Promoting Instructional Improvement: Promising Evidence of Coaching That Benefits Teachers' Practice

by

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Dedication

This is dedicated to my parents, Michael and Lynn McQueen. Your sacrifices made this opportunity possible.

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Abstract

Existing experimental literature provides evidence that coaching paired with additional supports facilitates teachers' instructional improvement, but we cannot discern whether the coaching or other supports (e.g., professional development workshops, video resources) spurred the observed change. Other research isolating the effect of coaching suggests it leads to instructional improvement, but it does not provide a clear understanding about whether different features of coaching demonstrate promise for improving instruction more than others, despite evidence suggesting variation exists in the coaching teachers receive. Given the prevalence of coaching as form of professional development, it is critical to understand whether different features of coaching are more promising than others.

This experimental, mixed methods study designed a professional development intervention employing two features of coaching – teachers *choosing* the content of coaching and *focusing* coaching on a single instructional practice – within a teacher preparation program. I investigate whether coaches trained in the intervention use this type of coaching and whether the intervention demonstrates promise for improving teachers' instruction and perceptions of preparedness and coaching quality. Additionally, I explore whether certain coaching practices influence teachers' receptivity to coaching and why these practices matter.

Results suggest the intervention demonstrates promise for improving teachers' instruction. While not statistically significant, results indicate intervention teachers scored, on average, between 24 to 36 percent of a standard deviation better than control teachers. Additionally, results suggest the intervention can be implemented in an authentic educational setting and has promise for

strengthening teachers' perceptions of preparedness and post-observation conference quality. Lastly, this study also indicates that certain pedagogical coaching practices – including concrete feedback, creating a welcoming environment, limiting the focus, and modeling practice – might influence teachers' receptivity to coaching.

These findings have implications for the practice of teacher coaching. Evidence of the intervention's promise suggest pre-service and in-service teacher preparation programs might consider developing a coaching model where teachers choose certain competencies to address and coaches focus their support on the selected competencies. Finally, identifying four potentially influential coaching practices indicates that teacher preparation programs might consider supporting coaches in learning more about these practices.

Chapter 1: Introduction

Teacher coaching is quickly becoming a common form of teachers' professional development (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Coaching's prevalence is typically attributed to its emphasis on job-embedded practice, active learning (Blazar & Kraft, 2015; Desimone, 2009), and focus on instructional improvement (Cornett & Knight, 2009). In an era where coaching is becomingly increasingly common (Gibbons & Cobb, 2017), it is critical to understand its impact on teachers' instruction.

Recent large-scale experimental studies suggest coaching paired with additional supports – that include workshops, supplemental curricular materials, or video resources – can facilitate instructional improvement (Allen, Pianta, Gregory, Mikami, & Lun, 2011; Dee & Wyckoff, 2015) and enhance student achievement (Kraft, Blazar, & Hogan, 2016). Though these results suggest coaching can improve teacher quality, we cannot be certain because the additional supports provided (e.g., workshops, curricular materials) could also explain observed effects.

Other experimental studies focusing more specifically on the impact of coaching apart from additional supports indicate coaching can facilitate instructional improvement (Neuman & Cunningham, 2009; Sailors & Price, 2010). These studies suggest that receiving coaching is more beneficial than receiving no coaching at all. While providing critical evidence for a causal relationship between coaching and instructional improvement, we do not know whether some forms or features of coaching are better than others. In an era where coaching is becoming increasingly common and the types of coaching teachers receive varies significantly (Cornett & Knight, 2009), investigating this unaddressed area of the literature is particularly important.

While prior literature on teacher coaching has not addressed promising features of coaching, the extensive literature on professional learning has identified two features of effective professional learning experiences that could be applied to the context of coaching. First, teachers having *choice* over the content of coaching seems particularly promising. Prior literature suggests *choice* is important because it affords teachers the opportunity to direct the content of their learning (Merriam, 2001), actively engages them in the learning experience (Knowles, Houlton, & Swanson, 2005), and leverages their prior experience as the basis for learning (Garet et al., 2001). Second, more *focused* coaching –targeting a specific aspect of instruction or observational rubric competency – also seems promising. Prior literature implies narrowing the scope of professional learning experiences allocates necessary time to wrestle with new problems and ideas (Little, 1993), affords greater opportunity to deliberately practice a particular skill (Ericsson, Krampe, Tesch-Romer, 1993), and focuses the attention of the learner by setting boundaries to the experience (Schon, 1983).

Since a broader base of literature on professional learning suggests *choice* and *focus* may have promise, I designed a professional development intervention that incorporated *choice* and *focus* into the context of coaching and used an experimental design to investigate whether these two features demonstrate promise for improving teachers' instruction. In order to conduct this developmental study, I partnered with a teacher preparation program to design a randomized control trial (RCT) where I randomly assigned 22 coaches by content area and 46 first-year teachers by content area to intervention and control conditions. Randomization resulted in 10 coaches assigned to 25 first-year teachers in the intervention condition, in comparison to 12 coaches assigned to 21 first-year teachers in the control condition. I then trained intervention coaches to incorporate teacher choice and focus coaching around a specific rubric outcome across two observations; control coaches received the

training the teacher preparation program typically provided and were instructed to engage in the

program's typical form of coaching. The research questions guiding my study are:

1. Were coaches trained in the intervention more likely to offer teachers' choice and focused coaching as compared to coaches who received no training?
2. Compared to teachers whose coaches received no training, did teachers whose coaches received the training:
    a. Have better observation ratings?
    b. Report feeling more prepared?
    c. Report better quality coaching?

While prior literature suggests certain features of coaching – such as choice and focus – may

matter, less is known about what influences teachers' implementation of the content discussed.

Understanding the influences behind uptake and implementation are particularly important

considering the relationship between implementation and success of a particular intervention or

initiative (Power, Blom-Hoffman, Clarke, Riley-Tillman, Kelleher, & Manz, 2005). Moreover, prior

literature identified teachers' responsiveness to coaching as a likely influential factor because of the

relationship between responsiveness, uptake, and implementation (Wanless, Rimm-Kaufman, Abry,

Larsen, & Patton, 2014; Wong, Ruble, McGrew, & Yu, 2017). While providing suggestive evidence

responsiveness influences implementation, the different pedagogical practices coaches might employ

to enhance teachers' responsiveness to coaching remains unaddressed. Therefore, we have less of an

understanding of what likely influences teachers' receptivity to coaching and subsequent

implementation of the content discussed. Thus, following the intervention I interviewed 13 teachers

across conditions to try and uncover certain pedagogical coaching practices that teachers might be

amenable to. The additional research question guiding my study is:

3. What coaching practices influence first-year teachers' receptivity to coaching and implementation of the coaching content? Why do these coaching practices matter?

To address these research questions, I used a mixed methodological approach to allow for different means of data collection to investigate the promise of this intervention (Greene, 2007). I gathered information about coaches' implementation of the intervention, teachers' beginning and end of year observation scores, teachers' sense of preparedness to teach across different domains of practice, and teachers' perspectives on the types of coaching received. I collected these sources of data through post-intervention surveys, coaches' written feedback provided to teachers, beginning and end of year teacher surveys, and coaches' observation scores for all first-year teachers. Moreover, I used a semi-structure interview protocol to gather more information about different coaching practices that might influence teachers' receptivity to coaching and implementation of the coaching content. I also used the interview protocol to try and uncover why these coaching practices might influence receptivity and implementation.

This dissertation contributes to the literature on teacher coaching in at least three ways. First, I leverage a broad base of literature suggesting *choice* and *focus* are important features of effective professional learning experiences and apply these broader principles to the context of teacher coaching. Second, I incorporate these two features of efficacious professional learning in a coaching intervention and test whether they demonstrate *promise* for improving teachers' instruction. This study is, to my knowledge, the first to use an experimental design to test whether *choice* and *focus* demonstrate promise for improving teachers' instruction. Furthermore, I provide suggestive evidence this particular intervention (a) can be implemented with fidelity in an authentic educational setting and (b) demonstrates *promise* for improving teachers' instruction. Finally, I investigate whether certain pedagogical coaching practices influence teachers' receptivity to coaching. In particular, I make progress in identifying potentially *promising* pedagogical practices coaches might use to influence teachers' implementation of the content discussed.

In the next chapter, I review existing literature to identify relevant research concerning teacher coaching and its effect on classroom instruction. The literature reveals coaching, in general, has a positive impact on teachers' instruction, but less is known about whether different features of coaching demonstrate more or less promise. I conclude the chapter by presenting my conceptual framework to explain why a particular type of coaching has promise for improving first-year teachers' instruction. In Chapter 3, I describe the mixed methodological approaches that guide my study. I discuss the research design, the process of randomization, the sample being studied, the data sources, and analytic methods I used to answer my research questions. Chapter 4 presents findings for each research question. First, I focus on intervention fidelity analyses, specifically addressing measures of adherence, dosage, and quality. Then, I draw on teachers' observation ratings and self-reported perceptions of preparedness and coaching quality to discuss whether *choice* and *focus* demonstrate promise for improving instruction. Afterwards, I discuss teachers' perceptions about coaching practices that influence responsiveness to coaching and why these practices mattered. Finally, in Chapter 5, I present a discussion of my findings, synthesizing how the results can strengthen this particular intervention, inform practitioners working with novice teachers, and future research on teacher coaching.

Chapter 2: Literature Review and Conceptual Framework

Before describing my study, I review existing literature on the impact of coaching on teachers' instruction. Next, I examine the extensive literature base on professional learning, of which teacher coaching is situated in, suggesting *choice* and *focus* warrant inclusion in this particular intervention. Then, I briefly discuss existing literature on coaches' pedagogical practices and how we know little about which practices teachers report influence receptivity to coaching and implementation of the coaching content. Finally, I draw upon existing literature to conceptualize why a particular coaching intervention integrating *choice* and *focus* might demonstrate promise for improving teachers' instruction. Rather than provide a comprehensive review of existing literature, the purpose of this section is to offer background and motivation for the design of my professional development intervention.

Inclusion Criteria

Prior to my review of relevant literature, I describe the inclusion criteria I used to identify studies for my three sections: (1) the impact of coaching on teachers' instruction, (2) promising features of coaching, and (3) influences behind implementation of coaching content. For my first and third sections, I restricted the sample of studies using three primary criteria pertaining to predictors, outcomes, and research design to identify empirical studies warranting inclusion. First, I required that studies use coaching (section one) or responsiveness (section three) as a predictor of a particular outcome. I chose to focus on coaching and responsive as the predictors of interest given the applicability to my research questions. Second, I limited my review to studies that included as an

outcome either a direct measure for instructional quality – either observational evaluations or value-added to student achievement – in section one or implementation of coaching content in section three. I chose these outcomes because I was concerned with whether coaching impacts teachers' instruction or whether responsiveness influences implementation of the coaching content. Third, I required that studies employed an experimental or quasi-experimental research design. I made this decision given my desire to review studies with either similar research designs (e.g., experimental design) or studies making similar claims to the present study (e.g., suggestive evidence of promise).

In an effort to build a strong case for why certain features of coaching demonstrate promise (e.g., second section of literature review), I used two inclusion criteria. First, I broadened the scope of my review to include literature addressing professional learning. Addressing professional learning, as opposed to a singular focus on coaching, allowed me to leverage an extensive literature base on professional development, adult learning theory, and expert performance amongst others. Second, I included both empirical (e.g., quantitative and qualitative) and conceptual literature in my review. I sought to include both types of literature because I wanted to identify promising features of professional learning that had strong conceptual and empirical support for either *why* a certain feature demonstrates promise or suggestive evidence that a particular feature *does* matter. This inclusion criteria yielded considerable literature suggesting *choice* and *focus* are likely promising features of coaching.

The Impact of Coaching On Teachers' Instruction

A number of quantitative studies suggest that teacher coaching – typically comprising a classroom observation and post-observation feedback conference with a more experienced or knowledgeable other – can improve classroom instruction (Cornett & Knight, 2009; Davis &

Higdon, 2008; Evertson & Smithy, 2000; Ingersoll & Strong, 2011; Stanulis & Floden, 2009) and student achievement (Kraft et al., 2016). For my review here, the literature suggests I focus on two categories of research: coaching paired with additional supports and isolating the impact of coaching on instruction. I now turn to a discussion of each.

Coaching Paired With Additional Supports. Recent quantitative evidence suggests coaching paired with additional supports improves teachers' instruction. The most compelling evidence to date suggests coaching has a significant effect on teachers' instruction (Kraft et al., 2016). In a meta-analysis of 37 experimental studies examining the effects of coaching, Kraft et al. (2016) detected a pooled effect size of approximately 56 percent of standard across studies analyzing the effect of coaching on instruction. Additionally, 25 of the studies revealed a 71 percent of a standard deviation effect size when coaching focused exclusively on teachers' instruction (e.g., general pedagogical strategies). In contrast, when coaching addressed a particular content area (e.g., literacy, math, science), results revealed a 51 percent of standard deviation effect of coaching on teachers' instruction. Given how this meta-analysis only included experimental studies, Kraft et al. (2016) provide the strongest causal evidence to date around the effect of coaching on teachers' instruction and student achievement.

