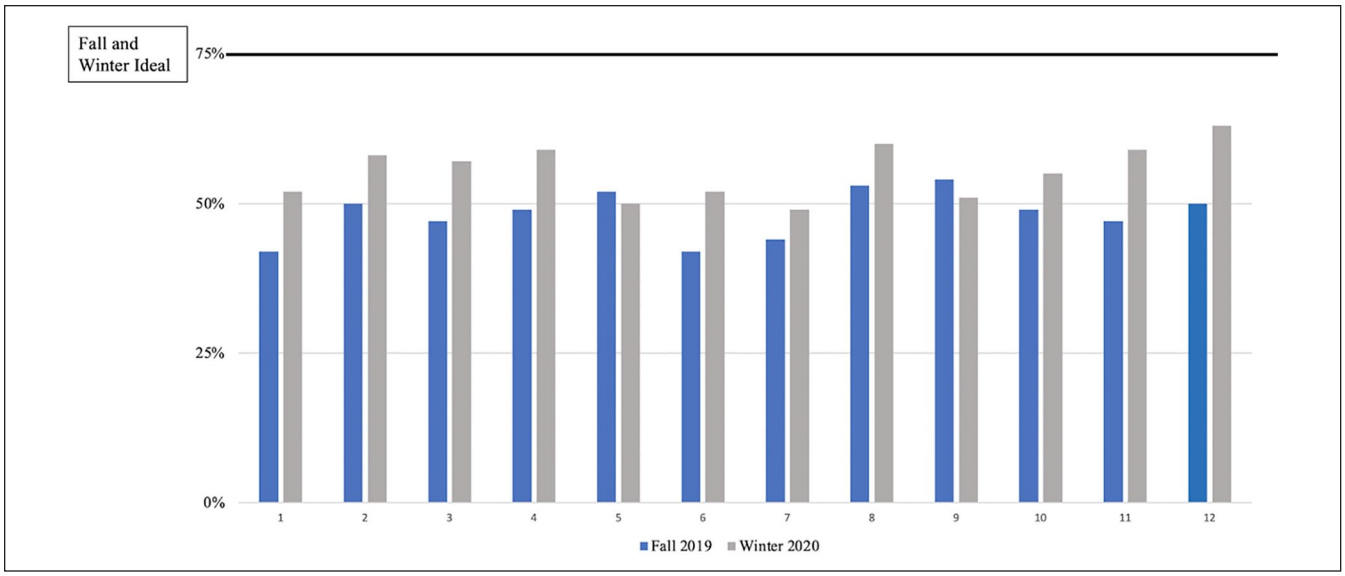

Figure 4. Average time spent coinstructing by week across all disciplines.

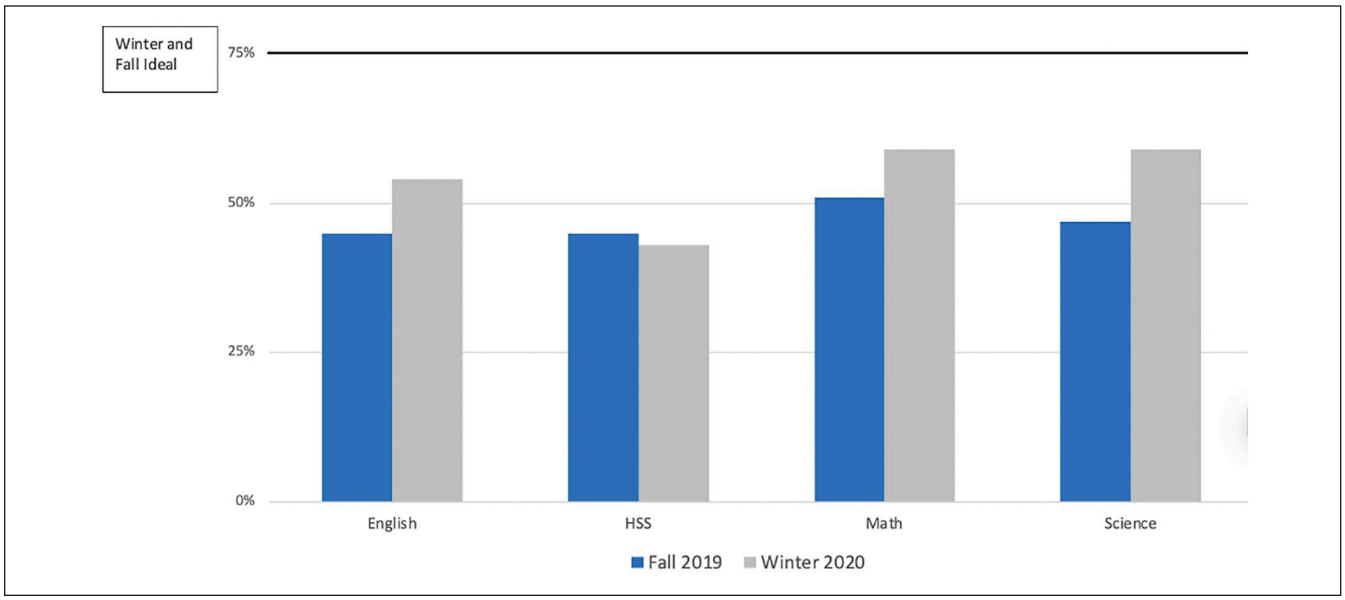

Figure 5. Average time spent coinstructing by discipline.

