



Gaining fluency: Five practices that mediate effective co-teaching between pre-service and mentor teachers

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HIGHLIGHTS

- Effective co-teaching activity (Leont'ev, 1978) is mediated by five key practices.
- Key practices involve negotiating difference, sharing authority, co-mentoring, and coaching in the moment, among others.
- Teachers gain fluency in co-teaching when they resolve inherent contradictions in each key practice.
- Gaining fluency in co-teaching affords situated professional development for mentor teachers and teacher candidates.

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ABSTRACT

This study examined four years of data on co-teachers in a teacher preparation program in the United States. Co-teachers were pre-service teachers and cooperating teachers participating in a single subject teaching practicum. Findings highlighted how pairs gained *fluency*, or proficient ways of collaborating, in co-teaching by engaging in five key practices: negotiating difference, sharing authority, co-mentoring, coaching in the moment, and immersing in real world teaching experiences. As co-teachers moved toward fluency, they reported increases in professional understanding and their abilities to meet the needs of students in their diverse, rural classrooms. Key implications are discussed.

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1. Introduction

Preparing teachers to effectively teach students from diverse backgrounds as well as persist in the profession are among many goals of teacher education. One of the most critical elements of teacher preparation is the clinical field experience, or teaching practicum (Feiman-Nemser & Buchmann, 1987; McIntyre, Byrd, & Foxx, 1996; Zeichner, 2010). Teacher education programs in many nations have expanded the length of time and variety of sites in which student teachers are placed (Danyluk, Luhanga, Gwekwerere, MacEwan, & Larocque, 2015; Ingvarson et al., 2014). For example, in the United States new recommendations mandate a

minimum of 600 h in the field in single and multiple subject programs and an additional 150 h for those seeking a dual credential (California Commission on Teacher Credentialing, 2015).

Despite the central role that field experience plays in teacher preparation, programs vary widely and the elements of what makes a strong field experience are not always well understood. In 2006, Linda Darling-Hammond summarized this state of affairs when she noted, “the clinical side of teacher education has been fairly haphazard, depending on the idiosyncrasies of loosely selected placements with little guidance about what happens in them and little connection to university work” (p. 308).

Researchers have long acknowledged inherent problems with traditional approaches to student teaching, such as the degree of isolation that student teachers face (McIntyre et al., 1996), insufficient opportunities for student teachers to link theory or program goals to practice (Darling-Hammond & Bransford, 2005), limited opportunities to deepen reflection and inquiry while in the field

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(Zeichner, 2014), hegemonic relationships between university teacher preparation programs and school partnerships (Barab & Duffy, 2000; Zeichner, 2009), and insufficient mentoring from cooperating teachers (Bacharach, Washut Heck, & Dahlberg, 2010).

Despite these critiques, traditional approaches to student teaching have remained static over the past century in many countries (Gopinathan et al., 2008). In this traditional approach, often described as “takeover” or “sink or swim”, student teachers spend a majority of time observing a mentor teacher (cooperating teacher) and discrete amounts of time soloing. In many programs, the expertise of a mentor teacher is perceived to be secondary to that of university faculty, and the school placement serves only as a site for student teachers to “practice” teaching (Clarke, Triggs, & Nielsen, 2014). Additionally, mentor teachers are rarely provided the necessary support they need to implement a more productive form of mentoring (Valencia, Martin, Place, & Grossman, 2009; Zeichner, 2010). Poor mentoring of student teachers has significant implications for teacher preparation programs and the broader profession of education. Given added pressure of state testing requirements or value-added models of teacher accountability, many veteran teachers are less willing to take on a teacher candidate, and school administrators are increasingly resistant to relinquishing classroom instruction to teacher candidates full time (Darragh, Picanco, Tully, & Henning, 2011).

For many student teachers, learning to teach is essentially a practice of isolation. Given the increasingly diverse needs of K-12 students and high rates of teacher attrition in the first five years of teaching, this model of learning to teach makes little sense. As Darragh et al. (2011) argued, traditional models of student teaching often end up preparing teachers who “shut the classroom door to the outside world and do not view their profession as a collaborative one. Why would they? Their apprenticeship and first exposure to the profession was a solo one” (p. 86).

1.1. Co-teaching in teacher preparation programs

Co-teaching has emerged in the literature as a promising instructional practice for learning to teach and for better serving K-12 students. Co-teaching within teacher preparation offers an alternative method for preparing teachers that emphasizes situated learning within a framework of collaboration, reflection, and mutual respect (Tobin & Roth, 2005, 2006). Friend, Embury, and Clarke (2015) used the term *apprentice teaching* to refer to the use of collaborative co-teaching strategies between a mentor teacher and teacher candidate within a clinical field experience and distinguish this approach from co-teaching between two licensed teachers, usually an educational specialist and general education, working in K-12 settings. For the purpose of our study, we use the term co-teaching to mean the pairing of a mentor teacher and teacher candidate in a teacher preparation program who partner in the planning of lessons, instructional decision-making, and assessment of student learning. Hereafter, we refer to co-teaching within student teaching as simply, co-teaching.