While prior literature suggests coaching can spur teachers' instructional improvement, other literature suggests coaching is particularly impactful for certain kinds of teachers. In a longitudinal study examining the effects of D.C.'s IMPACT evaluation system, Dee and Wyckoff (2015) found that certain teachers improved as a result of participating in this system. In this particular system, teachers participated in rubric-based observational evaluations, received instructional coaching, and enticed with incentives (e.g. performance bonuses) or threatened with consequences (e.g. dismissal threats) according to their performance. The authors employed a regression discontinuity (RD)

design to compare performance outcomes among low-performing and high-performing teachers near the respective thresholds that triggered either a dismissal threat or a monetary incentive. RD estimates suggest low-performing teachers – those receiving dismissal threats – and high-performing teachers – those receiving performance bonuses – improved their performance by 24 to 27 percent of a standard deviation, respectively, compared to those who near the thresholds but did not receive either a threat or incentive.

While the articles reviewed in this section highlight the impact of coaching on instruction, other studies have also examined whether the delivery of coaching (e.g., web-based) matters. Allen, Pianta, Gregory, Mikami, and Lun (2011) tested whether My Teaching Partner-Secondary (MTP-S) – a web-based coaching program that includes initial workshop-based training, a year of personalized coaching, a video library resource, and additional skill booster workshops – improved teachers' instruction. By randomly assigning 78 secondary school teachers across content areas to either the intervention of MTP-S or regular in-service training, they found a significant positive effect of the program on teachers' instruction and students' end-of-year test scores. Intervention teachers improved by 0.37 standard deviations more than control teachers on observed teacher-student interactions, as measured by the Classroom Assessment Scoring System – Secondary (CLASS-S) rubric. Additionally, students assigned to teachers receiving MTP-S had a net gain of 0.22 standard deviations compared to students assigned to control teachers, which equates to moving a student from the 50th to 59th percentile. The authors mentioned, though, several important limitations. First, the study had significant attrition, resulting in 33-percent of teachers dropping out of the study following randomization. Additionally, the authors cited the intensity of coaching – 10 to 12 coaching cycles occurring over a one year period – as a programmatic feature that is likely not sustainable in larger, more urban school districts.

Given these limitations and the need to test the efficacy of promising education interventions (Forman, Shapiro, Codding, Gonzales, Reddy, Rosenfield, & Stoiber, 2013), Allen, Hafen, Gregory, Mikami, and Pianta (2015) replicated this study by randomly assigning 86 secondary (middle and high school) classrooms serving 1,194 students to a modified MTP-S intervention. The more recent iteration of the MTP-S included the same core components (e.g., personalized coaching addressing a single CLASS-S rubric domain), but decreased in intensity with five to six observation cycles per year, over two years. The authors claimed the lower-intensity coaching model distributed over time was more suitable to the realities and demands of an urban, under-resourced school district. Results revealed students assigned to intervention teachers scored approximately 31 to 48 percent of a standard deviation better than students assigned to control teachers, which would likely move a typical student in the intervention condition from the 50th to 59th percentile. The authors concluded these results mirrored the effects from their initial study.

Although the studies reviewed in this section provide causal evidence that coaching paired with additional supports can improve instruction, each study had a common limitation. Namely, we cannot be certain other features provided – additional workshops, incentives, consequences, annotated resources, etc. – might also explain the observed effects. For example, the MTP-S intervention included a year of personalized coaching, a video library resource, and additional skill booster workshops, thus making it difficult to discern whether it is the coaching or the additional supports that explain teachers' instructional improvement. In an era where coaching is becomingly an increasingly common support offered to teachers, it is critical to understand whether coaching directly benefits teacher performance apart from other supports.

Isolating The Impact of Coaching on Instruction. Other experimental research isolated the causal effect of coaching by providing any additional supports given to intervention

teachers/coaches also to control teachers/coaches, thus ensuring that the only difference between conditions was the kinds of coaching received. Leveraging the stratified random assignment of 304 early childhood caregivers, Neuman and Cunningham (2009) sought to examine the effects of professional development coursework and coaching on teachers' early language and literacy practices. The researchers randomly assigned teachers to one of three groups: a professional development course paired with coaching, a professional development course, or no professional development course or coaching. Two-way ANCOVA tests revealed that caregivers who had received both types of supports (n=86) scored significantly higher on Early Language and Literacy Classroom Observation (ELLCO) and the Child/Home Early Language and Literacy Observation (CHELLO) instruments, as compared to those only receiving coursework (n=85), and those receiving no professional development courses or coaching (n=133).

While Neuman and Cunningham (2009) focused on the impact of coaching on early childhood caregivers, other studies have examined whether coaching is impactful at the elementary level. In a study of 44 elementary teachers, Sailors and Price (2010) examined the effects of coaching on teachers' instruction, as measured by the Comprehension Instruction Observation Protocol System (CIOPS). Teachers who were randomly assigned (n=17) to attend a two-day summer in-service training and receive classroom-based support from a reading coach improved by 0.64 and 0.78 standard deviations on reading and comprehension strategies respectively, as compared to teachers (n=27) who attended the same in-service training but did not receive any classroom-based support.

While these studies provide causal evidence for the impact of coaching on teachers' instruction, some important issues remain unanswered in the research on teacher coaching.

Namely, we do not know whether different features of coaching are more or less beneficial on teachers' instruction. Understanding whether different features of coaching show promise is particularly important to address because great variation exists in the kinds of coaching teachers receive (Blakely, 2001; Cornett & Knight, 2008; Joyce & Showers, 1995; Norwood & Burke, 2011). Given coaching's prevalence as a form of professional learning, it is critical to understand whether different features of coaching are more promising than others. Thus, this development study examining a subtle, but important treatment contrast – more choice and focus versus less choice and focus – will begin to explore this unanswered, yet important area in the literature on teacher coaching.

Promising Features of Coaching

In this section, I describe two features of teacher coaching –*choice* and *focus* – that prior literature suggests are particularly promising and warrant inclusion as integral parts of the intervention at the center of this study. *Choice* refers to teachers having control over the content of their professional learning, which in this case, is the coaching they receive. *Focus* on the other hand, refers to limiting the scope of a professional learning experience, which I classify as addressing a single observational rubric competency (e.g., behavior management) in the coaching context. These two features are far from exhaustive, but I include them in the intervention because the extensive literature base on professional learning suggests *choice* and *focus* have promise for improving teachers' instruction.

Choice. Prior literature on professional learning suggests *choice* demonstrates promise for three reasons. First, *choice* provides teachers the autonomy to self-direct the content of a learning experience. Second, *choice* allows teachers to actively participate in the learning experience. Finally,

choice establishes a sense of *coherence* between the coaching content and teachers' goals and experiences. I elaborate on each below.

Autonomy. Adults are self-directed individuals capable of autonomous learning and desire opportunities to make choices aligning to personal goals (Knowles, 1984; Merriam, 2001). In particular, adults need discretion in planning and directing personal learning because discretion recognizes adults' ability to make decisions aligned to professional interests (Knowles, Houlton, & Swanson, 2005). Thus, when teachers choose the content on which to focus their coaching on, they have the autonomy to self-direct their own learning and identify content relevant to individual needs and goals (Merriam, 2001).

Moreover, prior research suggests teachers provided who have more opportunities to self-direct their own learning are more likely to report greater satisfaction with professional learning. Specifically, results from a survey of 1,300 teachers across different districts and states revealed teachers who choose all or most of their professional learning experiences are approximately twice as satisfied with professional learning as compared to teachers who have less choice (Gates Foundation, 2014).

Other research has moved beyond perceptions of satisfaction to provide suggestive evidence that greater autonomy might improve teachers' instruction. In a study of 26 middle school teachers, Grossman (2015) sought to measure the relationship of targeted professional development on teachers' instruction. The author, who led the professional development, showed participating teachers aggregate diagnostic data (PLATO rubric scores) on their beginning of the year observation scores to help them choose which elements of PLATO their professional development would address. Participating teachers selected the two lowest scored items: classroom discourse and strategy use and instruction. The authors then provided professional development on these two

practices that included opportunities to 1) observe high quality examples of these practices as well as different components of complex practices, 2) try out these practices multiple times, and 3) receive coaching from trained observers on their efforts to enact the targeted practices. Teachers who attended the professional development improved significantly more on the targeted instructional domains as compared to teachers who did not receive any professional development. While other factors of the intervention might explain the observed effects, this study provides suggestive evidence that having greater autonomy over the content of a professional learning experience could improve instruction.

   Active Participation. Choice might actively involve teachers in the professional learning experience through an analysis of teaching and learning (Knowles, 1984). Specifically, choosing the content of professional learning requires teachers to actively reflect on individual teaching and student learning in order to determine the focus of the learning experience. In doing so, teachers articulate a problem of practice to address while also articulating individual learning needs (Feiman-Nemser, 2001; Hawley & Valli, 1999). Moreover, new experiences without reflection contribute little to the conceptual development of the teacher (Dewey, 1938). Thus, actively analyzing teaching and learning can contribute to a balanced interplay between experience (action) and guided analysis (reflection) within a professional learning experience.

   Prior research on professional learning also suggests that *active participation* in professional learning is particularly promising. One of the most noteworthy studies on professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001) used a probability sample of 1,027 mathematics and science teachers to analyze how certain structural features of professional development influenced changes in teachers' knowledge, skill, and practice. Results from ordinary least squares regression (OLS) models suggest professional development emphasizing teachers' *active participation*

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in the analysis of teaching and learning promoted increases in knowledge and skill and changes in instruction.

Coherence. Choice can also facilitate a sense of *coherence* between professional learning activities and teachers' goals and experiences (Knowles et al., 2005). In particular, having autonomy over the content of professional learning activities (e.g., coaching) provides teachers with the opportunity to create a learning experience that is grounded in their goals and experiences (Garet et al., 2001). For example, if a teacher notices students struggling to support arguments with textual evidence, then the teacher can leverage this prior experience or problem of practice to inform what she addresses with her coach. Fostering *coherence* is particularly important because teachers' learning must be interconnected with ongoing classroom practice (Putnam & Borko, 2000). Additionally, teachers need the opportunity to discuss and locate new ideas in the context of teachers' knowledge, prior experience, and individual goals for professional learning (Little, 1993).

Moreover, prior research examining effective features of teachers' professional learning provides suggestive evidence that *coherence* likely matters. In a study of 454 science teachers, Penuel, Fishman, Yamaguchi, and Gallagher (2007) employed hierarchical linear modeling (HLM) to examine the effects of different features of professional development on teachers' knowledge and implementation of an inquiry science program, as measured by teacher surveys. The authors found perceived *coherence* of professional development activities with individual goals was a strong predictor of implementation of a particular program. Consequently, the authors suggest professional development experiences might be more effective when they align to teachers' goals for individual learning.

Focus. Prior literature on professional learning also suggests that *focus* – which I conceptualize as limiting the scope of a coaching conversation to a single instructional practice or

observation rubric competency – demonstrates promise for two reasons. First, *focus* can allocate the necessary *time* to acquire new knowledge and skills. Second, *focus* can *address a problem of practice* that might enable opportunities for learning. I elaborate on each below.

Time. Focus provides the opportunity for a coach and teacher to spend longer amounts of time addressing a single instructional practice. Thus, *focus* recognizes the important relationship between *time* and acquisition of new knowledge and skill, which is particularly important for three reasons. First, professional learning that facilitates teachers' learning must offer adequate time for grappling with problems, ideas, and materials (Little, 1993). In particular, Little's (1993) critique of traditional forms of professional learning (e.g., single workshops) implies they do not offer substantive depth or sufficient time for teachers to interact with problems of practice or new knowledge and skill, thus closing down opportunities for learning. Therefore, *focus* might enable a coach and teacher to spend the necessary time needed to wrestle with new knowledge and ideas because this particular feature privileges exploring a single topic or problem in depth. For example, if a teacher and coach focus on question quality for the entirety of a 45-minute interaction, they create an opportunity to discuss and explore a single instructional practice in depth.

Second, sufficient time in professional learning experiences help mitigate the detrimental effects of task complexity. Prior literature suggests task complexity – the number of distinct acts needed to perform a task – inhibits individuals from engaging in a task because of the demand it places on individuals' knowledge and skill (Wood, 1986). Moreover, Wood (1986) suggests one way to mitigate task complexity is taking the time to break down the task into small, manageable steps and provide continuous support and reinforcement over an extended period of time. Thus, *focus* could allocate the requisite time to mitigate task complexity. Specifically, attending to a single competency allows a coach to break down the complexity of a particular practice into bite-sized

steps and provide detailed advice for each step, which could make it easier for a teacher to integrate into her practice.