Coassessing

Survey data indicate that time spent coassessing also fell below the established benchmarks in fall (50%) and winter (75%; Figure 6). In fall, the average time coassessing reported by preservice teachers was 41%, ranging from 48% in Weeks 9 and 12 to 28% in Week 7. The highest percentage of time spent coassessing (62%) was reported in Week 10 of winter. The progression from fall to winter was less evident for coassessing, with decreases or identical amounts reported in 4 of the 12 weeks.

Like coplanning and coinstructing, survey participants generally reported more time coassessing in winter than fall (Figure 7). The lowest average time spent coassessing (35%) was reported by history/social science in fall and the highest (58%) by math in winter. Preservice teachers in math and science tended to report more time coassessing than those in English and history/social science, for both fall and winter.

English Case Studies

In the sections that follow, we present case studies on two English pairs. Although we only report on the two English pairs in this article, we also analyzed the qualitative data of a subset of pairs across disciplines to confirm that what we were noticing in the English pairs was consistent with these

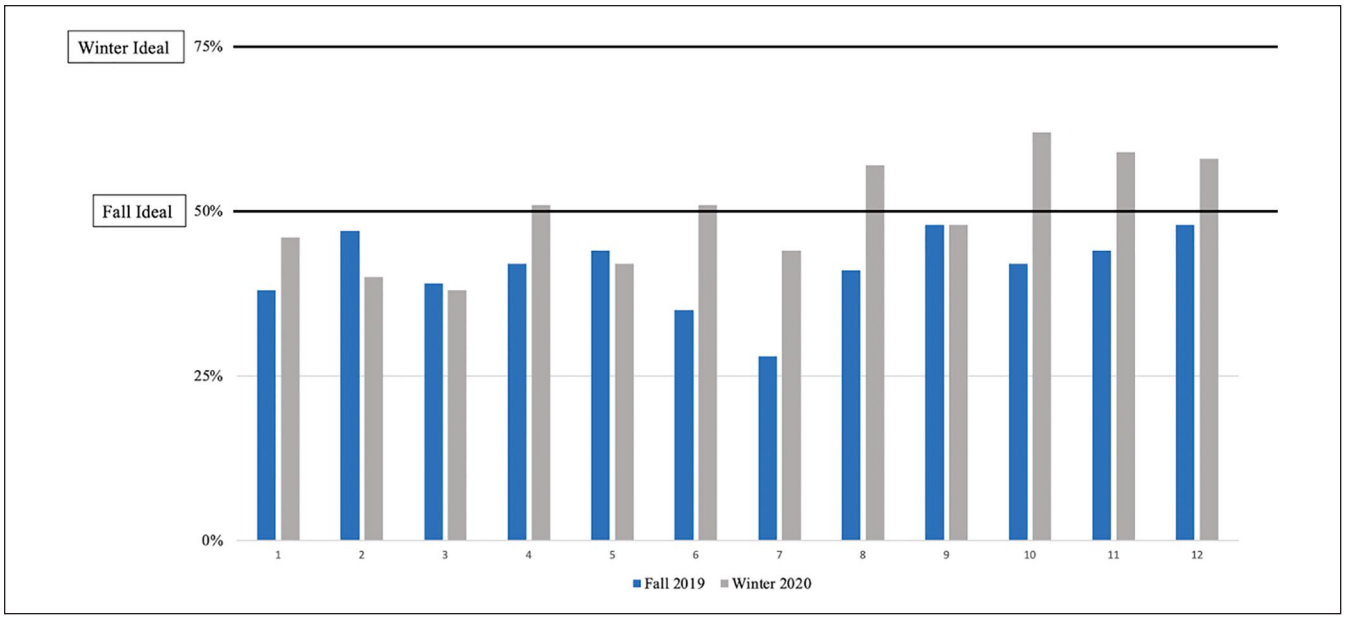

Figure 6. Average time spent coassessing by week across all disciplines.

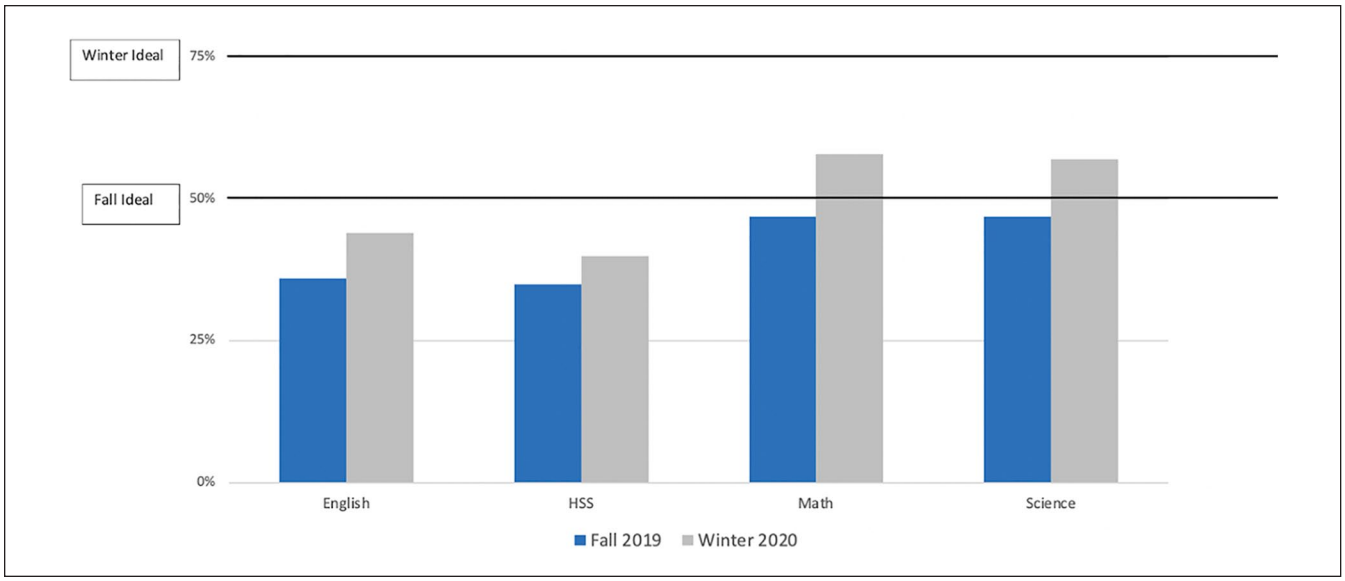

Figure 7. Average time spent coassessing by discipline.