Bacharach et al. (2010) conducted the largest study to date of co-teaching within a teacher preparation program and its impact on K-12 learners. Student achievement data found statistically significant gains in reading and math proficiency when 35,000 P-12 students were compared in co-taught and traditional student teaching settings, especially among English learners and students with special needs.

Studies of co-teaching in teacher preparation programs have increasingly focused on the process of learning as sociocultural historical activity (Gallo-Fox & Scantlebury, 2016). Roth, Masciotra, and Boyd (1999) examined ways that co-teaching in secondary classrooms expanded the “spielraum” (room to maneuver) of pre-

service teachers as they gained mastery over the complex and often improvised decision making practices alongside their mentor teachers (p. 773). They considered how pre-service science teachers learned masterful questioning in the lived reality of a classroom, alongside a mentor who acted “in being with” rather than as a detached observer. Roth, Tobin, Zimmerman, Bryant, and Davis (2002) conceptualized the study of co-teaching around activity theory, which focuses on what people do, the objects that motivate their activity, the community in which they participate, and the division of labor that orders their work (Leont'ev, 1978). They used this model to better understand how novice teachers learned pedagogical content knowledge, and together with their mentor teachers, engaged in collective responsibility for learning and teaching.

Other studies have examined the impact of co-teaching and co-generative dialogues on the development of pre-service teacher practice in general education classrooms (Roth & Tobin, 2005; Roth et al., 2002; Tobin & Roth, 2005). Tobin and Roth (2005) outlined a model for coteaching/cogenerative dialoguing, which defines co-teaching as “learning in praxis”, and cogenerative dialogues as collaborative discussions focused around improving teacher and student learning (pp. 314–315). Scantlebury, Gallo-Fox, and Wassell (2007) researched the use of co-teaching among secondary science teacher education candidates and found when they conceptualized co-teaching as a dialectic with attendant coteaching/co-generative dialogue strategies, co-teachers were able to create effective learning communities based on collective teaching, co-respect, and co-responsibility. Roth and Tobin's (2005) edited volume examined the impact of co-teaching/cogenerative dialogues in a variety of national and international secondary science classrooms and found increased student participation, higher levels of attendance at school, and student self-reports that co-teaching was more effective for their learning than solo teaching. Gallo-Fox and Scantlebury (2016) found improved professional development outcomes for cooperating teachers who mentored student teachers in co-teaching arrangements, which included opportunities to critically reflect on their practice and see themselves as educational leaders.

Our study draws from the work Roth et al. (2002) by conceptualizing co-teaching as a model of collective teaching and learning for teacher candidates and their mentors in a secondary education teacher credential program. In our study, we use four years of data from a year-long, co-teaching field experience. We focus on the ways that co-teaching arrangements between teacher candidates and mentor teachers impacted the practice of both, ultimately affording both novice and experienced teachers a better ability to meet student needs. In our study, we address two central questions: 1) When conceptualized as activity, what key practices mediate the implementation of co-teaching? 2) How does co-teaching promote professional development for teacher candidates and mentor teachers?

2. Methodology and methods

2.1. Conceptual framework: Co-Teaching as activity

Activity systems are characterized by a set of complex interactions among goals, participants, division of labor, rules and norms, and mediating tools represented in the activity triangle popularized by Engeström (1987). The motivating force behind human activities is the goal of obtaining or creating particular objects, which can be material or ideological, and have a profound effect on the design of the activity system. For instance, in the case of traditional student teaching, the goal is to produce new teachers who can independently plan and implement curriculum, manage a classroom of students, and assess student learning. The activity system that produces such individuals typically involves teacher

candidates mimicking the actions of cooperating teachers, gradually taking on increasing levels of individual responsibility. Conversely, the goal of co-teaching in teacher preparation is to produce collaborative acting and thinking newly trained teachers. Rather than focus on creating independent practitioners, co-teaching in a teaching practicum ultimately fosters *interdependence* by developing deeper forms of collaborative practice between novice teachers and their experienced mentors (Roth et al., 2002).

Researching co-teaching from an activity theory perspective led Tobin and Roth (2005) to identify co-generative dialoguing as a central practice in which co-teachers routinely engage. The purpose of co-generative dialoguing is to gain deeper understanding of teaching and learning in the classroom and discuss the improvement of learning for all students (Roth et al., 2002). Co-generative dialoguing can take place during co-planning sessions, classroom instruction, or reflections of a lesson. Through such dialoguing, teachers demonstrate their mutual commitment to improving their practice and in the process, jointly create new knowledge (Roth & Tobin, 2005; Rytivaara & Kershner, 2012).

Co-generative dialoguing also provides a context in which co-teachers can negotiate differences and resolve issues or problems. Engeström (1987) theorized that activities are highly dynamic and change over time as a result of the resolution of inherent contradictions. For instance, a tension inherent in co-teaching among teacher candidates and cooperating teachers is the expectation that on the first day of school, a completely novice teacher is introduced to students as an “equal” teacher, which is objectively not the case. The co-teachers, in their daily practice, must then work through this contradiction in order to maintain parity between differently experienced partners. Using co-generative dialoguing to work through and resolve this contradiction enables co-teachers to build a close partnership very early in the school year, which benefits both co-teachers and their students.