Third, practitioners need the opportunity to deliberately focus on or practice the same task or set of skills for an extended period of time in a repetitive way. Prior literature on expert performance suggests the amount of time an individual is engaged in deliberate practice, when paired with feedback, is related tot hat individual's acquired practice (Ericsson, Krampe, Tesch-Romer, 1993). Therefore, *focus* might allocate extended time for a teacher to deliberately practice a particular skill while receiving feedback from a coach. For example, the same 45-minute conference attending to question quality could have a teacher scripting out questions (e.g., practice), receiving feedback from a coach on the questions, and then integrating the feedback back into her scripting of each question.

Moreover, prior research on teachers' professional learning also suggests that the amount of *time* focused on a specific instructional practice likely predicts changes in teachers' knowledge and skill. Intended to build on and extend the findings from Garet et al.'s (2001) study previously discussed, Desimone, Porter, Garet, Yoon, and Birman (2002) examined the effects of professional learning activities on the instruction of 207 teachers, in 30 schools, in 10 districts across five states over a three year time period. Specifically, the authors used three waves of survey data to document teaching practice before and after a professional learning activity and examine the relationship between changes in teaching practice and participation in the activity. Estimates from hierarchical linear modeling (HLM) suggest extensive and sustained professional development focused on specific instructional practices increased the likelihood teachers employed these practices in their daily work. Based on their findings, the authors argue that change in teacher practice will occur if teachers experience sustained professional development focused on the specific content or

instructional practices teachers must enact. These results confirm findings from Garet et al. (2001) who also found the duration of a professional development activity as having a significant, positive effect on self-reported increases in knowledge and skill.

Addressing A Problem of Practice. Limiting the scope of a coaching conversation to a single instructional practice or rubric competency provides the opportunity to engage a specific problem of practice. Specifically, *focus* offers teachers the opportunity to deliberately address a problem of practice, which is important for three reasons. First, conversations about problems' of practice help develop teachers' capacities to manage the complex work of teaching (Lampert, 2003). Specifically, addressing a problem of practice demands teachers learn to grapple with the inherent complexity of teaching. Second, discussing a problem of practice challenges teachers to develop the orientation and capacity to learn in and from their practice (Ball & Cohen, 1999). In particular, discussing problems of practice requires teachers to inquire into their practice, thus presenting the opportunity to analyze the situation, the moves, and the decisions made. Ball and Cohen (1999) argue it is the unique combination of these three – situation, moves, and decisions – that facilitates the development of professional learning. Finally, discussing problems of practice might stimulate teachers' instructional improvement. Addressing challenging or confusing experiences assists teachers in reconceptualizing the problems they encountered (Horn & Little 2010). In doing so, teachers are exposed to new ways of thinking that help build principles of practice. According to Horn and Little (2010), this new way of thinking can facilitate teachers' learning and stimulate instructional improvement.

Moreover, prior research provides suggestive evidence that addressing a *problem of practice* might facilitate instructional improvement. Allen et al.'s (2011) experimental study, described above, could imply focusing coaching conversations around specific problems of practice might improve

teacher performance. Trained MTP-S observers selected clips of intervention teachers' practice to illustrate strengths and areas for growth in a limited number of the dimensions on the CLASS-S rubric. Once intervention teachers had the opportunity to review their clips, they participated in a 20- to 30-minute phone conversation with MTP-S consultants to discuss specific ways they could improve on the targeted CLASS-S rubric dimensions. Given the significantly greater instructional improvement of MTP-S teachers as compared to non-MTP-S teachers, it is possible focusing coaching on a problem of practice (e.g., areas for growth on rubric) influenced teachers' instructional improvement.

Likewise, recent experimental evidence suggests pairing high-performing and low-performing teachers together to address specific areas for growth improves teachers' instruction and student achievement. For example, Papay et al.'s (2016) randomized controlled trial study examined the effects of pairing 90 "low performing" teachers, identified as those who had low evaluation scores on one or more instructional domains, with 117 "high-performing" teachers, those who were highly rated in any of the same instructional domain(s), to collectively work on the practice of teaching. Results revealed students of low performing intervention teachers improved their reading and math test scores, on average, 12 percent of a standard deviation greater than control teachers. The authors concluded improvements were likely the results of low-performing intervention teachers refining their skills in certain instructional domains that, in turn, improved student learning and achievement. While Allen et al. (2011) and Papay et al. (2016) cannot isolate the effect of a clear focus on problems of practice[1], taken together they provide some additional support for the claim

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[1] Horn and Little's (2010) conception of a problem of practice focuses more broadly on the instructional triangle and the relationship between teacher, student(s), and content. Moreover, Little (2012) also thinks about problems of practice in terms of the complex nature of teaching where teachers are balancing multiple problems at once. In contrast, this study focuses a problem of practice on discrete teaching skills from an observational rubric. While conceptually distinct, both articulations can help identify an area of focus for teachers to potentially address.

that one likely contribution of *focus* as a feature of coaching is that is creates opportunities for teachers to *address a problem of practice*.

Finally, qualitative research on coach-teacher interactions also suggests focusing on a problem of practice might enable opportunities for learning. In a study examining the conversational moves used by two coaches in post-observation conferences, McQueen (2015) found the content of the conversation influenced the types of moves that coaches used. Results suggest coaches used different conversational moves when discussing a problem of practice as opposed to all other topics. Specifically, during conversations about a problem of practice, coaches used certain conversational moves known to promote opportunities for learning – reflective questioning and paraphrasing – at greater rates compared to conversations unrelated to problems of practice. The author suggests a promising approach to coaching is focusing on problems of practice in coaching conferences with teachers.

Given that the extensive literature base on professional learning suggesting that *choice* and *focus* demonstrate promise, this study integrates *choice* and *focus* into the context of a coaching intervention and tests whether these two features demonstrate promise for improving instruction. Thus, this study is, to my knowledge, the first to use an experimental design to provide pilot data on whether coaching that includes *choice* and *focus* demonstrates promise.

Influences Behind Implementation of Coaching Content

While prior literature suggests two features of coaching – choice and focus – might have promise for potential to improve teachers' instruction, it does not specify exactly what influences teachers' incorporation of the content, including strategies or suggestions, of a conversation where choice and focus are present. Understanding potential influences behind uptake and implementation

are particularly important because a critical factor for success of any intervention or initiative is the extent to which the intervention or content is delivered or implemented as intended (Power et al., 2005; Wong et al., 2017). In other words, if teachers do not implement the content (e.g., strategies or suggestions) of coaching conversations, then it is plausible coaching will not improve teachers' instruction. One influence prior literature suggests might matter is teachers' responsiveness to coaching because of its possible relationship to implementation of an intervention's core components or the content of coaching (Wanless et al., 2014; Wong et al., 2017). In particular, prior research suggests teachers who are more responsive – commonly viewed as participants' engagement, participation, or attentiveness during coaching or training – during professional development, of which coaching is considered a form of, are more likely to incorporate strategies or information offered during the professional development into their practice as compared to teachers who were disengaged or non-responsive (Reinke et al, 2013). Moreover, professional growth will not occur if a teacher is unwilling or unable to enact changes in her professional practice (Kraft & Gilmour, 2016).

Teacher Responsiveness and Implementation. Some recent experimental research has sought to determine if teacher responsiveness predicts implementation of a particular intervention's core components. Reinke et al. (2013) analyzed whether teachers' trained in the Incredible Years Teacher Classroom Management (IY TCM) program – a school wide intervention including 6 days of group-based professional development for teachers working with students with disruptive behavior problems – implemented the intervention as intended. Specifically, the authors randomly assigned 34 elementary teachers from six urban schools to the IY TCM intervention and measured the relationship between teachers' responsiveness to IY TCM professional development – based on professional development leaders ratings of teachers' engagement during the session – and teachers'

use of practices (e.g., positive praise) discussed during the professional development. Ordinary least squares (OLS) regression results revealed teachers' responsiveness to the training session predicted observed changes in teachers' use of the intervention's core components following the professional development. For example, teachers who were more responsive to the second professional development, which addressed providing students with attention and praise, offered 34 percent of a standard deviation ($p>0.05$) more praise compared to those who were less responsive to the professional development after controlling for baseline usage of positive praise and other teacher covariates.

Other research suggests responsiveness also predicts implementation of non-classroom management related interventions. In a secondary study of 126 fourth and fifth grade teachers assigned to treatment conditions of a larger randomized control trial, Wanless, Rimm-Kaufman, Abry, Larsen, and Patton (2014) examined the relationship between responsiveness an uptake of the Responsive Classroom (RC) approach. The authors found intervention teachers' engagement in the one-week RC training – as measured by trainers' ratings of teachers on an eight item instrument – was positively associated with teachers' uptake of the RC core components in respective classrooms.

Teacher Responsiveness and Student Outcomes. While Reinke et al. (2013) and Wanless et al. (2014) addressed the relationship between responsiveness and uptake, other studies have examined whether responsiveness influences student outcomes. In a study of 79 special education teachers, Wong and colleagues (2017) examined the effect of the Collaborative Model for Promoting Competence and Success (COMPASS) intervention on autistic students' Individualized Education Program (IEP) outcomes. Special education teachers assigned to the COMPASS intervention condition (n=47) participated in five researcher led sessions, including an initial 3-hour consultation with one of the co-developers of COMPASS and four additional 1-hour coaching sessions across

the school year. Following the initial consultation and subsequent coaching sessions, the co-developers rated intervention teachers' responsiveness to the intervention using a nine-item Consultation/Coaching Impression Scale (CIS) that demonstrated a high level of internal consistency across sessions. Results from a serial mediation analysis revealed teachers' responsiveness during initial and ongoing consultation had significant indirect effects of student IEP outcomes.

Despite offering suggestive evidence for a positive relationship between responsiveness and implementation, the quantitative nature of these studies did not allow for identifying the practices coaches or professional development trainers employed to facilitate teachers' responsiveness to coaching or professional learning. Thus, we know less about what coaches could do in coaching conversations to improve the likelihood teachers implement the content discussed during coaching conversations. Uncovering certain practices is particularly important because it may increase the likelihood the content of the conversation is implemented as intended (Peterson, 2013). Given that we know less about which coaching practices might facilitate responsiveness, my study addresses this limitation by interviewing several first-year teachers to try and uncover what these coaching practices might be. This is one of the first studies, to my knowledge, that seeks to uncover what coaching practices influence teachers' responsiveness and likelihood teachers implement the content of coaching conversations.

Summary, Research Foci, and Contribution to the Literature

Existing literature provides evidence that coaching is associated with instructional improvement. However, it does not yet provide a clear understanding about (1) features of coaching that demonstrate promise, (2) whether different features of coaching demonstrate promise for improving

instruction more than others, or (3) different pedagogical coaching practices influencing teachers' responsiveness to coaching.

This study, then, contributes to the literature on teacher coaching in a number of important ways. First, I leverage a broad base of literature identifying two features of promising professional learning opportunities that could be applied to the context of coaching. Specifically, I integrate *choice* and *focus* into the development of a coaching intervention. In doing so, I provide some clarity to the literature on different features of coaching that demonstrate promise. Second, I test whether *choice* and *focus* when applied to the context of coaching, improve teachers' instruction. This study is, to my knowledge, one of the first to test whether certain features of coaching demonstrate promise for improving teachers' instruction. Finally, I investigate whether certain pedagogical coaching practices might influence first-year teachers' receptivity to coaching and implementation of the content discussed, which has important implications for the practice of teacher coaching moving forward.

Conceptual Framework

In this section, I draw on the literature previously discussed to develop a conceptual framework for the professional development intervention used in this study. First, I explain the core constructs that guide my conceptual framework. Then, I incorporate literature previously cited to articulate a framework for why a professional development intervention comprised of choice and focus demonstrates promise for improving teachers' instruction.

Core Constructs of Conceptual Framework

My conceptual framework for this study, illustrated in Figure 2.1, depicts a particular professional development intervention and the underlying logic around why it might demonstrate

promise for improving classroom instruction. Before elaborating on the details of this framework, I begin by defining five main constructs.

Instruction. Drawing on the conceptual framework established by Cohen, Raudenbush, and Ball (2003), I operationalize instruction as the interaction of a teacher, students, and content within the classroom context. Moreover, this particular operationalization captures the multifaceted nature of classroom instruction, including teachers' pedagogical practices, teacher-student interactions, and student-content interactions, amongst others (Kraft et al., 2016). Additionally, incorporating a multidimensional conceptualization of instruction is important because the observation instrument used in this study, discussed in the third chapter, attempts to capture the different aspects of Cohen, Raudenbush, and Ball's (2003) conceptualization of instruction.