other pairs. Through this process of data reduction, we both eliminated and selected data we considered representative of the corpus (Smagorinsky, 2008). We decided to focus on English, not only because this was the discipline background of Author 1, but also as reported in the quantitative data, the discipline of English often implemented coteaching below the benchmarks when compared with the other disciplines. When determining which English pairs to analyze for the purpose of a case study, one criterion was to select a pair that was consistently meeting the benchmarks for all three components of coteaching and one that was not meeting the benchmarks. From there, we chose to focus on two pairs that were teaching at the same school site to reduce possible contextual differences that might have affected coteaching implementation.

English pair meeting benchmarks. Carly[1] (preservice teacher) and Abigail (inservice teacher) cotaught high school English. This was the first time Abigail hosted a preservice teacher from the TPP program, but she had hosted preservice teachers from other programs. This pair consistently met the benchmarks for coplanning, coinstructing, and coassessing

Table 3. Carly's Average Time Spent Coplanning, Coinstructing, and Coassessing.

Quarter	Coplanning (%)	Coinstructing (%)	Coassessing (%)
Fall 2019	73	85	75
Winter 2020	81	84	84

(see Table 3). In fall, Carly reported spending more than double the amount of time recommended for coplanning and regularly exceeded the benchmarks for coinstructing and coassessing. In winter, Carly was one of the few preservice teachers to report meeting the elevated benchmarks for time spent coplanning (50%), coinstructing (75%), and coassessing (75%).

In addition, survey responses indicated that Carly perceived Abigail as willing to incorporate new ideas and techniques into the classroom. Across fall and winter, Carly rated Abigail's openness to new ideas 20 times, with an average rating of 4.8 (on a scale of 1 to 5, with 5 equating to the inservice teacher always being willing to incorporate new ideas/techniques). In fall, Carly submitted ratings of five every week, exceeding the benchmark of three for Abigail's openness to new ideas. The pair also surpassed the benchmark of four in winter, with Carly providing a rating of 4.5 across eight submissions.

In looking at Carly's responses to the open-ended reflection questions, several key characteristics of the pair's coteaching practice became apparent. When asked to provide an example of coteaching, Carly consistently provided an example of coplanning, instructing, and coassessing, which showed how each component informed the next. For coinstructing specifically, this pair made use of all six coinstructional strategies at some point in the two quarters. Not only were a variety of strategies used, but Carly also described how each coteacher had a clear role and shared responsibilities for cotaught lessons: "On Tuesday, we cotaught paragraph writing, each focusing on a specific skill with half the class" (winter quarter).

The language used in describing their implementation of coteaching included words like "concurrently," "discussed," "both," "together," and "agreed upon," showing collaboration through discussion. Carly also discussed in her reflections how she was seen as an equal in the classroom by Abigail, creating space for Carly to have an active role in the lesson. Carly having "voice" in decisions was also evident in this pair's implementation of coplanning with Abigail creating opportunities to revise already existing lessons and units. Carly described this planning, stating, "Today Abigail and I re-paced our *Macbeth* unit and decided together what aspects I would teach and plan and when we should look at and adjust details of the upcoming *1984* unit" (fall quarter). There were also opportunities for Carly to generate new content, receive feedback from Abigail, and to collaboratively enhance the lesson:

> This week Abigail proposed that I use our prep to plan a debrief for a sonnet activity I led the classes in when she was gone for training last week. After planning a short lesson, Abigail and I looked over it, honed it, and talked about how to improve it. I then taught the lesson and we debriefed afterward. (fall quarter)

This pair also exhibited intentionality when implementing coteaching. For example, the pair was strategic about what coinstructional strategy to implement when depending on student learning needs. Carly shared an example of differentiated instruction determined by where students were in the writing process: "We cotaught by splitting the class into groups based on what part of the process they were in on their essays. I worked with a smaller group who were still outlining while Abigail worked with them as they typed up and edited" (fall quarter). Furthermore, Carly had opportunities for "solo" teaching, but this teaching occurred with Abigail engaging in coassessing afterward, engaging in discussion about the lesson that just occurred and providing mentoring. For example, Carly taught a lesson for edTPA (a performance-based assessment required for credentialing), but collaborated with Abigail on what to do next: "This week as I taught for edTPA, Abigail asked for my reflection on how the lesson was going and provided feedback as we decided together how to move forward" (winter quarter).

When identifying the most memorable moment for each week, Carly often commented on her collaborative interactions with Abigail. In one reflection, Carly stated,

> My most memorable moment this week was working with my coteacher to reassess and make a new plan when we realized that our class set of books was a different adaptation than the audio book we were planning to use. It was a moment of slight chaos, but working together on it made it less stressful and bonded us. (fall quarter)

In this response, Carly identifies the benefits of having a colleague to troubleshoot with and how they were beginning to establish a collaborative working relationship.