2.2. Data and participants

Our study examined four years of qualitative data from MENTOR (pseudonym), a year-long, co-teaching practicum in a secondary education teacher preparation program at Northern California University. While MENTOR shared much in common with the traditional student teaching program, MENTOR was designed around a co-teaching model between cooperating teachers and teacher candidates. Teacher candidates in science, mathematics, history, and English were paired with experienced cooperating teachers. Both received a two-day co-teaching training at the beginning of the fall semester and were expected to co-teach every period of the school day. Candidates were also expected to attend start up days, in-service trainings, Individual education Program (IEP) meetings, faculty meetings, and generally share in duties of the classroom and needs of the school. Teacher candidates were selected by the strength of their application to the credential program and expressed interest in a co-teaching experience. Mentor teachers were identified by university supervisors as innovative practitioners and open to co-teaching with a novice teacher. Both mentor teachers and teacher candidates received a stipend for their participation in the program.

Data for the study included four cohorts from each year of the MENTOR program, for a total of 21 teacher candidates and 12 participating mentor teachers (some mentor teachers participated for more than one year). Teacher candidates included 13 women and eight men; 18 identified as white and three identified as Latina. Mentor teachers included 10 women and two men; eight identified as white, three identified as Latina, and one identified as Armenian American. Mentor teachers averaged roughly 12 years of teaching experience; four of the mentor teachers had Master's degrees with

one pursuing her Ph. D. Data collected included six total interviews with different co-teaching pairs, two focal group interviews each with three different co-teaching pairs, 10 total teacher candidate journals (one journal per candidate), four mentor teacher reflections, and one videotaped classroom observation. The observation was conducted with an observation protocol based upon state-mandated Teacher Performance Expectations (TPEs) used by the teacher preparation program. Interviews with co-teaching pairs and focal groups were conducted using a semi-structured format and included the following questions: 1) What does co-teaching look like in your classroom? 2) Can you share an anecdote that captures how co-teaching affects student learning in your classroom? 3) How has co-teaching changed your practice as an experienced teacher or teacher candidate? 4) What might be some drawbacks to co-teaching? 5) What helped you to become an effective team? 6) What suggestions do you have for new mentor teachers and teacher candidates that are new to co-teaching?

2.3. Data analysis and trustworthiness

Our analysis of the data corpus employed Template Analysis as described by Brooks, McCluskey, Turley, and King (2015) and King (1998). Template Analysis has been used widely in the field of organization and management research, especially in design studies when the research aim is to better understand how a particular system design works in practice (Brooks McCluskey, Turley, & King, 2015). Because we envision co-teaching as an activity system, and we use activity theory as a conceptual framework to better understand co-teaching, Template Analysis was a good fit for this study.

The analysis began by creating a template of codes that emerged from initial, open coding of a subset of the larger data corpus (See Table 1. Co-Teaching Template Analysis in the Appendix). After the initial coding of the data subset and throughout the entire coding process, the researchers employed Strauss and Corbin's (1990) constant comparative analysis and met on several occasions to establish consistency in the coding process. The template was continually altered through subsequent analysis of the data corpus by adding to existing codes and combining codes into larger codes or themes. In order to establish trustworthiness (Lincoln & Guba, 1985) and confirm developing themes, we triangulated the evidence from co-teacher interviews, mentor teacher focus group interviews, an end of year focus group interview candidate journals, and candidate and mentor mid-year evaluations. We conducted member checks during data analysis, asking five mentor teachers and six teacher candidates to review interview transcripts and classroom video to ensure accuracy of researcher analyses. As shown in Table 1, researchers coded a total of 193 sections of transcribed text from multiple data sources to arrive at final themes. Throughout this process, Template Analysis provided a flexible structure through which we could closely track, combine, and add codes. Following Brooks et al. (2015), the appearance of each code was tallied in the template using an asterisk for each data source. This process increased confirmability (Lincoln & Guba, 1985) of the analysis by allowing researchers to trace codes and findings back to their original sources of data. Once coding was completed, all quotes and memos under each code, including subcodes, were copied into one document and read together. More extensive memos were then constructed to create findings for each major code.

3. Results

Findings from the data corpus revealed five major practices of the co-teaching activity system. Here, we explore these findings in detail, including how co-teachers engaged in this work and talked

about their practice. In the discussion that follows, we argue that co-teachers' ability to gain mastery in these key practices afforded situated professional development for both teachers and allowed them to better meet the needs of their students.