Coaching. Coaching develops specific knowledge and skills to improve teachers' instruction (Lofthouse, Leat, Towler, Hall, & Cumming, 2010) and increase student achievement (Desimone, 2009). Improved instruction is often viewed as the product of an instructional expert and teacher engaging in a classroom observation and related post-observation conference (Vasquez & Reppen, 2007) to examine, alter, and construct new knowledge (Sanford & Hopper, 2000). Moreover, Kraft et al. (2016) conceptualize the coaching process in the following way:

> "(a) *individualized* – coaching sessions are one-on-one; (b) *intensive* – coaches and teachers interact at least every couple of weeks; (c) *sustained* – teachers receive coaching over an extended period of time; (d) *context-specific* – teachers are coached on their practices within the context of their own classroom; and (e) *focused* – coaches work with teachers to engage in deliberate practice of specific skills." (Kraft et al, 2016, p. 8)

While Kraft et al. (2016) conceptualize coaching in a somewhat idealized fashion, their conceptualization has several similarities to the coaching model used in this study. In particular, coaching in the present study included one-to-one coaching conferences, occurred over an extended period of time, and intended to focus on the practice of specific skills within the context of teachers'

classrooms. The only difference from the idealized coaching process was its intensity. Rather than interacting at least every couple of weeks, teachers and coaches typically interacted bi-monthly. This conceptualization is consistent with prior literature on coaching and with the perspectives of leaders in the program with whom I partnered.

Figure 2.1: Coaching That Leads to Instructional Improvement
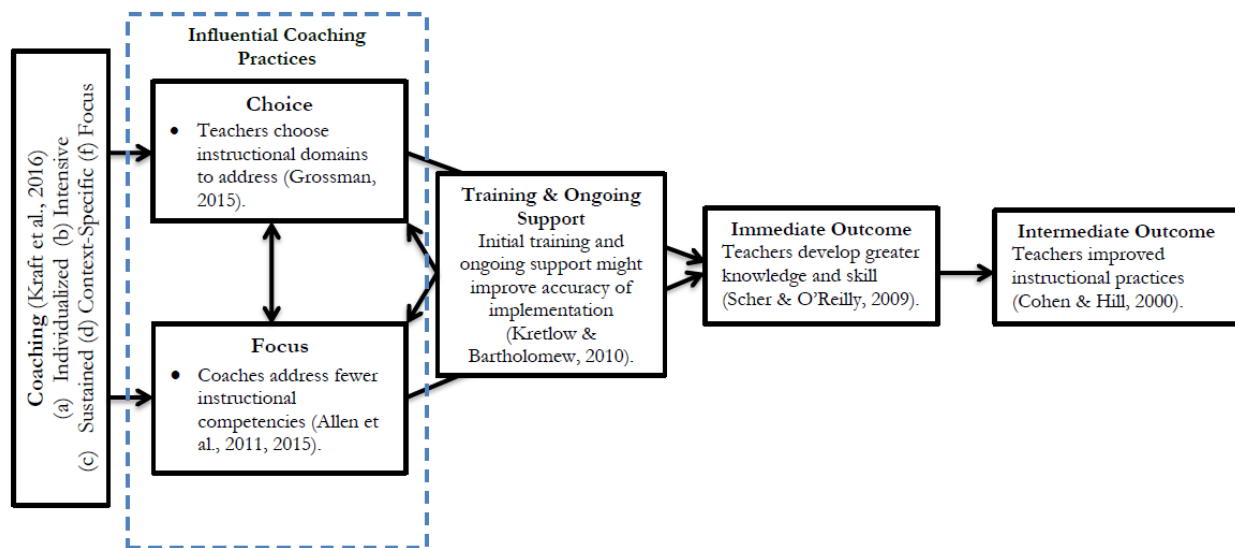
Choice. As conceptualized in this study, choice consists of teachers having control over the content they receive coaching on. Specifically, teachers choose a single dimension or component of an observational rubric they wish to receive coaching on. Therefore, choice initiates the process of teachers receiving coaching on a single competency of an observational rubric.

Moreover, I chose to include observational rubric competencies, as opposed to selecting a problem of practice, because prior research suggests a focus on competencies might yield a different, and possibly a better quality, type of coaching. Specifically, observational rubrics establish a shared vision of effective practice, thus allowing coaches and teachers to focus on practices or dimensions that make a difference for students (Stuhlman, Hamre, Downer, & Pianta, 2014). A shared vision of effective practice affords coaches the opportunity to focus on improvement in a targeted practice or

dimension that matters to instruction and achievement (Archer, Cantrell, Holtzman, Tocci, and Wood, 2016). In contrast, teachers selecting a problem of practice absent of an observational rubric might focus the coaching on practices that are not based on a conceptualization of effective practice.

Focus. In the context of this study, focus, which I also label as "focused coaching" at times, refers to coaches and first-year teachers addressing a single competency in a post-observation conference. This conceptualization is similar to Allen et al. (2011, 2015) articulation of narrowing focus in the MTP-S program where coaches chose a specific element on the CLASS-S rubric to address with each teacher. Similarly, all MATCH teacher coaches focusing on behavior management in every coaching session during the second year of Blazar and Kraft's (2014) study is another relevant example of what focus might look like in practice.

Influential Coaching Practices. Grossman et al.'s (2009) conceptualized pedagogy and professional practice as the "intellectual and technical activities" (p. 2059) a teacher educator employs to assist novices preparing for professional practice. Thus, this study draws on this conceptualization to define a coaching practice as any intellectual or technical activity a coach employs to prepare and improve a first-year teacher's professional practice. Moreover, drawing on Reinke et al. (2013), influential refers to any practice, as previously defined, that enhances teachers' engagement, participation, or attentiveness. Taken together, influential coaching practices refer to any intellectual or technical activity that increases teachers' engagement or participation in a post-observation conference.

A Model of Coaching That Improves Instruction

Prior literature suggests quality professional learning is influential in strengthening teachers' knowledge, skill, and instruction (Cohen & Hill, 2000; Scher & O'Reilly, 2009). Thus, in this section

I discuss why a particular coaching model featuring choice and focus will likely yield a promising coaching experience for beginning teachers. While I draw on literature previously discussed, this section moves beyond rehashing why choice and focus warrant inclusion to focusing more broadly on how the constituent parts of a particular coaching model interact to yield a promising learning experience teachers.

My conceptual framework, illustrated in Figure 2.1, represents how coaching that integrates choice and focus, when paired with certain influential coaching practices, and implemented with a high degree of fidelity yields certain immediate (change in teachers' knowledge and beliefs), intermediate (change in instruction), and long-term outcomes (changes in students' attitudes and beliefs). As it relates to Figure 2.1, influential practices are depicted by the blue-dash rectangle in Figure 2.1; however, since prior literature has not unearthed potential influential practices that might enhance teachers' receptivity to coaching, I purposely leave the blue-dashed rectangle blank, nor do I elaborate on potential practices below, to imply that this study attends to this unaddressed area. Additionally, training and ongoing support, which prior literature argues supports high levels of fidelity, are depicted in the middle black rectangle. Moreover, the arrows pointing back from the black rectangle to choice and focus imply what the *content* of the initial training and ongoing support could address. Below I explore the left hand side of Figure 2.1 – choice, focus, and initial training and ongoing support – to propose why this coaching model demonstrates promise for achieving intended outcomes. I also discuss *why* choice and focus must work in tandem to maximize promise.

Choice. In my previous review of relevant literature, three prominent reasons emerged across the literature indicating why *choice* demonstrates promise. First, *choice* provides teachers the autonomy to self-direct the content of a learning experience (e.g., Merriam, 2001). Second, *choice* allows teachers to actively participate in the analysis of their teaching and learning when selecting the

content to address (e.g., Garet et al., 2001). Third, *choice* allows teachers to leverage prior experience to guide current and future learning experiences. Specifically, teachers can draw on prior experience to select the appropriate content (e.g., Putnam & Borko, 2000) which, in turn, establishes a sense of *coherence* between the content and teachers' goals and experiences (e.g., Penuel et al., 2001).

Focus. Prior literature suggests two reasons why *focus* is likely a promising feature of coaching. First, *focus* provides the opportunity to allocate sufficient *time* to acquire new knowledge and skills (Desimone et al., 2002). Second, *focus* can provide opportunities for teachers to *engage problems of practice* that support their learning (Allen et al., 2011).

Working In Tandem. Although choice and focus individually demonstrate promise, the arrow connecting them in Figure 2.1 symbolizes my belief that they cannot occur in isolation of each other. For example, asking a teacher to choose several instructional competencies to discuss might increase her sense of empowerment and trust but will likely yield a conference that is broad in scope and absent of specific and actionable feedback. On the other hand, focusing coaching on a single competency without any input from the teacher might yield specific and actionable feedback but the teacher might feel less inclined to take that feedback up. Thus, choice and focus must work in tandem to maximize the potential impact of this intervention on teachers' instruction.

Initial Training & Ongoing Support. Prior research on the implementation of educational interventions suggests that initial trainings without any additional support are unlikely to maximize and sustain implementation fidelity (Kretlow, Cooke, & Wood, 2012). Initial trainings may increase a particular practice's frequency of use, but will not yield high and stable levels of implementation without additional support (DiGennaro, Martens, & Kleinmann, 2007; Kretlow, Wood, and Cooke, 2011). Moreover, training and support around implementing any new practice needs to account for the challenges encountered in an authentic environment (Elmore, 2006).

The literature suggests one way of improving intervention fidelity is by exposing participants to individualized follow-up support after initial training (Wenz-Gross & Upshurt, 2012) or coaching (Kretlow & Bartholomew, 2010; Stitcher, Lewis, Richter, Johnson, & Bradley, 2006). Therefore, the development and implementation of an educational intervention should include both initial training and some component of ongoing support for participants (Kretlow & Barthlomew, 2010; Wenz-Gross & Upshurt, 2012).

Moreover, prior research suggests improving and sustaining a high level of intervention fidelity is particularly important to achieving desired results. In their theoretical sequence showing how features of professional development influence certain outcomes, Scher & O'Reilly (2009) suggest professional development implemented with a high degree of fidelity will help facilitate change in teacher knowledge, attitude, and beliefs. Thus, prior research provides strong evidence that a professional development intervention needs to provide sufficient initial training and ongoing support to improve accuracy of implementation and sustain a high level of implementation. Given this, the arrows in Figure 2.1 stretching back from training and ongoing support to the intervention core components – choice and focus –represent this study's attempt to provide initial training and ongoing support in an attempt to ensure a high level of fidelity for these two components.

Conceptual Framework Summary

In this section, I elaborated on the conceptual framework that guides my study. This framework suggests that a particular coaching model including two specific features – choice and focus – working in tandem and implemented as intended have promise for enhancing teachers' knowledge, skill, and instruction. In the next chapter I discuss my methodology to determine whether the intervention demonstrates promise for achieving intended outcomes.

Chapter 3: Methodology

This chapter describes the methods used to collect data for this study and the analytic process used to understand the data associated with each research question. I begin this chapter by describing the setting and research design, including the randomization process and the intervention and control conditions. Then, I discuss the sample, including the sample of all field instructors, henceforth called coaches, and first year teachers in the program. Afterwards, I discuss each data source associated with my research questions and how it was collected. Finally, I describe my analytic strategy, including my process of developing measures associated with different research questions and the analyses I used to derive my results. This study asks the following:

1. Were coaches trained in the intervention more likely to offer teachers' choice and focused coaching as compared to coaches who received no training?
2. Compared to teachers whose coaches received no training, did teachers whose coaches received the training:
   a. Have better observation ratings?
   b. Report feeling more prepared?
   c. Report better quality coaching?
3. What coaching practices influence first-year teachers' receptivity to coaching and implementation of the coaching content? Why do these coaching practices matter?

Setting

This study took place during the 2015-2016 academic year and included coaches and teachers from a two-year (four semester) interim certification program (ICP) for alternatively certified teachers within a large public university in the Midwest. One hundred and fourteen enrolled first- and second-year teachers were concurrently participating in an alternative certification program (ACP), which required teachers to work full-time in an underserved urban K-12 school and make adequate progress in the ICP. This study included the 46 first-year teachers enrolled in the ICP at

the beginning of the 2015-2016 academic year. I elaborate why I included only first-year teachers in forthcoming paragraphs.

ICP Context

      Figure 3.1 summarizes the pre-service and in-service training and support first-year teachers received within the ICP context. For this particular study, pre-service refers to a five week period of time (e.g., July-June, 2015), where ICP teachers learn to teach through coursework and student teaching, but are not legally responsible for students. In contrast, in-service refers to a four-semester period (e.g., Fall 2015-Winter 2017) where ICP teachers are instructionally and legally responsible for students' education. I discuss each dimension of pre-service and in-service training below.