When asked to identify the biggest challenge for each week, there were no weekly reflections where Carly identified coteaching as a challenge. Rather, coteaching often was described as being leveraged to address the challenge or Carly felt encouraged by Abigail. For example, when participating in an accreditation site visit, a new experience for Carly, Carly explained, "It was good for me to ask for help from Abigail; however, and it is one of the first times I've

Table 4. Sam's Average Time Spent Coplanning, Coinstructing, and Coassessing.

Quarter	Coplanning (%)	Coinstructing (%)	Coassessing (%)
Fall 2019	29	29	29
Winter 2020	44	34	31

really felt out of my depth, so I'm 'glad' it happened while she [Abigail] was there" (winter quarter).

The high level of collaboration between Carly and Abigail may seem unusual when compared with a traditional "sink or swim" model of learning how to teach but is what TPPs hope would occur often in interactions between a coteaching pair. According to Beers (2005), coteaching is most effective when a power differential between coteachers does not exist.

English Pair Not Meeting Benchmarks

Sam (preservice teacher) and Martha (inservice teacher) cotaught high school English and Martha had hosted preservice teachers for over 10 years. This pair did not meet the benchmarks for coplanning, coinstructing, and coassessing (see Table 4). Sam's survey responses from fall indicate that she met the benchmark established for the amount of time spent coplanning (25%), but did not reach the benchmarks for coinstructing (75%) and coassessing (50%). In winter, Sam's reported percentages of time fell below all three benchmarks, with her reflections on coinstructing and coassessing averaging less than half of the recommended amount of time, 75% for each.

In addition, this pair did not consistently meet benchmarks for the inservice teacher's willingness to accept new ideas and techniques into the classroom. Overall, Sam rated Martha's openness a 3.4 on a scale of 5. In fall, the pair exceeded the benchmark of three, with Sam rating Martha's openness 3.4 across 12 submissions. In winter, Sam provided eight ratings, with an average of 3.5, which fell below the benchmark of four.

In looking at Sam's responses to the open-ended reflection questions, several key characteristics of the pair's coteaching practice became apparent. First, the pair often implemented the gradual release of responsibility, which enabled each coteacher to have a clear role, but often this role was more independent in nature rather than collaborative. For example, the coinstructional strategies often used were one teach/one assist, one teach/one observe, or team teaching with divided responsibilities (e.g., Sam led the vocabulary section of the lesson while Martha led the rest).

Another common theme in the qualitative responses was the power dynamic with the inservice teacher being more in a position of authority. For example, language used in the reflections such as "her class" (referring to Martha) highlighted this dynamic. Sam also described instances of limited self-confidence and building her confidence and abilities, which led to her taking on a more active role in the classroom. For example, Sam described that Martha "offered to let me develop and present" a lesson and when she "succeeded in doing that," additional opportunities for planning and teaching were made available (fall quarter). These examples support findings that suggest the coteaching model is less effective when teaching pairs fail to achieve some level of parity (Pratt, 2014) and negotiate power in their coteaching relationship (Rabin, 2020).

A third common theme was Martha adopting a mentor stance. Martha often modeled a lesson in one period and then had Sam teach the same lesson in the next period. Martha also provided feedback on lesson plans and instruction that Sam took lead on and provided Sam with opportunities to engage in teaching practices. Sam described this planning approach, stating, "I typically come up with a game plan and she'll [Martha] make suggestions for where I pause in the play, what they [students] might need to discuss further, etc." (winter quarter).

The reflections also provided evidence of a possible misunderstanding of the coteaching model itself. In one reflection, Sam commented, "I cotaught while my teacher had to attend a brief WASC meeting during fourth period" (fall quarter). In this comment, Sam seems to equate coteaching with an opportunity for lead/solo teaching, not the collaboration of both teachers.

When identifying the most memorable moment for each week, Sam primarily commented on her interactions with students and commented less frequently on coteaching. Across the two quarters, there were only four reflections where Sam mentioned coteaching. When coteaching was mentioned, it was related to Sam's thoughts on the power dynamic. Sam commented on how her coteacher "reassures me that I am becoming a part of the class" and "despite my role being primarily observational, I am starting to be a presence in the classroom" (fall quarter).

For most challenging moments, Sam's responses revolved around classroom management and how to address student misbehavior. In one instance of describing a classroom management challenge, Sam described how she and her coteacher had possibly different philosophies:

> My biggest challenge this week has been figuring out how to start using restorative language and techniques in the classroom. Many of my kids that I have tried using it with seem responsive at first, but it never sticks for long. Perhaps it's because I do it with them but my coteacher doesn't, so there's not enough consistency for it. (fall quarter)

For Sam and Martha, the relationship dynamic depicted here mirrored "traditional" student teaching, where the

cooperating teacher functions as a mentor to the preservice teacher and assumes more of the lead role in the classroom (Beck & Kosnik, 2002; Borko & Mayfield, 1995; Koerner et al., 2002).

Discussion

To What Extent Are Coteaching Pairs Within and Across Disciplines Able to Achieve the Coteaching Ideal Benchmarks?

Survey data indicate coteaching pairs had mixed results in meeting the benchmarks throughout fall and winter. Across disciplines, the average time reported for coplanning exceeded the benchmarks, with increases seen every week from fall to winter. Although reported times fell below the established benchmarks for coinstructing and coassessing, similar increases were reported from fall to winter. These increases suggest that, over time, the teaching pairs were able to develop more shared responsibility and establish collaborative relationships with the potential to destabilize power differentials between preservice and inservice teachers (Gallo-Fox & Scantlebury, 2015).