3.1. Negotiating difference

In this finding, we highlight the experience of one co-teaching pair, Angela and Kelly. Angela was a mentor teacher with 13 years of experience teaching science in middle school and Kelly was her teacher candidate. Angela identified as a working class, Armenian American and was in the process of pursuing her Ph.D. in education. Kelly identified as white and upper middle class. For Angela and Kelly, negotiating difference began with initial recognition that their collaboration depended on getting to know one another personally and continued with their mutual interest in engaging their different positionalities (i.e., race, class, age, experience teaching, and beliefs about students):

That goes back to you [looking at Angela] sitting me down and talking to me about this whole perfectionism complex, you need to get over it. It probably stems from my parents, that type A personality. Keeping that barrier up with the students—always having the answer, never mess up ... Instead of showing them my vulnerability, not always needing to be the expert every time. I think by you being so open, I was able to be more open with the students. [Kelly].

It came down to how much will I need to give up, to provide her a safe space. Now, we work in a *brave* space ... There is so much misunderstanding across class ..., but then at the same time, you always want the people of color to cross over. But here to see someone make that effort to cross over, then you do it too. So, I learned a lot too. And then also appreciate some of those things ... And we had to talk, like where did you grow up? How did you grow up? With what kind of income? What kind of schools did you go to? And we had to break it down so we know where we're starting from. [Angela].

In the above conversation, Kelly's self-reflection about her initial reluctance to be vulnerable with students emerged after critical dialogue with Angela who helped her understand how this resistance hindered her developing practice and relationships with students. While co-teaching provided the space for this work to take place, the successful negotiation of difference was only possible when pairs were willing to engage tensions directly and work through them. When they did this work, pairs were more able to engage what Angela termed a "brave space"; one that builds from differences and turns the attention toward students:

... If we can't dismantle those oppressive spaces of differences among ourselves, then how are we going to do this with our students? So we did. Every single one of our students was represented this year, every single one was represented, was themselves, 100%, no identities were stripped ... As cheesy as this sounds, you know you have these dreams of like what you want your classroom to be like, well it came true. Like what is democratic practice? What is this space? How do you develop critical consciousness within your students, how do you provide that space so you can have that love and understanding? ... for me to have the honor and privilege of finally being in a space as a teacher you're actually meeting the needs of all of your students and actually doing it, it's been (gets emotional).

For Angela and Kelly, the initial goal of their shared activity was

achieving honesty in their personal and professional relationship. Once this goal was realized, the goal shifted toward a brave space, one that allowed them to turn their fullest attention to students.

3.2. Sharing authority

"So there is still the authority or control or, that you have as a cooperating teacher in the traditional model that you don't, it kind of goes away, it gets absorbed differently ... We both have authority. We both have this teacher status." [Rosa].

Another critical element of co-teaching between experienced and novice teachers involved learning to successfully negotiate and share authority in the classroom. Sharing authority was enacted in linguistic, physical, and interactional spaces of co-teaching practice. In Rosa's quote, language was a principle means of sharing authority; a key factor in mediating participant thinking and actions (Vygotsky, 1978). Rosa and others repeatedly referred to themselves as "we", as "co-teachers." They also used inclusive pronouns like "our practice", "our classroom" and "our students" to describe their teaching. The language of "co" denoted a non-hierarchical, collaborative relationship and directly coded shared authority into the language pairs used to speak about their practice.

Sharing authority was also enacted in the physical geography of the classroom, often through providing a desk for candidates. While seemingly simple, the desk became symbolic of their equitable work and the mutually visible identity of the novice teacher, complete with belongings from home. Here, Melissa (teacher candidate) and Dina (mentor), discuss how the presence of these material resources led to other acts of sharing space in the classroom:

As a student teacher last year, I spoke about having the desk space. So I was with Rosa and she gave me a full desk. She had a little name tag on there for me. It said Melissa Smith, English teacher. I saw this and was like, this is real. It was exciting and it made me really feel like a teacher, even though I had no idea what I was doing. [Melissa].

I strongly encourage mentor teachers to get a full-sized desk and put it somewhere in your room that creates a teacher space for your co-teachers. Even if you think maybe this is the only year you're going to do it, just do it for a year. I think that really empowered Alicia as my co-teacher last year. It really empowered her to feel like it was her space, it was her classroom, and it made the kids realize that she was the second teacher, and they didn't have to come to me for everything [Dina].

In addition to physical space, pairs also shared authority in the interactional space. This happened through taking on equitable roles and responsibilities in both co-planning and co-teaching and working toward leveling the traditional hierarchy of mentor and teacher candidate in interactions with students. Sharing authority mediated candidate development by providing early opportunities to take on a lead instructional or planning role with support from the mentor teacher. Teacher candidate, Kelly, described her experience this way:

I think just the number one difference and benefit is that basically you start in the classroom as a co-teacher and equal. They don't see me as a student teacher. Even if some of the students might know that I'm a student of teaching, I was introduced as their teacher along with Ms. Azarian. I'm not anything less so I think that's very beneficial for the students and for the student teacher. [Kelly].

Kelly stressed that being introduced to students as a teacher

helped her begin the process of sharing authority with her mentor from day one. While clearly students understood she was learning to teach, her mentor's willingness to introduce her this way, messaged a sharing of practice to students, further reinforced by a desk space and use of language that conveyed mutual authority.