Figure 3.1: ICP Teacher Training & Support
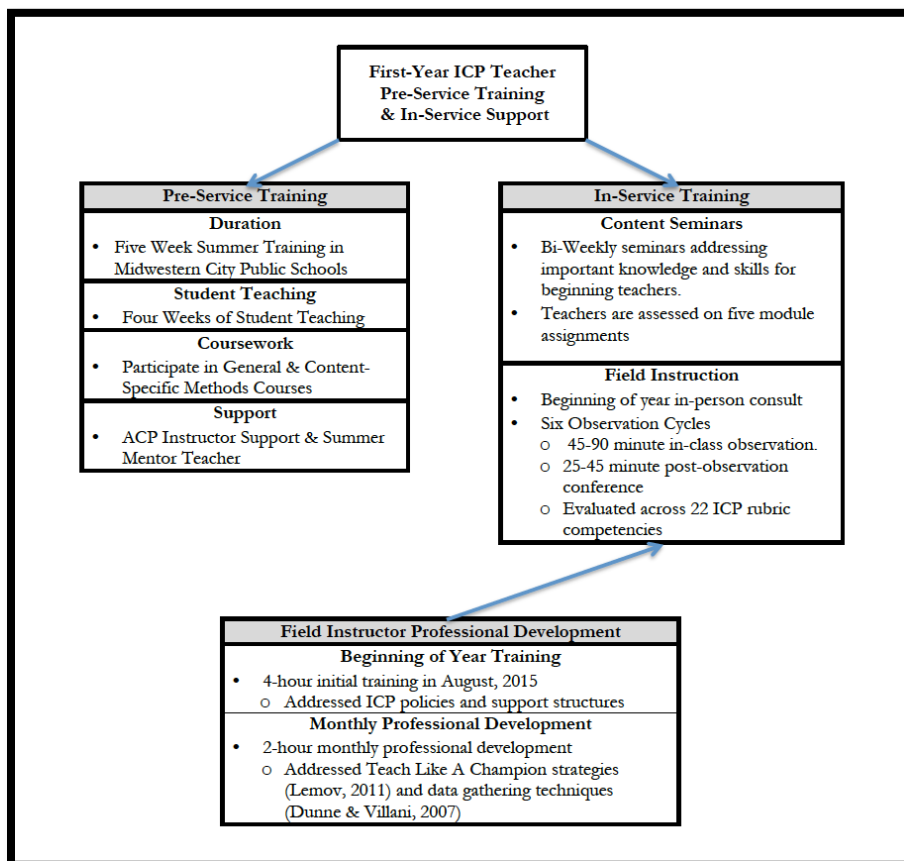
Pre-Service Training

Prior to enrolling in the ICP, each first-year teacher participated in the same five-week summer training program administered by the ACP. Training included four weeks of student teaching, supervision from ACP alumni and local mentor teachers, general content methods courses, and varying amounts of content-specific methods instruction.

In-Service Training

The ICP included two core programmatic components: content seminars and field instruction. Content seminars covered the knowledge and skills the ICP suspected beginning teachers needed for success in a particular discipline. Field instruction, henceforth called coaching, provided beginning teachers with ongoing classroom support from experienced content-based educators. I elaborate on each component below. I conclude this section a description of the ICP program team overseeing the content seminars and coaching.

Content Seminars. Content-specific instructors[2] facilitated bi-weekly content seminars, each lasting for three hours and occurring following the school day. The seminar curriculum covered five modules focusing on important knowledge and skills for beginning teachers. Module one attended to beginning teachers' understanding of best practices for teaching and learning the discipline. In module two, beginning teachers focused on planning for engaging and effective instruction. The third module addressed strategies for delivering effective content instruction. Module four covered motivating beginning teachers' students to learn the discipline. Lastly, beginning teachers explored the knowledge and skills needed to teach all children in module five, with a particular emphasis on

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[2] Five of the twelve seminar instructors also serve as coaches. Seminar instructors not serving as coaches are full-time teachers or administrators.

teaching students with special needs and limited English proficiency. Each module lasted between three and five class sessions. Following each module, teachers uploaded an assignment to an online portfolio that stored teachers' seminar and field instruction work products. Seminar instructors reviewed teachers' work products, gave it a grade (e.g., A, B, C, etc.) and provided written feedback as needed.

Coaching. Table 3.1 provides an overview of the coaching structure during the 2015-2016 school year. First-year teachers enrolled in the university program participated in six observation cycles with ICP-hired coaches. Each observation cycle included an in-class observation and an in-person or phone post-observation conference. Additionally, coaches scored teachers' performance across 22 competencies on the ICP rubric. Refer to Appendix A for a copy of the ICP rubric. Coaches also provided one in-person consultation at the beginning of the year to build rapport before the first observation. Finally, coaches participated in ongoing ICP professional development. I elaborate on each component below.

Table 3.1: Overview of 2015-2016 Field Instruction Structure

Aug. 17 or Aug. 28	Sept. 8 – Sept. 25	Sept. 26 – Oct. 16	Oct. 17 – Nov. 13	Nov. 14 – Dec. 18	Dec. 19 – Jan. 15	Jan. 16 – Feb. 12	Feb. 13 – Mar. 18	Mar. 19 – Apr. 22
Beginning of Year Training	In-Person Consult	Eval. Visit #1	Eval. Visit #2	Eval. Visit #3	■	Eval. Visit #4	Eval. Visit #5	Eval. Visit #6
		Program PD	Program PD	Survey Analysis	Program PD	■	Program PD	Program PD

Classroom Observations. The ICP required coaches to conduct six class classroom observations during the academic year. Coaches were instructed to observe a full-class period, typically ranging from 45 to 90 minutes, for each of the six observations. Secondary coaches typically observed a specific class or period (e.g., Period 1, Algebra I), whereas elementary coaches would observe a particular subject area or block of time (e.g., Literacy, Math enrichment). Oftentimes teachers

selected the time period or subject block they wished the coach to observe. The ICP did not require coaches to operate in a certain manner during the observation. However, in my observations of seven ICP coaches, I saw them take field notes on teacher and student actions and collect evidence around the 22 competencies on the ICP rubric. Additionally, some coaches took notes using a Word document on their computer while others hand scripted notes.

Post-Observation Conferences. Post-observation conferences typically lasted between 25 and 45 minutes and occurred in-person after the observation or over the phone depending on coaches' and teachers' schedules. The ICP required post-observation conferences to occur within 24-hours of an observation. The ICP requested that coaches ask teachers to reflect on their lesson, offer opinions around teachers' strengths and weaknesses, and suggest how they might get scored across all competencies. However, in my observations of ICP post-observation conferences unrelated to this study, I observed variation in how the conference was structured and facilitated. For example, some field instructors provided a running record of what they observed during the observation, whereas other field instructors prompted teachers to reflect on the observed lesson and consider improvements they might make moving forward.

Teacher Evaluation. An ICP administrator submitted all six teachers' evaluations rubrics to coaches' online portfolio accounts before the start of the year. Coaches evaluated teachers' performance using the evaluation rubric (see Appendix A) that corresponded to the visit number (e.g., rubric one for observation one). The content of the rubric was the same for each visit. Teachers' evaluation included two core components: an evaluation score and written feedback. Coaches scored teachers from 0 to 3 on 20 of 22-rubric competencies. Two of the competencies (7A: Communication with Families and Community and 8C: Professional Development) were optional to score because the ICP suspected coaches might not observe them during an observation.

The ICP averaged the 20 competencies to calculate an overall score for each observation. Additionally, the ICP required coaches to provide written feedback on three (minimum) to six (maximum) rubric competencies. The program provided coaches with a handout of exemplar feedback, but did not require feedback to be structured in a specific manner. Moreover, coaches did not receive much training, outside of the handouts, on how to draft effective written feedback. Finally, the ICP did not provide any requirements for which competencies coaches' feedback should address.

Teacher Consults. The program expected coaches to complete one in-person consult outside of the six observations. Coaches conducted the in-person consult at teachers' orientation in early September. The in-person consult was intended to build rapport between teachers and coaches before the first observation. Coaches met with each of the teachers assigned to them for about fifteen minutes to introduce themselves and discuss any successes or challenges the teacher previously experienced in the classroom.

Coach Professional Development. The ICP required coaches to attend a 4-hour beginning of the year orientation and a monthly professional development session. The coach coordinator planned and designed each professional development. ICP professional development typically addressed one of two topics. Either coaches learned about Teach Like A Champion (Lemov, 2011) strategies and discussed how they might use them when conferencing with teachers or coaches learned about different data gathering techniques (Dunne & Villani, 2007) and how they might use them during observations. Finally, the professional development paid less attention to *how* coaches might engage teachers in the conference process or *how* to best complete teachers

The ICP program team overseeing the entire program comprised seven individuals. The team included a program director, assistant program director, coach coordinator, a teacher support coordinator, and two graduate student research assistants. The team collectively constructed the ICP curriculum, professional development for coaches and seminar instructors, and oversaw the daily operation of the program. In addition to serving as the primary researcher on this study, I also served on the program team as a graduate student research assistant (GSRA) overseeing the online portfolio and seminar curriculum. This allowed me to contribute to the design of the survey, including the questions on coaching experiences and preparedness to teach across domains of practice. I discuss the potential problems of my dual role in the limitations section.

Study Context

The Institute of Education Sciences (IES) uses a five goal structure – exploration, development and innovation, efficacy and replication, effectiveness, and measurement – to classify where a study falls along a continuum of research and what expected outcomes *should* be. The present study falls within the "Development and Innovation" goal, otherwise known as goal two, because I *developed* an intervention, implemented in an *authentic* education setting, and collected pilot data examining *potential* for impact on particular outcomes (IES, 2016). Moreover, IES expects a development and innovation study to yield at least three outcomes (Buckley & Doolittle, 2013). First, a study must provide evidence the intervention can be implemented with fidelity in an authentic education setting. Specifically, IES expects projects to assess whether the intervention is delivered as intended using at least one measure of intervention fidelity. Second, developmental studies must collect pilot regarding the intervention's promise for generating intended outcomes.

Since IES does not expect development and innovation studies to yield statistically significant results, promise is classified as whether the intervention changes targeted outcomes in the appropriate *direction* (Buckley & Doolittle, 2013). Moreover, development and innovation studies typically employ underpowered efficacy studies in order to "provide unbiased estimates of practical consequence which can stand as evidence of promise while not statistically significant" (IES, 2016, p. 50). Third, goal two studies should produce a fully developed version of the proposed intervention. IES expects a fully developed intervention at the conclusion of this phase might result in an Efficacy and Replication study to test whether the intervention *actually* improved participant outcomes.

Finally, situating this study within the context of an IES goal two study serves two purposes. First, presenting IES expectations for a developmental study provides rationale for the research design, sample, and methodological approaches discussed in this chapter. Second, it helps frame *how* I should interpret and discuss my results. I now turn to a discussion of how I designed this development study and the methodological approaches I employed.

Research Design

This study, illustrated in Figure 3.2, is a randomized control trial (RCT). The ICP hired coaches to support a specific content area. I used administrative data provided by the ICP to create content groups, henceforth called strata, and placed each field instructor in the content specific strata they supported. I randomly assigned coaches within each strata to either the intervention or control condition.

School sites hired first year teachers to teach a specific content area. I assigned teachers to corresponding strata using the same process discussed above. I then randomly selected teachers to

each condition and assigned them to a coach in the same strata and condition. I describe the randomization process in more detail in a forthcoming section.

As previously indicated in Figure 3.1, all teachers and coaches participated in six observation cycles. Intervention and control conditions shared the same characteristics except for the third and fourth observation cycles. During these two cycles, depicted as the purple and orange rectangles in Figure 3.2, I trained intervention coaches to review teachers' first and second evaluation scores to determine four rubric competencies each teacher needed to demonstrate improve in. I then trained intervention coaches to provide teachers with the four competencies each teacher could improve in and allow each teacher to choose one of the competencies to address. Additionally, I trained intervention coaches to coach and provide feedback around the selected competency for the third and fourth observation. Coaches in the control conditions continued observing and coaching around all rubric competencies. I then tested whether intervention teachers received better observation at the end of year (observation cycles #5 & #6) after controlling for beginning of year scores (observation cycles #1 & #2) and other important teacher characteristics. I elaborate on each component of my research design below.

Randomization

Coaches. All coaches (n=22) during the 2015-2016 academic year supported the content they had most experience teaching. For example, a coach with 20 years of teaching experience consisting of 14 years of social studies and 6 years of mathematics teaching supported social studies. I first grouped all coaches into the six strata (e.g., strata) they supported. I then sorted coaches alphabetically within each strata, assigned a number in chronological order, and randomly assigned to either intervention or control conditions using a random number generator. I assigned the first

coach selected within each strata to the control condition and the second coach to the intervention condition. To ensure equal distribution of coaches across conditions, I repeated this process until I assigned every coach within each strata to a condition. I assigned 10 coaches to the intervention condition and 12 coaches to the control condition.