In comparing the reported coteaching practices by discipline, we identified several trends. First, preservice teachers in all disciplines generally reported spending more time implementing coteaching practices in winter. In fact, only history/social science teachers reported less time spent coinstructing in fall. Next, coteaching pairs in science consistently reported high percentages of time spent on coplanning, coinstructing, and coassessing. In contrast, English pairs implemented the coteaching practices less frequently than pairs in other disciplines. English was the only discipline to fall below the coplanning benchmark in winter and preservice teachers in English reported spending the least amount of time coinstructing in fall. The qualitative analysis of English pairs who met and did not meet the ideal benchmarks provides some context for these trends.

What Patterns in Implementation Are Evident in Pairs Meeting and Not Meeting These Benchmarks?

Data for Carly and Abigail, the English pair who met the benchmarks in both fall and winter, indicate a pair who understood the coteaching model and intentionally engaged in collaboration to support the delivery of lessons and the learning of both coteachers. The pair's collaboration suggests they viewed each other as equals, which researchers have identified as integral to effective coteaching implementation (Guise et al., 2016, 2017; Scantlebury et al., 2008; Soslau, Gallo-Fox, & Scantlebury, 2018; Thompson & Schademan, 2019). Although these data suggest Carly and Abigail achieved a more equal power differential, it is important to keep in mind that there is always an inherent imbalance due to an inservice teacher's more extensive teaching experience and their small role as an "evaluator" of the preservice teacher's practice. Prior coteaching research indicates that this imbalance can be mitigated by (a) acknowledging and dismantling hierarchy in pursuit of collaborative, caring relationships (Rabin, 2020); (b) leveraging each coteacher's strengths and expertise (Pratt, 2014); (c) creating space for the inservice teacher to embrace dual roles (Soslau, Gallo-Fox, & Scantlebury, 2018); and (d) engaging pairs in activities that promote learning together (e.g., attending professional development, co-designing a new lesson; Guise et al., 2017, 2021). Abigail embraced the role of learner by actively engaging Carly in the teaching process and soliciting Carly's input on already developed lesson plans and units.

Conversely, data for Sam and Martha—who only met the coplanning benchmark in fall—indicate that the coteaching model was either not well understood or underutilized by the pair. This is evidenced by the independent nature of the coinstructional strategies selected, such as when one teacher would teach while the other assisted or observed, and an increased focus on lead/solo teaching. This finding supports previous coteaching research that has identified the challenge of clearly articulating the coteaching model and supporting pairs to understand how it differs from the "sink or swim" model, a model many inservice teachers may have experienced in their own TPP programs (Guise et al., 2017). For Sam and Martha, our TPP could have done better in defining and characterizing the coteaching model, which we will discuss further in the implications section.

Although both inservice teachers utilized mentoring and provided feedback to their coteacher, Abigail's mentoring was embedded in a more equal power differential between preservice and inservice teacher. Abigail created opportunities to co-revise and co-construct curriculum with Carly, embracing a dual role of mentor and learner (Soslau, Gallo-Fox, & Scantlebury, 2018). With Sam and Martha, this co-engagement was sometimes missing. Martha was more of a "critical friend," giving feedback after the lesson plan had already been drafted by Sam. Martha gradually released more responsibility for teaching to Sam once Sam had demonstrated the ability to handle current tasks, instead of the pair working in tandem to deliver instruction.

Do the Benchmarks Correspond With the Nature of Coteaching Described by the Preservice Teachers?

As previously described, the research team established benchmarks for each of the coteaching reflection survey questions that asked preservice teachers to identify the percentage of time they engaged in coplanning, coinstructing, and coassessing for the week. These established benchmarks for the quantitative data are promising in categorizing levels

of collaborative implementation, for when we cross examined these benchmarks with the qualitative data for the two English coteaching pairs and additional pairs, we found alignment among the quantitative and qualitative data. In examining the qualitative data, themes emerged for each pair, helping to identify characteristics of coteaching implementation for meeting the benchmark (e.g., variety of coinstructional strategies implemented, equal voice in collaboration) and characteristics for not meeting the benchmark (e.g., coinstructional strategies aligned with more independent rather than collaborative roles, misunderstanding of coteaching model).

These findings align with previous coteaching studies that have identified practices commensurate with more collaborative levels of coteaching implementation. For example, Soslau, Gallo-Fox, and Scantlebury (2018) posit the need for TPPs to "focus on learning affordances within a coteaching model such as (a) positioning, power, and agency building; (b) focus on pupil learning; and (c) embodiment of dual roles as teacher and learner of teaching" (p. 11) to achieve higher levels of coteaching implementation. Similarly, Guise et al. (2017) identified dismantling the power differential and creating a community of practice where coteachers engage in collaborative, reflective dialogue as paramount to achieving higher levels of coteaching.

Implications

By determining benchmarks and analyzing data in relation to these benchmarks, we learned that the benchmarks show promise in quickly identifying pairs who are implementing coteaching in line with the model (e.g., equalized power dynamics, collaborative instructional strategies such as joint team teaching) and those who may be drawing on more traditional notions of student teaching. What is most promising about this approach is that if weekly reflection data could be reported with the benchmark overlaid, it would provide TPP faculty with a quick indicator of where additional support may be needed and which pairs could share exemplary practices. This would allow "interventions" to happen in real time without months passing before providing support. This recommendation is one way to respond to the call by coteaching researchers such as Gallo-Fox and Stegeman (2019) who have argued for the need for TPPs to develop an easy-to-use reflection instrument that allows for targeted support to enhance coteaching implementation.