Successful co-teaching pairs shared authority in linguistic, physical, and interactional spaces of their practice, which resulted in both teachers' roles becoming mutually valuable and visible to students. The process of sharing authority reinforced the image of the teacher candidate as a central participant (Lave & Wenger, 1991) in the classroom and afforded candidates a role to grow into before they often felt legitimately qualified to do so. More central participation had implications for how quickly candidates developed as practitioners and got to know their students and the wider school.

3.3. Co-mentorship

Another practice of successful co-teaching involved reciprocal mentoring or *co-mentorship* (Clark, 2004), in which both co-teachers were situated simultaneously as significant contributors and learners (Fouché & Lunt, 2010). Co-mentorship began with planning meetings during which mentors shared curricula and activities that they typically used to teach content. During planning, candidates also contributed ideas for lesson content, instructional approaches learned in university coursework, or expertise with technology. Through these sessions, co-teaching pairs recognized and drew upon each other's unique strengths and resources and often planned lesson(s) around one another's areas of expertise. Here, Richard and Paulina, teacher candidates, describe this process:

So far our planning sessions have followed a fairly regular formula. Rosa says, "What do you want to do?" Then, she tells me, historically, how she has taught a lesson. Next, I either decide to go with the lesson as is, and roles are prescribed for both of us to accommodate the co-teaching model, or I offer up a new idea for teaching whatever set of objectives the original lesson was designed to teach. [Richard].

I think just observing her and watching how she takes charge of the classroom, and looking at how I do things, it really allowed me to reflect on my practice, what do I need to do to get to that level? So, for me, it was a learning experience every day. What we would do is if I was up at the front delivering a lesson, and if she picked up on something that I could have changed or that I could do better for the next class, the next time I deliver it, she would tell me that went great but this is what I would change or how about you give them a little bit more thinking time here, and so that allowed me to modify what I was doing ... [Paulina].

Co-planning sessions also impacted mentor teacher development. Mentors spoke about the benefits of making their tacit instructional knowledge more explicit for candidates; a process that provided opportunities for critically reflecting on practice and sometimes, re-thinking that practice. As Angela noted, "The value of openly discussing our practice, improves our practice." For some mentor teachers, opportunities to reflect on practice were often limited given staffing in many of their rural, small schools. For Anna, the only math teacher at her school, co-teaching presented a critical opportunity to collaborate with her co-teacher:

Well [Paulina] keeps saying how much she has learned from this experience but I have also, so she's constantly introducing me to new ideas, new ways that I could see things that, you know as a long time teacher now you kinda get stuck sometimes in what

you're doing, you do the same thing and it's hard to see, and especially with me, I was the only geometry teacher so there was no one for me to collaborate with, so she taught me how to collaborate with people because that's not something I've ever had the opportunity to do.

Other mentor teachers, such as Hobart below, talked about a willingness to re-think his instructional practice because mentoring a new teacher gave him an added sense of responsibility:

It kinda made me think, I'm like wow man, you know I need to step up my game a little bit, like I had become set in my ways, I had become set in the way I did things, and what co-teaching has really made me do is kinda make me re-examine everything that I do, and really push me to be better because now I am responsible at a much larger degree for someone else. [Hobart].

Mentors also talked about the importance of seeing their co-teachers develop as professionals. As teacher candidates grew more skilled, mentor teachers began to see themselves as teacher educators. Mentor teacher, Rosa expressed it this way:

I think what is interesting for me is, I thought, I wanted to do something different. I think I went into co-teaching thinking that I wanted to do something different for myself but not realizing that I had something to contribute or something to offer. So, I think it's been a growth experience for me to be a part of helping Richard, because you're training the next person to take your place.

Co-mentoring involved situated professional development for teacher candidates and mentor teachers as both were positioned as important contributors to a shared practice. Candidates gained the most from mentors open to sharing their curricula and instructional practice while also recognizing their candidate's unique contributions.

3.4. Coaching in the moment

Co-teachers often discussed the value of having coaching conversations during a lesson, what Soslau, Kotch-Jester, Scantlebury, and Gleason (2018) call the "huddle". Building on this view, we term "coaching in the moment", to mean instructional conversations carried out in front of students. This in-situ coaching not only contributed to improvements in candidate practice but also afforded mentors and candidates the ability to modify instruction to better meet student needs, what Soslau et al. (2018) call "adaptive teaching". These coaching moments occurred as a result of formatively assessing student needs and sometimes, from directly soliciting student input. Coaching moments served purposes much like co-generative dialogues (Roth & Tobin, 2005); they were collaboratively produced and purposefully focused on understanding and improving student learning. They were also public and jointly decided, modeling for students how to collaborate productively with others.

In an excerpted video clip, Angela and Kelly, 7th grade life science mentor and resident, prepared their students for a review of notes using whiteboards. Prior to this, Kelly had been working with students reviewing a diagram on the board to prepare them for the subsequent whiteboard review, without notes. Here, Angela begins the whiteboard instruction portion of the lesson, checking in with Kelly about agreed upon procedures:

Angela I'm starting? (looking at Kelly).

Kelly Yep, but they still need to put away their notes (looking at Angela).

Angela Oh yeah we'll do that in a few minutes

Kelly Yeah?