Figure 3.2: Research Design
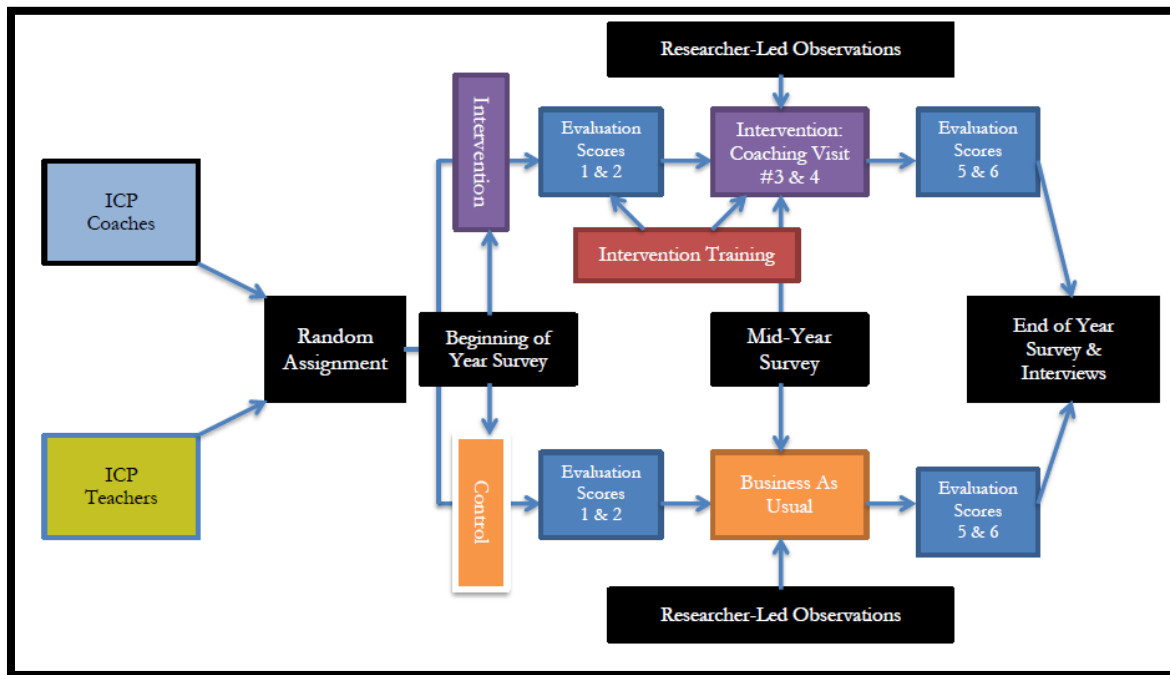
Teachers. A district or school hired ICP first-year teachers (n=46) to a subject area based on the content area they pursued for their interim certification. I employed the same process for grouping and assigning teachers previously discussed in the coach section. For each teacher placed in the intervention or control condition, I randomly assigned them to a coach in the same strata and condition. For example, I assigned Teacher A who taught English/ELA and selected for the intervention to Coach A hired to support English/ELA and selected for the intervention. I repeated this process until I assigned every teacher to a coach in the same strata and condition. I assigned each coach between one to three teachers depending on the number of teachers in each strata. Some

coaches only supported one teacher because they indicated to the ICP a preference to support a single first-year teacher. While six coaches supported three teachers, the majority of coaches supported two first year teachers. I assigned 25 and 21 teachers to the intervention and control conditions respectively.

Intervention and Control Conditions

Treatment Contrast. Weiss, Bloom, and Brock (2014) argue a treatment contrast – difference in services experienced under the intervention and counterfactual condition – is necessary for a program effect to occur. Without a treatment contrast, you cannot detect an intervention effect because program participants would have the same experience as they would if assigned to the existing services. Given the importance of the treatment contrast, it is important to identify the contrast between conditions as *comprehensively* as possible in order to explain what might cause program effects. A treatment contrast consists of four dimensions: content, quantity, quality, and conveyance. Content refers to the features or components of a program, whereas quantity refers to the prevalence, intensity, and duration of services received. Finally, quality refers to how well the program is received, while conveyance is how, when, and by whom the service is provided (Weiss, Bloom, & Brock, 2014).

The treatment contrast in this particular study is subtle, but important. Specifically, the *content* of coaching for teachers' third and fourth observation cycles is the *only* dimension of the treatment contrast designed to be different across conditions. This subtle treatment contrast stands in stark contrast to prior experimental studies examining the effects of coaching versus no coaching (Allen et al., 2011; Blazar & Kraft, 2015). In these prior studies, the treatment contrast had differences across all four dimensions because the counterfactual received no existing services. For instance, providing

coaching immediately changes participants' experience in a program when the control condition is absent of the same service. The strength of the treatment contrast, as I discuss in the fourth and fifth chapters, is important to consider when interpreting the findings of this study within the context of prior literature. I now turn to a discussion of the single dimension of the treatment contrast different across conditions: content.

Content Differences. All coaches participated in the same beginning of the year training and completed the same program-administered beginning-of-year (BOY) survey. The BOY survey collected coaches' demographic information, including years of teaching experience, years of coaching experience, years of experience in different school types (public, charter, private, etc.), years with the ICP, highest degree attained, and whether coaches had interest in supporting first-year teachers. Additionally, all coaches followed the same guidelines for observations one, two, five, and six. As described above, these guidelines included observing a full class period, conducting a post-observation conference, evaluating teacher performance on all ICP rubric competencies, providing a minimum of three and maximum of six comments, and attending program delivered professional development.

However, the services provided across conditions (content), as summarized in Table 3.2, differed across seven components for visits three and four: professional development, competency focus, teacher evaluation, pre-observation communication, observation process, conference process, and post-conference process. Below I describe each of these components comprising the treatment contrast.

Professional Development. All coaches received the same amount of professional development – six 120-minute sessions – on the same monthly schedule. However, the intervention group received a different kind of training for two of their six professional development sessions. Intervention

coaches attended a separate professional development in November and January. The November professional development occurred in person and was held on the same day and time as the control professional development. Eight of the ten (80 percent) intervention coaches attended the November professional development. I provided a virtual professional development covering the same content for one of the two-intervention coaches who was unable to attend the in-person professional development. The one remaining coach did not reply to any communication concerning attending a follow-up professional development. The ICP held all January professional development virtually due to budgetary constraints. The virtual intervention professional development occurred on the same day and time as the ICP virtual professional development for control coaches. Eight of the ten (80 percent) intervention coaches attended the January professional development. I also discussed the contents of the professional development with the one of the two-intervention coaches who did not attend the virtual professional development. The same coach who did not attend the November professional development was also absent from the January professional development. I removed the coach who missed both professional development and the teachers she supported from the sample. I further discuss this case in forthcoming pages.

I then designed the second intervention professional development to assist coaches in strengthening their implementation of the intervention's core components: choice and focus. I intentionally focused on implementation given the call from prior research to focus additional trainings or support on the intervention's core component as a means of strengthening implementation (Kretlow & Bartholomew, 2010). The second intervention professional development addressed coaches' experiences implementing the intervention thus far, making connections between the third and fourth observation, and coaches' next steps after the intervention concluded. Specifically, I asked coaches to discuss with a partner their general thoughts and

impressions of focusing coaching around a single competency for each teacher. Afterwards, I had each pair synthesize their discussion and share with the group. Teacher pairs commonly referenced how removing the evaluation component afforded them the opportunity to discuss in more detail how to address a particular competency as opposed to having to address a multitude of competencies. Next, I prompted coaches to review a copy of each first-year teacher's written feedback from the third observation. Afterwards, I tasked coaches to consider, based on the written feedback, what they might look for during the fourth observation to continue narrowing the focus of the conference. Coaches then reengaged with their initial partner to discuss insights gleaned from analyzing each teacher's written feedback. Finally, I provided post-intervention next steps to coaches at the completion of the professional development. Appendix C provides a detailed session design for the second intervention professional development.

The two intervention professional developments differed from the control professional developments in at least three meaningful ways. First, the content of the respective professional development differed. During the first control professional development, coaches read about different Teach Like A Champion (Lemov, 2011) strategies and discussed how they might incorporate them into their practice. The first intervention professional development did not consider or discuss Teach Like A Champion strategies or their applicability in post-observation conferences. In the next control professional development, coaches learned about different data gathering strategies (Dunne & Villani, 2007) and reflected on strategies they might use with teachers. However, in the second control professional development, coaches did not discuss how these data gathering techniques might apply to different rubric competencies. In contrast, the intervention professional development allocated considerable time to discussing how to collect evidence around a single competency. For example, intervention coaches in the first professional development

discussed how they might collect evidence and coach around behavior management (e.g.,

Competency 2A). Additionally, the intervention professional development did not discuss any of the

data gathering strategies discussed in the control professional development.

Table 3.2: Intervention & Control Conditions

ICP Component		Intervention Condition	Control Condition
Professional Development	Professional Development #1	• 120-Minute In-Person PD • Overview of Intervention. • Identified four competencies each teacher struggled with. • Discussed how to observe and coach teachers around a single competency.	• 120-Minute In-Person PD • Focused on Teach Like A Champion (Lemov, 2011) strategies and how to incorporate into conference process.
	Professional Development #2	• 120-Minute Virtual PD • Reflected on experiences thus far with intervention. • Reviewed written feedback provided to each teacher. • Identified what they might look for in the fourth observation for each teacher.	• 120-Minute Virtual PD • Focused on data gathering strategies (Dunne & Villani, 2007) and how to incorporate into conference process.
Competency Focus		• Focused on one ICP rubric competency each teacher chose.	• Focused on 20 of 22 ICP rubric competencies.
Teacher Evaluation		• Coaches withheld evaluation scores for Visits #3 & #4	• Evaluated teachers on 20 of 22 ICP rubric competencies for Visits 3 & #4
Pre-Observation Communication		• Coaches provided list of four competencies to potentially focus on. • Teachers chose one of the four competencies to address. • Determine date and time of observation and conference.	• Determine date and time of observation and conference.
Observation Process		• Collect evidence on the competency the teacher chose.	• No requirements around what to collect evidence or focus on.
Conference Process		• Focus on single competency teacher chose. • No requirements around how to facilitate conference.	• No requirements around what to focus on. • No requirements around how to facilitate conference.
Post-Conference Process		• Provide written feedback for the competency each teacher chose.	• Provide written feedback for 3 to 6 competencies.

Second, neither control professional development reviewed or analyzed any evidence from previous observations to consider how they might support teachers in future observations. In both intervention professional developments, coaches used teachers' observation scores and written feedback to inform their practice. Specifically, intervention coaches analyzed teachers' first and second observation scores to identify four potential competencies to address with each teacher. Additionally, intervention coaches reviewed teachers' written feedback to consider what evidence they might collect in the fourth observation.

Finally, the facilitator for the control professional development did not incorporate research on professional development into the session design. In contrast, the intervention professional development's mode of delivery included three of Desimone's (2009) five components of effective professional development: active learning, duration, and collective participation. In particular, intervention coaches analyzed teachers' observation scores and reviewed written feedback (active participation), had ample time to discuss how teachers might observe and coach around a single competency (duration), and engaged in learning with other members of the intervention condition (collective participation).

Competency Focus. As described above, each intervention teacher chose one of four competencies to receive coaching on across the third and fourth observation cycles. Table 3.3 indicates the distribution of rubric competencies intervention teachers chose prior to the third observation. Approximately 36 percent of intervention teachers chose to address behavior management (Competency 2A). The remaining 64 percent of teachers were somewhat evenly distributed amongst nine other competencies selected.

Control coaches continued to focus their observations, post-observation conferences, evaluative scores, and written feedback on 20 of the 22 rubric competencies. The program left it to the discretion of each control coach to identify the rubric competencies they wanted to discuss with each teacher. Therefore, the competencies addressed in the third and fourth post-observation conferences and affiliated written feedback varied by teacher and coach.

Table 3.3: Distribution of Selected Rubric Competencies*

Competency	Description	# of Teachers	% of Group
1C	Preparation To Teach	1	0.045
1D	Lesson Structure	3	0.136
2A	Behavior Management	8	0.364
2B	Physical Space	1	0.045
2C	Norms, Routines, Procedures	1	0.045
2E	Student Engagement	1	0.045
3A	Positive Interpersonal Relationships	1	0.045
5A	Modified Instruction	1	0.045
5B	Scaffolded Instruction	2	0.091
6A	Multiple Forms of Assessment	3	0.136
*22 of the 25 teachers randomized to the intervention condition selected a competency to focus on. The three teachers who did not select a competency were assigned to the one intervention instructor who did not show up to the first and second intervention professional development. I discuss this more in my attrition analysis below.			

Teacher Evaluation. Intervention coaches withheld evaluating teachers during the third and fourth observations. I made this decision based on prior research suggesting the need to consider the procedures, methods, and activities that enable implementation of the intervention's core components, otherwise referred to as *implementation fidelity* (Hulleman, Rimm-Kaufman, & Arby, 2013, Mendive et al., 2015). I suspected if intervention coaches still evaluated teachers, they would not be able to devote the majority of time, evidence collection, and focus around a single competency. Rather, intervention coaches might feel the need to collect evidence around multiple competencies in order to accurately evaluate teachers' performance. Moreover, intervention coaches might feel the need to address multiple competencies in the post-observation conferences to justify

how they might evaluate teachers. Thus, I intentionally removed the evaluation component because I assumed this enabled coaches to focus on a single competency, both in the observation and post-observation conference. Control coaches continued to provide first-year teachers with evaluation scores for the third and fourth observations. Thus, they provided teachers with a score of zero to three across 20 of the 22 rubric competencies.

Pre-Observation Communication. Intervention coaches allowed first-year teachers to choose one of four competencies to focus on for the third and fourth observation. See Appendix D for the sample email I provided intervention coaches during the first intervention professional development. In addition, coaches determined the date and time of the observation and post-observation conference in the same email provided in Appendix D.