With these benchmarks showing promise for identifying levels of coteaching implementation, a next step would be to revisit whether the benchmarks we determined are appropriate for each quarter of the clinical experience. For example, we established the coinstructional benchmark of 75% of the time pairs should engage in coinstructing and findings showed that pairs across all disciplines did not meet this benchmark. Does this result indicate that pairs require more support pertaining to coinstructional strategies and exploration of when solo teaching time is appropriate? Or, is the benchmark itself unrealistic? For determining a realistic benchmark, the coteaching reflection data could be reanalyzed to determine the tipping point for pairs leaning toward more collaborative teaching versus traditional notions of student teaching. For example, for coinstructing, perhaps 50% of instructional time is where we see the separation, and therefore the benchmark could be lowered while still having an accurate sense of when additional supports are needed. For additional pair support of coinstructing and coassessing, our TPP could provide a foundational coteaching workshop where these two components of coteaching are clearly defined through the use of video footage showing high levels of pair collaboration.

Related to using the benchmarks for data analysis and immediate support, the benchmarks could also be shared with coteaching pairs when first introduced to the coteaching model. By sharing these benchmarks, program recommendations could become more transparent. Pairs could also examine their own reflection data with the benchmarks in mind to reflect on their implementation to date and where they want to make changes. Inservice teachers might periodically complete the weekly reflection survey and compare their results with their coteacher. Is the pair in agreement about their level of coteaching implementation or do they have different perspectives? These questions could lead to rich discussion and reflection, but only if both coteachers are positioned to be open to reflection and growth.

For the purpose of program improvement, a TPP could meet quarterly to discuss the reflection data in relation to the benchmarks. Using a data discussion protocol, faculty and staff could make observations, pose questions, and think about how the data could inform future pair supports. Involving a few preservice and inservice teachers in these data discussion protocols could ensure analysis and input from key stakeholders. After reviewing the data, all stakeholders as a part of a networked improvement community (NIC) could collaborate to explore ideas for improving coteaching implementation and determine possible solutions (Bryk et al., 2011).

The recommendations provided above require coteachers to embrace a stance of learner and collaborator. We recognize the complexity of collaboration and the time required to make collaboration work. Furthermore, who is paired together and their prior experiences with collaboration may also impact the level of receptivity embraced by each coteacher. Future coteaching research could explore how best to create effective pairings, including thought partnering with coteachers around approaches to establishing effective pairings.

Conclusion

Our TPP plans to continue to collect weekly coteaching reflections from our preservice teachers and to fine-tune the implementation benchmarks for the three components of coteaching. Analyzing the reflection data according to these

benchmarks enabled us to identify and confirm collaborative practices that support effective coteaching implementation with the data reported according to the benchmarks serving as an indicator of a need for additional pair support. The ability to quickly report the data in respect to these benchmarks will position our TPP to engage in more frequent data discussions, explore the qualitative data for deeper insight into what the quantitative data is showing, and determine tangible next steps for pair support. Drawing on one of the six guiding principles of improvement science, our work seeks to examine variation in coteaching implementation, exploring questions such as "What works, for whom, and under what conditions?" to be able to determine and study small changes to support that may reduce variation (LeMahieu et al., 2015, p. 446). We are cautious not to overemphasize with our benchmarks the percentage of time spent coplanning, coinstructing, and coassessing because we recognize that effective coteaching implementation is not just quantity of time engaging with the model but the quality of that engagement. However, we do think the benchmarks can be helpful in identifying variation in coteaching implementation, an important starting point for TPP and stakeholder conversations.

Appendix

Clinical practice weekly reflection survey for secondary preservice teachers

Preservice teacher information
- Preservice teacher name
- Inservice teacher name
- School site
- Quarter (fall, winter, spring)
- Date

Global reflection on the week of clinical practice
- What was your most memorable moment this week?
- What was your biggest challenge this week?
- Name one thing you did for self-care this week.
- Please provide a *specific example* of how coteaching (coplanning, coinstructing, or coassessing) was implemented in your classroom this past week. If coteaching did not occur, what do you see as the barriers?
- When given the opportunity this past week, to what extent was the *cooperating teacher* willing to incorporate *new ideas/techniques*?
  - A: 1 (not accepting of new ideas)
  - B: 2
  - C: 3
  - D: 4
  - E: 5 (always takes new ideas into consideration)
  - F: N/A

Coplanning
- Out of all of the time *planning* this past week, approximately how much time was spent coplanning?
  - A: 0% of the time
  - B: 25% of the time
  - C: 50% of the time
  - D: 75% of the time
  - E: 100% of the time
- Which of the options below was the most *prevalent planning* strategy used this past week? Choose ONE option:
  - A: You were given lesson(s) or page(s) to teach without discussion
  - B: You were given lesson(s) to teach with discussion and/or clarifying questions asked and answered
  - C: You were given lesson(s) and jointly modified with your cooperating teacher
  - D: You were given lesson(s) and you modified on your own
  - E: Beginning with a standard/objective, you and your cooperating teacher jointly developed a new lesson
  - F: Beginning with a standard/objective, you developed your own lesson
  - G: Beginning with a standard/objective, you provided your cooperating teacher with a lesson for them to teach
  - H: Other (please describe)

Coinstructing
- Out of all of the time *instructing* this past week, approximately how much time was spent coinstructing?
  - A: 0% of the time
  - B: 25% of the time
  - C: 50% of the time
  - D: 75% of the time
  - E: 100% of the time

(continued)

Appendix (continued)