Angela Ok, so before we start, when we do start don't put everything away yet (A and K look at one another and smile).

Kelly All I can see is a sea of notes (waves hands over horizon).

Angela But yeah in a second, let us just finish instructions, just let you settle down for a sec, sorry I even brought it up (smiling).

Kelly Sorry, I just got excited (shrugs and laughs).

Angela It's alright! (laughs) Everything is going to be ok! (K and students laughing).

Angela So what's gonna happen is, the group's gonna ask a question and you all are going to hold up (gestures whiteboard) the whiteboard with the answer. Make sure there is no side conversation while your classmates are asking questions ...

In this clip, Kelly reminds Angela that students still need time to put away their notes before the review portion of the lesson begins, something they had agreed to do during their co-planning time. However, Angela who is more practiced with these routines and observes that students require more time with their notes during oral instructions, gently but firmly insists on a modification to Kelly who then apologizes for the oversight. These coaching moments, while sometimes at the micro-level, allowed teachers to modify their instruction on the spot and model for their students how to productively negotiate differences of opinions. Wendy, teacher candidate, expressed these types of negotiations in front of students in this way:

And I think when we negotiate which direction we are trying to go with teaching, like should we do this? Or should we do that? I think it models that learning is a process and that no one just knows the right answer ... It shows that, and we model that for students, that learning is a negotiation in trying to figure things out.

Coaching in the moment occurred throughout the day and was often piecemeal, making it easier for candidates to apply the negotiated change in practice. Candidates reported that it was most productive for their learning because it was timely, non-evaluative, and able to be acted upon immediately:

Co-teaching allows for direct feedback since if I make a mistake during a lesson, the mentor can model a better way to go about whatever it was so the kids don't lose out on perhaps a valuable lesson, just because I need to learn one. I then get the opportunity to improve on these opportunities for the rest of the day. [Matthew].

Anna, a mentor teacher, described her experience giving feedback:

It's definitely different than when I had my two previous student teachers. I didn't feel as comfortable interjecting when I felt like they needed some help ... it's just that through this program, it really lends itself to coaching because you're doing it together, they're not only learning from the suggestions but they're also learning from watching and then doing it themselves right away.

Additional opportunities for coaching in the moment came when co-teachers elicited student input directly. One teacher candidate stated that it was easier to ask for student input because the focus was on the practice: "I think it is easier with two of us because it's easier to be vulnerable as a pair versus one person with 28 kids." Students provided feedback on approaches to activities and in some classes, the construction of rubrics for assignments. Teacher candidate, Bethany, noted this:

I think from my perspective it's the time, you have more time to do it but because you're not reflecting so much on your own-did that work? Did our assessments work? Did our plan work?

Because we're doing that as we go along. So it's like, okay, we think we've gotten that good and so now it's like, ok what's the student perspective? We can go to them and see if what we think matches with what they think. I think having that second person in the room helps make that possible.

Coaching in the moment provided candidates with daily, non-evaluative corrections to their practice. Coaching moments happened in front of students, modeled collaborative decision making, and often involved invitations for authentic student input into lessons. Coaching in the moment sent a message to students that positive, constructive feedback and critical reflection were norms in the classroom; everyone was there to learn.

3.5. Co-teaching as deep immersion in 'real world' teaching

"In the traditional model you talk about teaching a lot but don't really do it a lot. I liken it to the metaphor of riding a bike, you can't just talk about riding a bike a lot and then go ride. In co-teaching, you are learning to ride a bike from the very beginning." [Matthew].

Co-teaching partnerships allowed for a year-long immersion into formal aspects of the teaching profession. Candidates and mentors talked about ways that co-teaching afforded a strong professional development opportunity for candidates along two key dimensions: belonging in the classroom and belonging at school. Because candidates were at their placements all day, they reported gaining a more realistic picture of what the "real world" of teaching involved. For instance, candidates experienced every period of the day and quickly learned that different classes involved different learners, curricula, class routines, and lesson modifications. As candidates became more knowledgeable about differentiation across classes, they were better able to forge meaningful relationships with their students; often, in the first couple of weeks. Candidates, Wendy and Colleen, shared the following:

First of all, in the first semester the difference that you have 1-1 with the students in the classroom is incredible. As a co-teacher, you're going through the same things in the first week of school that traditional phase one students experience in week 10-15, when they're just starting to teach their first lessons. Like I did that on my first day, in my first week! So you go through those first phases faster and then you spend more time just learning how to teach first hand. [Wendy].

As it is, I cannot even imagine what it would be like to not be in the co-teaching program. This just feels like what student teaching should be about. I feel that, asking anything less of a credential candidate would not thoroughly prepare them for the job ... I am being allowed to live the life of a real teacher for a year before I actually am one. [Colleen].