The ICP required control coaches to communicate in advance with teachers about the day and time the observation and post-observation conference would occur. However, the ICP did not have any specific requirements for how control coaches should communicate over email.

Observation Process. I instructed intervention coaches to only collect evidence on the rubric competency each teacher chose. Given that prior research suggests focused coaching and feedback can benefit teacher practice (Grossman, 2015), I suspected focusing attention and evidence collection around one competency might assist intervention coaches in developing more in-depth hypotheses about what and how to improve instruction.

In contrast, the control coaches did not have any requirements for how they should observe teachers' lessons. Therefore, control coaches focused on as few or as many competencies deemed necessary. However, based on observations of control teachers, for purposes unrelated to the present study, I suspect control coaches might try and collect evidence on as many competencies as possible since they evaluated teachers on 20 of the 22 competencies.

Conference Process. I informed intervention coaches to focus the majority of the post-observation conference around the competency each teacher chose. Specifically, intervention coaches should provide verbal feedback (e.g., evidence collected, opinion of performance) and suggestions for improvement around a single competency. How the intervention coaches facilitated the conference, however, was left to their discretion.

The ICP did not have any requirements for what coaches should discuss or how they should facilitate a conference. A prior study of the same ICP revealed much variation in the competencies discussed and the conversational moves used to facilitate the conference (McQueen, 2015). The typical conference included teachers reflecting on the lesson, discussing what went well, what could improve, and how to improve in the areas discussed.

Post-Observation Process. Given that intervention coaches focused the observation and conference on a single competency, I also instructed intervention coaches to provide written feedback, an ICP requirement, on the single competency each teacher chose. The content of the feedback, such as communicating performance or providing suggestions – was left to the discretion of each coach. In contrast, the ICP instructed control coaches to provide written feedback on a minimum of three rubric competencies. The coach also had discretion over the content of the feedback. Both intervention and control teachers uploaded written feedback to teachers' online portfolio.

Sample

Coach Characteristics

The ICP hired 25 coaches during the 2015-2016 school year. The program surveyed coaches during the summer of 2015 to determine assignment preferences. The survey gauged coaches'

willingness to work with teachers previously assigned to their caseload, willingness to work with low-performing second and third-year teachers, and willingness to work with first-year teachers. Three coaches indicated they did not want first-year teachers assigned to their caseloads. Thus, the analytic sample initially included 22 coaches who indicated a willingness to work with first-year teachers. I randomly assigned 10 coaches to the intervention condition and 12 coaches to the control condition.

Table 3.4: Coach Characteristics At Randomization

Variables	Intervention	Control	Difference	p-value on Difference
Education Experience	28.10	27.50	0.6	0.92
Coaching Experience	12.70	13.00	-0.3	0.95
ICP Experience	2.30	2.83	-0.53	0.22
Female	0.90	0.83	0.07	0.67
Male	0.10	0.17	-0.07	0.67
African-American	0.60	0.58	0.02	0.94
White	0.40	0.42	-0.02	0.94
Bachelors Degree	0.10	0.00	0.1	0.26
Masters Degree	0.40	0.42	-0.02	0.94
Specialist Certificate	0.40	0.50	-0.1	0.65
PhD	0.10	0.08	0.02	0.85
K-Gr. 5	0.30	0.33	-0.03	0.87
Gr. 6–8	0.30	0.17	0.13	0.48
Gr. 9-12	0.30	0.42	-0.12	0.59
K-Gr. 8	0.10	0.08	0.02	0.89
Elementary	0.40	0.33	0.07	0.76
English/ELA	0.30	0.25	0.05	0.80
Mathematics	0.10	0.25	-0.15	0.39
Science	0.10	0.08	0.02	0.89
Public School	1.00	0.83	0.17	0.19
Charter School	0.00	0.08	-0.08	0.37
Non-ICP School	0.30	0.17	0.13	0.48
ICP School Experience	0.70	0.83	-0.13	0.48
F-statistic from Joint Test				0.80
p-value				0.67
n (coaches)	10	12		

Note: A balance check was conducted to ensure no significant differences existed across conditions. I regressed the intervention variable on each coach covariate. Analyses for coach characteristics yielded no statistically significant differences at the 0.05-level across conditions. Results (See Appendix E) suggest random assignment of coaches was successful in yielding comparable groups.

In Table 3.4, I present descriptive statistics on participating coaches. On average, coaches had approximately 27 years of education experience, including almost 13 years of coaching experience. Eighty-five percent were female, 58-percent were Afircan-American, and 42-percent were white. Eighty-seven percent held either a Master's Degree or Specialist Certificate. Ninety-two percent taught in public schools, with over three-quarters having taught in similar schools ICP teachers worked in.

I regressed the intervention variable on each coach covariate and included covariates for the strata (or block fixed effects) to check for balance across groups. I included covariates for the strata (e.g., content area) because I randomized coaches within the different strata blocks. Analyses yielded no statistically significant differences at the 0.05-level across the 24 covariates measured (See Appendix E). Given how no statistically significant differences existed, I concluded randomization produced comparable groups of coaches across conditions. Moreover, a joint-test of significance fails to reject the null hypothesis that coach characteristics do not differ between treatment and control groups (*F=0.80*, *p=*0.67).

Teacher Characteristics

Forty-six first-year teachers began the year enrolled in the ICP and eligible to participate in my study. I assigned 25 teachers to 10 intervention coaches at the beginning of the year. In contrast, I assigned 20 teachers to 12 control coaches. Table 3.5 provides basic descriptive statistics for teachers in the full sample, the intervention condition, and the control condition.

Of the 46 randomly assigned teachers, approximately two-thirds were female, 57 percent white, and 37 percent were African-American. Approximately 50 percent taught elementary, and 65 percent worked in charter schools. Fifty-five percent did not take any education courses in college,

and 63 percent had no teaching experience prior to pre-service training. Lastly, over 70 percent wanted to teach between one and five years, while approximately 50 percent indicated wanting to remain in education for over a decade, likely outside of classroom teaching.

I also regressed the intervention variable on each teacher covariate and included covariates for the strata (or block fixed effects) to check for balance across groups. Analyses yielded one statistically significant difference at the 0.05-level across 43 covariates measured (See Appendix F for complete results) - significantly more likely teachers in the control group had taken no undergraduate education courses (e.g., Ed. Cred.: None, p<0.05). Consequently, I controlled for having taken no undergraduate education courses in the models comparing end of year evaluation scores, amongst other covariates. Moreover, a joint-test of significance fails to reject the null hypothesis that teacher characteristics do not differ between treatment and control groups (*F=0.87*, *p*=0.63). Finally, randomization literature (What Works Clearninghouse, 2008) suggests having less than five-percent of statistically significant variables produces comparable groups. Thus, I concluded randomization yieled comparable groups across conditions.

Table 3.5: Teacher Characteristics At Randomization

Variables	Intervention	Control	Difference	p-value on Difference
Age	24	23.90	0.1	0.94
Visit 1 Eval. Score	1.30	1.45	-0.15	0.30
Visit 2 Eval. Score	1.54	1.62	-0.08	0.56
BOY Eval. Score	1.42	1.53	-0.11	0.40
Female	0.64	0.71	-0.07	0.60
Male	0.36	0.29	0.07	0.60
Asian	0.04	0.05	-0.01	0.90
African-American	0.36	0.38	-0.02	0.89
White	0.56	0.57	-0.01	0.94
K-Gr. 5	0.48	0.48	0	0.98
Gr. 6-8	0.20	0.24	-0.04	0.76
Gr. 9-12	0.32	0.29	0.03	0.81
Elementary	0.48	0.48	0	0.98
English/ELA	0.16	0.14	0.02	0.88
Math	0.12	0.14	-0.02	0.82
Science	0.12	0.19	-0.07	0.52
Social Studies	0.08	0.00	0.08	0.19
World Languages	0.04	0.05	-0.01	0.90
Charter	0.72	0.57	0.15	0.30
State Run School	0.20	0.24	-0.04	0.76
Public School	0.08	0.19	-0.11	0.28
Ed. Cred.: Non-Resp.	0.04	0.00	0.04	0.37
Ed. Cred.: None	0.40	0.71	-0.31	0.03*
Ed. Cred.: 1-3	0.20	0.05	0.15	0.13
Ed. Cred.: 4-6	0.04	0.00	0.04	0.36
Ed. Cred.: 7-9	0.00	0.10	-0.1	0.12
Ed. Cred.: 10-12	0.04	0.00	0.04	0.37
Ed. Cred.: 13-15	0.04	0.00	0.04	0.37
Ed. Cred.: 16+	0.24	0.14	0.1	0.42
Prev. Teach Exp.: No	0.60	0.67	-0.07	0.65
Prev. Teach Exp.: Yes	0.40	0.33	0.07	0.65
Ed. Pers.: 1-2 Yrs.	0.12	0.19	-0.07	0.52
Ed. Pers.: 3-5 Yrs.	0.32	0.19	0.13	0.33
Ed. Pers.: 6-10 Yrs.	0.08	0.00	0.08	0.19
Ed. Pers.: 11+ Yrs.	0.48	0.62	-0.14	0.36
Tch Pers.: 0 Yrs.	0.16	0.19	-0.03	0.79
Tch. Pers.: 1-2 Yrs.	0.24	0.19	0.05	0.69
Tch. Pers.: 3-5 Yrs.	0.32	0.38	-0.06	0.67
Tch. Pers.: 6-10 Yrs.	0.16	0.05	0.11	0.23
Tch Pers.: 11+ Yrs.	0.12	0.19	-0.07	0.52
F-statistic from Joint Test				0.87
p-value				0.63
n (teachers)	25	21		

School Characteristics

Table 3.6 summarizes descriptive statistics for ICP teachers' schools (n=27). I averaged schools characteristics at the condition level. Across schools, the majority of students were Black (76 percent), Hispanic (14 percent) or White (9 percent) and eligible for free or reduced price lunch (82 percent). 10 percent of students received Special Education (SPED) services while 15 percent were classified as limited English proficient (LEP). The majority of teachers were either Black (45 percent) or White (45 percent). Additionally, most teachers were female (72 percent) and had evaluation ratings of either highly effective of effective (74 percent).

I also regressed the intervention indicator on each school covariate and included covariates for the strata (or block fixed effects) to check for balance across groups. Thus, this analysis yielded one statistically significant difference at the 0.05-level across 21 covariates measured (See Appendix G). Schools in the control condition had, on average, larger student enrollments[3] (p<0.01). Moreover, a joint-test of significance fails to reject the null hypothesis that school characteristics do not differ between treatment and control groups (*F=2.14*, *p*=0.11). Since less than 5-percent of school characteristics were statistically significantly different, I concluded that randomization was successful (What Works Clearinghouse, 2008).

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[3] I intended to control for enrollment in the models I ran with end of year evaluation scores amongst other covariates. However, but due to multicollinearity issues, I dropped enrollment from my main models. I discuss further in my discussion of measures.

Table 3.6: School Characteristics At Randomization

Variables	Intervention	Control	Difference	*p*-value on Difference
Enrollment	517.8	858.9	-341.1	0.01**
% Black Students	0.67	0.77	-0.1	0.35
% Hispanic Students	0.19	0.11	0.08	0.33
% White Students	0.14	0.12	0.02	0.73
% Other Students	0.01	0.01	0	0.98
% Male Students	0.50	0.50	0	0.81
% Female Students	0.50	0.50	0	0.81
% Economic Disadvantaged	0.87	0.80	0.07	0.07~
% LEP	0.20	0.14	0.06	0.44
% SPED	0.09	0.09	0	0.71
% Attendance	0.88	0.89	-0.01	0.68
% Black Teachers	0.32	0.44	-0.12	0.15
% Hispanic Teachers	0.03	0.02	0.01	0.21
% White Teachers	0.59	0.49	0.1	0.23
% Other Teachers	0.05	0.05	0	0.96
% Male Teachers	0.26	0.28	-0.02	0.37
% Female Teachers	0.74	0.72	0.02	0.38
F-statistic from Joint Test				2.14
p-value				0.11
n(teachers)	25	21		

Participant Attrition

The primary concern with participant attrition pertains to bias. If the type of treatment participants leaving the study are steadily different than the control participants leaving in a manner related to the outcomes of interest, then results will be biased such that differences in the outcomes cannot be attributed *solely* to the intervention (What Works Clearinghouse, 2015) Thus, What Works Clearinghouse (2015) recommends examining two kinds of attrition – overall and differential – to determine if the number of participants leaving a study limits bias. Specifically, WWC suggests examining the attrition for all participants (overall attrition) and between conditions (differential attrition) to determine if the combination of overall and differential attrition infers bias. Additionally, WWC uses two attrition standards – conservative or liberal – to determine if the combination of

overall and differential attrition is considered "low" or "high". For this study, I employed

conservative standards because I suspected attrition is likely related to the intervention (What Works

Clearinghouse, 2015). For example, a teacher receiving poor quality coaching might feel less

supported and decide to resign from her teaching position as a result. A study with low attrition is

expected to have less bias and receives WWC's highest rating of *Meets WWC Group Design Standards*

Without Reservations; in contrast, a study with high attrition does not receive the highest rating due to

the threat of possible bias and must show that after attrition, remaining participants across

conditions are similar on demographic characteristics at baseline. A study with high attrition, but

equivalent groups in the analytic sample receives a rating of *Meet WWC Group Design Standards with*

Reservations.