Clinical practice weekly reflection survey for secondary preservice teachers

Which of the *strategies* below did you utilize when coinstructing this past week? Select all that apply:
- A: One teach/one observe (follow-up question: Did you or your CT observe? What was the focus of the observation?
- B: One teach/one assist (follow-up question: Did you or your CT assist? What was the focus of the assisting?
- C: Team teaching (follow-up question: When team teaching, did you assign different parts of the lesson to different coteachers or did you jointly teach?)
- D: Station teaching
- E: Parallel teaching (i.e., the class is divided in half and each coteacher teaches the SAME lesson to his/her half of the class)
- F: Differentiated teaching (i.e., one teacher works with students at their expected grade level while the other teacher works with students who need the content retaught, extended, and/or remediated)
- G: Did not coinstruct this week
- H: Other (please describe)

Coassessing

Which of the options below was the most prevalent coassessing strategy used this past week? *Choose ONE option for Formal & ONE option for Informal*:

Formal assessment:
- A: Your cooperating teacher evaluated/graded assessments and discussed results with you
- B: You evaluated/graded assessments and discussed results with your cooperating teacher
- C: You and your cooperating teacher evaluated/graded assessments collaboratively
- D: Other (please describe)

Informal assessment:
- A: Your cooperating teacher provided you with feedback on your teaching
- B: You and your cooperating teacher collaboratively reflected on lesson(s), student learning and engagement
- C: You and your cooperating teacher discussed possible changes that could have improved the lesson(s), student learning and/or engagement
- D: You and your cooperating teacher discussed modifications to future lessons based on observations and post-lesson reflection
- E: Other (please describe)

Additional information

Please indicate the number of days you subbed this past week. A partial day should still be counted as 1 day.

Did you substitute exclusively for your cooperating teacher?

Please enter the number of days you were absent from clinical practice this past week?

Please enter your university supervisor's email address:

Please enter your content advisor's email address.

Please use the space below if you have any comments or questions for your university supervisor.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by the United States Department of Education Teacher Quality Partnership Grant Program (Grant No. U336S180010, 2018).

ORCID iD

Megan Guise https://orcid.org/0000-0002-7224-3832

Note

1. All names are pseudonyms.

References

Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, *35*(6), 42–55. https://doi.org/10.14221/ajte.2010v35n6.3

Bacharach, N., Heck, T. W., & Dahlberg, K. (2010). Changing the face of student teaching through coteaching. *Action in Teacher Education*, *32*(1), 3–14. https://doi.org/10.1080/01626620.2010.10463538

Badiali, B., & Titus, N. (2010). Co-teaching: Enhancing student learning through mentor intern partnerships. *School University Partnerships*, *4*(2), 74–79.

Beck, C., & Kosnik, C. (2002). Components of good practicum placement: Student teacher perceptions. *Teacher Education Quarterly*, *29*(2), 81–98.

Beers, J. (2005). The role of coteaching in the development of the practices of an urban science teacher. In W. M. Roth & K. Tobin (Eds.), *Teaching together, learning together* (pp. 79–95). Peter Lang.

Beers, J. (2008). Negotiating the transition between different teaching contexts through shared responsibility and shared reflection. *Cultural Studies of Science Education*, *4*(2), 443–447. https://doi.org/10.1007/s11422-008-9153-6

Beninghof, A. M. (2015). To clone or not to clone? *Educational Leadership*, *73*(4), 10–15.

Borko, H., & Mayfield, V. (1995). The roles of the cooperating teacher and university supervisor in learning to teach. *Teaching and Teacher Education*, *11*(5), 501–518. https://doi.org/10.1016/0742-051X(95)00008-8

Brunner, C., Fasca, C., Heinze, J., Honey, M., Light, D., Mandinach, E., & Wexler, D. (2005). Linking data and learning: The Grow Network study. *Journal of Education for Students Placed at Risk*, *10*(3), 241–267.

Bryk, A. S., Gomez, L. M., & Grunow, A. (2011). Getting ideas into action: Building networked improvement communities in education. In M. T. Hallinan (Ed.), *Frontiers in sociology of education* (pp. 127–162). Springer.

Cook, L., & Friend, M. (1995). Co-teaching: Guidelines for creating effective practices. *Focus on Exceptional Children*, *28*(3), 1–17. https://doi.org/10.17161/fec.v28i3.6852

Gallo-Fox, J., & Scantlebury, K. (2015). "It isn't necessarily sunshine and daisies every time": Coplanning opportunities and challenges when student teaching. *Asia-Pacific Journal of Teacher Education*, *43*(4), 324–337. https://doi.org/10.1080/1359866X.2015.1060294

Gallo-Fox, J., & Stegeman, L. (2019). Coteaching in early childhood clinical experiences: A cross-case study of learning affordances. *Teaching Education*, *31*(3), 298–332. https://doi.org/10.1080/10476210.2018.1561661

Guise, M., Habib, M., Robbins, A., Hegg, S., Hoellwarth, C., & Stauch, N. (2016). Pre-conditions for success & barriers to implementation: The importance of collaborative and reflective dispositions to foster professional growth during a coteaching clinical experience. *Teacher Education Quarterly*, *43*(4), 55–76

Guise, M., Hegg, S., & Robbins, A. (2021). Learning together through coteaching coaching: A model of support for coteaching pairs in clinical practice. *Teaching and Teacher Education*, *100*, 103278. https://doi.org/10.1016/j.tate.2021.103278

Guise, M., Thiessen, K., Robbins, A., & Habib, M. (2017). Continuum of co-teaching implementation: Moving from traditional student teaching to implementing co-teaching. *Teaching and Teacher Education*, *66*, 370–382. https://doi.org/10.1016/j.tate.2017.05.002

Halverson, R., Prichett, R. B., & Watson, J. G. (2007). *Formative feedback systems and the new instructional leadership*. University of Wisconsin.