Because of the extended presence in their schools and daily

opportunities to co-plan with mentors, candidates became central participants in their classrooms. They had a clear sense of the curriculum and used this knowledge to answer student questions in class or brainstorm aloud with their mentor about what should be modified to better address student needs. This increased time and higher quality participation created a strong sense of belonging in the classroom. Belonging in the classroom further translated to belonging at school. Candidates were frequently invited to be part of staff meetings, department meetings, and IEP meetings, which allowed them additional opportunities to develop collegial relationships with other faculty and critical professional development opportunities for their future practice. Richard, a teacher candidate, shared this:

Rosa treated me as an equal from day one. And then I learned how to interact with colleagues. So hey when you're having an issue with a student, whose a teacher that you know that has had some success with this person? That's how I got acquainted with our Ed Specialist to see how she does with that student. One day I spent a couple of hours with her ... Don't know if I'd had the confidence to approach all of these people, without having gone through [co-teaching].

Candidates in MENTOR reported developing more quickly relative to their peers in the traditional student teaching program. The outcome of this more accelerated professional development was the ability of candidates to get hired soon after they graduated and sometimes, at the school where they had co-taught. During a panel meeting of co-teaching teams, Hobart, a mentor teacher, expressed it this way:

Over the last couple of years, we've hired teachers out of the MENTOR program and out of the traditional program at the same time and same disciplines, and both very good teachers, the stress, strain, wear and tear, light years on the person out of the traditional program, I mean the one that came out of the MENTOR program if you watched her teach you'd think she'd been doing it for five years, you know?

Co-teaching afforded candidates an opportunity to hone their practice in the real world settings of their classrooms and wider school communities. This immersive experience flies in the face of the often leveled critique of co-teaching; that co-teaching does not prepare teacher candidates for the real world of teaching. Here, evidence suggests the opposite; co-teaching reflects more *real-world* teaching experience than traditional student teaching.

4. Discussion

In this study, we asked the following research questions: 1) When conceptualized as activity, what key practices mediate the implementation of co-teaching? 2) How does co-teaching promote professional development for teacher candidates and mentor teachers? We found that co-teaching involved a complex interplay of five primary practices: negotiating difference, sharing authority, co-mentoring, coaching in the moment, and deep immersion in real world teaching. Each practice involved daily exposure to the many contradictions and tensions inherent in the development of a shared practice between teacher candidates and mentor teachers. When co-teachers were successfully able to resolve tensions around their differences, they were more able to evolve the goals of co-teaching activity and move on to different goals, such as meeting student needs. For instance, when pairs committed to negotiating difference, they directly confronted differences in their years of experience or racial and socio-economic positionalities. In so doing, their roles and the division of labor that guided their partnership

shifted resulting in a new goal for the co-teaching activity, meeting the needs of all of their students.

Similarly, practices of sharing authority, co-mentoring, coaching in the moment, and immersion in the real world of teaching all involved negotiating attendant contradictions in the activity. In each of these practices, co-teachers needed to work through the inherent asymmetrical power difference that exists between the professional knowledge and experience of a mentor teacher and a teacher candidate. In sharing authority, mentors needed to be willing to honor the experiences of teacher candidates and the unique resources that they brought to the classroom; using language and physical space in a way that conveyed parity to other staff at the school and their own students. In co-mentoring, teachers needed to suspend *a priori* beliefs about mentoring knowledge simply flowing from mentor to candidate, much like Freire's (2005) notion of banking models of education. Instead, mentors opened up their practice, explaining their instructional choices while being open to change and honoring the experiences of their candidates as they did. Coaching in the moment required co-teachers to continually rethink traditional models of evaluative feedback. Both teachers became highly attuned to making immediate adjustments within the daily flow of classroom activities, based on their joint assessment of student needs, or their direct solicitation of student input. Finally, co-teaching practice was mostly successful when it reflected the real world of teaching structurally and temporally. This sense of belonging in the classroom translated to opportunities to participate actively as staff in the wider school.

By resolving tensions inherent in each of these practices and evolving the goal of co-teaching activity, we argue that co-teaching pairs *gained fluency* in the practice of co-teaching as mentor and novice teachers. By fluency, we mean the acquisition of a more internalized way of knowing one another's personalities, pedagogical leanings, and instructional purposes. We draw from theories of second language learning to conceptualize this idea. As with language learning, co-teachers gain fluency when they acquire a knowledge of practice that is more automatic and internalized (Schmidt, 1992; Segalowitz, 2004). We argue that becoming fluent in co-teaching involves a more implicit flow of communication about instructional decisions over time, an ability to exert fluid control of the "immediacy that characterizes every minute of the ongoing practice of teaching" (Roth et al., 1999, p. 773). Once pairs learned one another's language they moved on to more implicit ways of collaborating during teaching. For example, rather than a huddle to communicate the need to tighten timing during a lesson, just a nod or a hand gesture might suffice.

This process of gaining fluency provides insight into the reasons for co-teaching positively impacting student achievement (Bacharach et al., 2010). Explanations for why co-teaching positively impacts student learning cannot be explained simply by having two teachers in the room. Our study suggests that what is more likely at work, is that two teachers, one novice, one experienced, engaged in the complex work of resolving the many inherent contradictions around sharing a practice. Once they did so, they were better able to evolve their own practice and direct their attention toward student thinking and learning.