Heckert, J., Strieker, T., & Shaheen, M. (2013). Kennesaw State University collaborative clinical practice. *The Renaissance Group*, *1*(2), 83–96. https://doi.org/10.33499/edren.v1i2.51

Koerner, M., Rust, F. O., & Baumgartner, F. (2002). Exploring roles in student teaching placements. *Teacher Education Quarterly*, *29*(2), 35–58.

Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance*. Wiley.

LeMahieu, P. G., Edwards, A. R., & Gomez, L. M. (2015). At the nexus of improvement science and teaching: Introduction to a special section of the. *Journal of Teacher Education*, *66*(5), 446–449. https://doi.org/10.1177/0022487115602125

Lewis, C. (2015). What is improvement science? Do we need it in education? *Educational Researcher*, *44*(1), 54–61.

Mandel, K., & Eiserman, T. (2015). Team teaching in high school. *Educational Leadership*, *73*(4), 74–77.

Mason, J. (2017). *Qualitative researching*. SAGE.

Murdock, L., Finneran, D., & Theve, K. (2015). Co-teaching to reach every learner. *Educational Leadership*, *73*(4), 42–47.

Murphy, C., & Carlisle, K. (2008). Can they go it alone? Addressing criticisms of coteaching. *Cultural Studies in Science Education*, *4*(2), 461–475. https://doi.org/10.1007/s11422-008-9150-9

Pratt, S. (2014). Achieving symbiosis: Working through challenges found in co-teaching to achieve effective co-teaching relationships. *Teaching and Teacher Education*, *41*, 1–12. https://doi.org/10.1016/j.tate.2014.02.006

Rabin, C. (2020). Co-teaching: Collaborative and caring teacher preparation. *Journal of Teacher Education*, *71*(1), 135–147. https://doi.org/10.1177/0022487119872696

Saldaña, J. (2015). *The coding manual for qualitative researchers*. SAGE.

Scantlebury, K. (2005). Gender issues in coteaching. In W. M. Roth & K. Tobin (Eds.), *Teaching together, learning together* (pp. 233–248). Peter Lang.

Scantlebury, K., Gallo-Fox, J., & Wassell, B. (2008). Coteaching as a model for preservice secondary science teacher education. *Teaching and Teacher Education*, *24*, 967–981. https://doi.org/10.1016/j.tate.2007.10.008

Sindelar, N. W. (2003). Using data to increase student achievement, step-by-step. *Classroom Leadership*, *6*(6), 12.

Smagorinsky, P. (2008). The method section as conceptual epicenter in constructing social science research reports. *Written Communication*, *25*(3), 389–411. https://doi.org/10.1177/0741088308317815

Soslau, E., Gallo-Fox, J., & Scantlebury, K. (2018). The promises and realities of implementing a coteaching model of student teaching. *Journal of Teacher Education*, *70*(3), 265–279. https://doi.org/10.1177/0022487117750126

Soslau, E., Kotch-Jester, S., Scantlebury, K., & Gleason, S. (2018). Coteachers' huddles: Developing adaptive teaching expertise during student teaching. *Teaching and Teacher Education*, *73*(1), 99–108. https://doi.org/10.1016/j.tate.2018.03.016

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296.

Thompson, M., & Schademan, A. (2019). Gaining fluency: Five practices that mediate effective co-teaching between pre-service and mentor teachers. *Teaching and Teacher Education*, *86*, 1–9. https://doi.org/10.1016/j.tate.2019.102903

Tobin, K., & Roth, W. M. (2005). Coteaching/cogenerative dialoguing in an urban science teacher preparation program. In W. M. Roth & K. Tobin (Eds.), *Teaching together, learning together* (pp. 59–77). Peter Lang.

Tomlinson, C. A. (2015). Teaching in tandem: A reflection. *Educational Leadership*, *73*(4), 90–91.

Tomlinson, P. D., Hobson, A. J., & Malderez, A. (2010). Mentoring in teacher education. In P. L. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (pp. 749–756). Elsevier.

Valencia, S. W., Martin, S. D., Place, N. A., & Grossman, P. (2009). Complex interactions in student teaching: Lost opportunities for learning. *Journal of Teacher Education*, *60*(3), 304–322. https://doi.org/10.1177/0022487109336543

Author Biographies

Megan Guise is a full professor of English education at California Polytechnic State University, San Luis Obispo and is a former high

school English teacher. Her research interests include coteaching during the clinical experience, effective models of professional development, new teacher induction, and feedback on teaching.

Eric Ambroso is a research and evaluation specialist with WestEd and a former English language teacher. His research interests include teacher preparation, new teacher induction, and educational policies that affect English learners and students from refugee backgrounds.

Katie Paulding is a part-time lecturer and university supervisor in the School of Education at California Polytechnic State University, San Luis Obispo. She is a former teacher on special assignment and junior high mathematics teacher. Her research interests include teacher preparation in elementary and secondary mathematics clinical experiences and proportional reasoning in middle school.

Courtney Moore is a grant program associate and student support liaison working with the School of Education and Center for Engineering, Science, and Mathematics Education (CESAME) at California Polytechnic State University, San Luis Obispo. Her research interests include coteaching within clinical practice, STEM teacher identity development, and the impacts of social identities in education.

Sarah Hegg is a grant program manager working with the School of Education and Center for Engineering, Science, and Mathematics Education (CESAME) at California Polytechnic State University, San Luis Obispo. Her research interests include coteaching in the clinical experience, new teacher induction, preservice teacher supervision, and utilizing improvement science for education reform.