5. Conclusions

Gaining fluency in co-teaching affords a more robust and reciprocal professional development activity for mentor teachers and teacher candidates. When mentors feel engaged as coaching professionals, they see themselves as central partners in teacher education rather than as disconnected overseers in the "practice field" (Zeichner, 2010). Teacher candidates are more able to see themselves as equitable collaborators who also bring new ideas, the

ability to relate differently to students, and evidenced-based content knowledge learned through credential coursework.

The role of the university vis a vis the clinical school site has the potential to shift markedly in a co-teaching based practicum. Effective co-teaching partnerships demonstrate to school partners and mentor teachers the value of welcoming high leverage practices into the classroom (Ball & Forzani, 2010–2011). The critical role of the university in teacher preparation is fundamentally to remain current in educational research about what works in schools to improve learning environments and outcomes for students. However, a disconnect has always existed historically between the content of teacher education courses and the clinical field experience (Darling-Hammond, 2006), to the point where it can be either problematic or prohibitive to provide candidates an opportunity to bridge theory and practice in their classrooms. These practices, introduced and modeled in university methods classes, can be more effectively implemented into clinical settings when mentor teachers, and the schools where they teach, feel fully included and positioned as partners.

When teacher educators recognize the five elements of what makes a co-teaching practice potentially “fluent”, they can design trainings or support practices around these critical components in addition to introducing pairs to co-teaching or co-planning strategies. For example, co-teaching pairs could receive extensive opportunities to discuss the potential for negotiating difference in their own practice or trouble-shoot tensions they might face in sharing authority or coaching in-situ. Future research could include targeted professional development around the five elements of co-teaching and then studying the impacts of this work on year long residencies between mentors and teacher candidates.

Our findings also call for a shift in teacher candidate supervision from an evaluative to a coaching model that helps teacher candidates gain expertise around adaptive teaching practices (Soslau et al., 2018). Coaching models of supervision are more productive for candidate development because they provide input in smaller doses, which can be implemented and practiced immediately. General guidelines for this approach include a focus on giving ample feedback during frequent observations versus the traditional approach of focusing on scoring (Bambrick-Santoyo, 2012). Future research could focus on coaching practices for supervisors and mentor teachers, including timing and types of feedback that positively impact teacher candidate development, or the role of content knowledgeable supervisors in helping candidates to meet specific instructional goals (Roth, Tobin, Zimmermann, Bryant, & Davis, 2002).

A limitation of this study concerns the degree of scalability for developing fluent co-teaching practitioners across teacher preparation programs worldwide. Mentors and teacher candidates were carefully selected because of their interest in co-teaching and demonstrated instructional practice. They were also provided a stipend to participate in the MENTOR program. However, our findings point toward a needed area of understanding in the literature; that is, what comprises effective co-teaching practice among teachers learning to teach?

The practice of co-teaching provides insights into related questions in teacher education: What do we gain when learning to teach is conceptualized as an inherently collaborative and ongoing activity? What does authentic teacher professional development look like when situated in co-teaching practice? Our findings suggest that co-teaching, when mediated by practices that contribute to collaborative teaching, provides a pathway towards improving teacher education and teacher professional development.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tate.2019.102903>.

Appendix

Table 1
Co-Teaching Template Analysis

	I1	I2	I3	I4	I5	I6	MP	EYM	CJ	MMY	CMY	Video	Total
1. Negotiating Difference	***		*	***			**		*				10
1.1 Critical Reflection of self, identity	****	*	**	*			****		*			**	8
2. Sharing Authority	**		*	*					*				11
2.1 Mediated by discourse: the language of co, we, etc.	**		*	***	*				*				8
2.2 Shared vision and/or goals	*	**	*****	*****	*		*****	**	***		*		3
3. Co-Mentoring	*	*	*****	*					***				29
3.1 Making tacit/implicit knowledge of teaching, students, etc.		*	***	**	*		***		**				7
3.2 Mentor Expertise Influencing Candidate (and vice versa)	*	*****	*	**	***		**						11
3.3 Facilitating student input - expanding student agency.				*	*		***		*				7
3.4 Changing mentor practice (re-thinking practice/mentorship)					*	*	**		*			**	5
4. Coaching in the Moment	***		*		**	*	**	*			**		7
4.1 Dialoguing in the moment - in situ feedback, adjustments to curriculum, transitions, instruction				*****	***	**	*****	**	*****	***	***		11
5. Deep Immersion in Real World Teaching Experiences			***	*****	***	**	*****	***	*****	***	***		32
6. Meeting the Needs of Diverse Learners	**		*****	**	*****	*	*****	**	*****	**	*		34
6.1 Better formatively assessing student learning			*	*	**		*		**				6
6.2. Thinking collaboratively			*	*	*		**		*				4
Total Number Text Sections Analyzed													193

Note: Key to Column Labels - I1 - Interview 1; MP - Mentor Panel Focus Group Interview; EYM - End-of-Year Meeting - Focus Group Interview; CJ - Candidate Journals; MMY - Mentor Mid-Year Evaluation; CMY - Candidate Mid-Year Evaluation.

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