Coach Attrition

Table 3.7 displays the total number of coaches and teachers across conditions at different

points during 2015-2016 academic year. Following the second evaluation, I withdrew a control

coach from the study because her only first-year teacher resigned from the program (See Table 3.7,

Column 5). Additionally, one intervention coach did not attend the first intervention professional

development due to a family illness. This particular coach did not respond to my attempts to make

up the professional development. Because this coach observed and evaluated her teachers across

competencies in the third visit and was unaware of her status as an intervention participant, I made

the decision to remove her from the study (See Table 3.7, Column 4). Thus, at the end of the

intervention, nine coaches remained in the intervention condition (90-percent) as compared to

eleven control coaches (92-percent). Finally, Table 3.8 indicates coaches had nine-percent overall

attrition and 2 percent differential attrition. The WWC conservative attrition standard indicates this

particular combination of overall and differential attrition is considered "low". A balance of

remaining coaches, using the same approach previously discussed, revealed no significant differences

across conditions existed at the $p<0.05$-level (See Appendix H).

Table 3.7: Teacher & Coach Attrition

	Randomization	Evaluation 1 Score	Evaluation 2 Score	Mid Year Survey	End-Of-Intervention
Time	Sept., 2015	Sept.-Oct.	Oct.-Nov.	Nov.-Dec.	Feb., 2016
Int. Teachers	25	25	25	22	21
Int. Coaches	10	10	10	9	9
Ctrl. Teachers	21	19	19	15	15
Ctrl. Coaches	12	12	12	11	11

Finally, I sought to understand whether attrition was a function of assignment to either

intervention or control conditions. Thus, I regressed coaches' attrition status on assignment to the

intervention condition. I also included covariates for the strata (e.g., content area) because I

randomized coaches within the different strata blocks. As evidenced in Table 3.8, Column 4, the

difference in attrition of 0.02 between conditions was not significant ($p<0.05$), suggesting attrition

was not significantly related to condition.

Teacher Attrition

All 46 first-year teachers enrolled in the program were still teaching at the time of

randomization (Table 3.7, Column 2). Before the first evaluation period (Table 3.7, Column 3), a

control coach alerted the ICP program team a desire to support one less first-year teacher.

Consequently, the ICP assigned a member of the program team to support this one first-year

teacher. Since this request occurred after randomization, I did not include the member of the ICP

program to the control condition. Thus, I removed the teacher originally assigned to a control coach

from the analytic sample. Additionally, I removed one teacher from the control group before the

first evaluation period ended (Table 3.7, Column 3) because she resigned from her teaching position. All remaining teachers continued in the program for both the first and second evaluation period (Table 3.7, Column 3 & 4). In the time between the second evaluation period (Oct.-Nov.) and the Mid-Year Survey window (Nov.-Dec.), four control teachers resigned from their positions (Table 3.7, Column 5). Additionally, the three teachers assigned to the intervention coach who did not attend either intervention professional development were removed from the sample. Then, from December 2015 to the end of the intervention window (February 2016), I removed one teacher from the intervention condition because she resigned from her teaching position. Thus, at the end of the intervention, 21 teachers remained in the intervention group (84 percent) compared to 15 control teachers (71 percent).

Table 3.8: Teacher & Coach Attrition Balance Check

	Overall Attrition	Intervention Group Mean	Control Group Mean	Difference	p-Value
Attrited Coaches	0.09	0.10	0.08	0.02	0.85
Attrited Teachers	0.22	0.16	0.29	0.13	0.24

Finally, Table 3.8 indicates teachers had 22-percent overall attrition and 13-percent differential attrition. The WWC conservative attrition standard indicates this particular combination of overall and differential attrition is considered "high". While attrition is "high", a balance check of remaining teachers discussed, revealed no significant differences across conditions existed at the p<0.05-level (See Appendix I). I also detected similar results across condition for school characteristics (See Appendix J). Moreover, Table 3.8, Row 2, Column 5 indicates attrition was not a function of assignment to either control or intervention conditions. Additionally, I employ multiple imputation for missing data as a robustness check to determine if attrition biased estimated effects of the intervention. I discuss this robustness check in Chapter 4.

Data Sources

I organized my data sources into two categories: ICP programmatic data and researcher collected data. ICP programmatic data included all data sources the ICP required participants to submit. The ICP required coaches to upload teachers' written feedback and observation scores to the online portfolio. Additionally, the ICP administered two programmatic surveys in November and April to all teachers. Finally, I collected two additional data sources from teachers in the form of a post-intervention survey and interviews. Table 3.9 provides an overview of the data sources used in this study, which I describe in more detail below.

ICP Programmatic Data. *Written Feedback.* I analyzed all written feedback provided to teachers after the third and fourth observation to test whether differences existed between conditions. As an ICP program administrator, I had access to all coaches' written feedback in teachers' online portfolio. I only downloaded written feedback of intervention and control teachers who also completed a Post-Intervention Fidelity Survey (PIFS). I made this decision to ensure I only included teachers with complete data – written feedback and PIFS – in my analytic sample. Thus, I downloaded 56 copies of written feedback, equating to two written feedback transcripts for 28 teachers. Of the 28 teachers with complete written feedback, I compiled 16 from the intervention condition and 12 from the control condition. I uploaded all copies of the written feedback into Microsoft Word. I then developed and applied a series of codes to all copies of written feedback and entered code counts into Microsoft Excel. I then uploaded the Microsoft Excel file into STATA to do a quantitative analysis of code counts. I discuss my analysis of written feedback in further detail in forthcoming sections.

Table 3.9: Descriptions of Data Sources

Data Type	Data Source	Brief Description	Time Collected (Month)	Purpose
ICP Programmatic Data	Written Feedback (N=56)	(2) Forms of Written Feedback per FI/Teacher	Visit 3 Feedback (Nov.-Dec, 2015) Visit 4 Feedback (Jan.-Feb., 2016)	Explore amount of focused feedback provided to teachers.
	Coaches' Observation Scores (N=37)	(6) Evaluation scores from coaches throughout the academic year.	Score 1 (Sep.-Oct.) Score 2 (Oct.-Nov.) Score 3 (Nov.-Dec.) Score 4 (Jan.-Feb.) Score 5 (Feb.-Mar.) Score 6 (Mar.-Apr.)	Evaluate teachers' performance according to ICP program rubric.
	ICP Mid- & End-Of-Year Survey (N=35)	(2) 30 Minute Survey	November, 2015 April, 2016	Identify teachers' sense of preparedness to teach.
Researcher Collected Data	Post-Intervention Teacher Survey (N=28)	(1) 5 minute survey	February, 2016	Explore presence of the intervention from teachers' perspective.
	ICP Participant Interview Transcripts (N=14)	(1) 20-30 min. interview.	April, 2016-May, 2016	Identify coaching practices first-year teachers' perceive as more or less influential.

Coaches' Observation Scores. I used ICP coaches' observation scores to determine

whether intervention teachers received better observation ratings as compared to control teachers.

Eight program outcomes and their 22 affiliated competencies that represented essential knowledge

and skills novice teachers should employ in the classroom comprised teachers' observation scores.

These program outcomes and competencies, presented in Table 3.10, aligned to state standards for

new teacher credentialing and compiled by university faculty, graduate students, and school

personnel in 2013.

Coaches used the rubric to evaluate teachers on a four-point (0-3) scale for each

competency. The four-point consisted of:

- 0: Insufficient: There is little to no evidence that the teacher is employing the practices associated with this outcome.
- 1: Beginning: The teacher is beginning to show evidence of incorporating the practices associated with this outcome into his/her instruction and/or records of practice. The observed practices are employed too ineffectively or inconsistently to successfully demonstrate the target outcome.
- 2: Developing: The teacher shows evidence of regularly incorporating the practices associated with the program outcome into his/her instruction and/or records of practice. The observed practices are employed somewhat effectively; however more skillful, deliberate execution is needed to successfully demonstrate the target outcome.
- 3: Embedded: There is evidence that the teacher routinely and skillfully incorporates the practices associated with this outcome into his/her instruction and/or records of practice.

Coaches used the above descriptions to collect evidence for each competency and make a determination regarding the appropriate score. A teacher's observation score represented the average score of 20 competencies. The ICP made two of the competencies – 7A: Communicating with Families and 8C: Professional Development –optional for coaches to score because these competencies might not be directly observed in a classroom observation or conference. Refer to Appendix A for the 2015-2016 ICP program rubric.

The evaluation rubric served two purposes. First, the rubric served as a tool to guide coaches' verbal and written feedback around improving teachers' instruction. From this feedback – in both the post-observation conference and written feedback provided in their online portfolio– teachers learned about their strengths as an educator and areas of their practice in need of improvement. Second, the rubric evaluated teacher performance. Given the ICPs standing as a recommender for provisional certification with a Midwestern state, teachers' observation scores helped determine whether they received a recommendation for certification. Evaluation scores also allowed for the ICP to identify teachers in need of additional assistance from coaches or program staff.

Table 3.10: ICP Program Outcomes and Competencies

Field Instruction Rubric	
Outcome 1: Plan and Prepare for Effective Instruction	
1B	Lesson Planning
1C	Preparation to Teach
1D	Lesson Structure
Outcome 2: Facilitate an Environment that Supports Student Engagement	
2A	Behavior Management
2B	Physical Space
2C	Norms, Routines, and Procedures
2D	Active Facilitation
2E	Student Engagement
Outcome 3: Build Rapport and Relationship with Students to Support Learning	
3A	Positive Interpersonal Relationships
3B	Student Investment, Interest and Autonomy
Outcome 4: Use Disciplinary Literacy to Teach Content	
4A	Effective Reading & Interpretive Strategies
4B	Academic Language
4C	Disciplinary Resources
Outcome 5: Enact Instruction to Meet Student Needs	
5A	Modified Instruction
5B	Scaffolded Instruction
Outcome 6: Assess Student	
6A	Multiple forms of Assessment
6B	Criteria for Assessment
6C	Data Tracking
Outcome 7: Relate and Communicate Effectively with Parents, Families, and Community	
7A*	Communication with Families and Community
Outcome 8: Reflect on Practice and Contribute Professionally to the Learning Community	
8A	Reflection on Lessons and Practice
8B	Building Relationships
8C*	Professional Development

ICP Mid- & End-of-Year Survey. The ICP program team created the mid- and end-of-year survey to study teachers' perceptions around types and quality of support received from seminar and coaches. The ICP program team administered surveys following the conclusion of the second (November, 2015) and sixth observation window (April, 2016) to all ICP teachers. The ICP administered the survey electronically through teachers' online portfolio.

The ICP program team created the mid- and end-of-year surveys to gather teachers' perspectives around three primary areas: coaching experiences, seminar experiences, and preparedness to teach across different domains of practice. Coaching questions addressed experiences in post-observation conferences, types and helpfulness of feedback, and investment in the field instruction process. Preparedness questions addressed managing the classroom, assessing students, and adapting curriculum and instruction, amongst others. The ICP program team also created several questions about teachers' seminar experiences. Refer to Appendix K for the entire mid- and end-of-year surveys.

My analyses focused on all questions about field instruction experiences and preparedness to teach across different domains of practice. The program allowed me to include identical questions on both surveys, allowing me to investigate changes in teachers' responses from before and after the intervention. Once I downloaded survey responses from teachers' online portfolio, I transformed them into STATA format for quantitative analyses. Out of a total of 37 teachers remaining in the sample at the end of the intervention, 35 teachers completed both the mid- and end-of-year of survey, resulting in a 95-percent response rate.

Researcher Collected Data. I collected two additional data sources from first-year ICP teachers to better understand teachers' experience with and exposure to the interventions' core components and teachers' perceptions of influential coaching practices. Administering a teacher survey immediately following the intervention allowed me to gather more detail and information about teachers' coaching experiences and perceptions of these experiences during their third and fourth observation cycles (e.g., intervention window). Moreover, interviewing a subset of first-year ICP teachers following their sixth observation provided information about coaching practices first-

year teachers felt influenced their receptivity to coaching. I provide a detailed description of each researcher collected data source below.

Post-Intervention Teacher Survey. I created a Post-Intervention Fidelity Survey (PIFS) to measure the presence of the interventions' core components in teachers' interactions with coaches across conditions. I administered the PIFS in-person to first-year ICP teachers at most bi-weekly seminar classes in February, 2016 (e.g., the end of the intervention window). I also electronically administered the PIFS through teachers' online portfolio to two seminar classes who canceled seminar sessions in February due to inclement weather.

I created the PIFS to gather information on the presence of the intervention's core components – choice, focus, and conference quality – during first-year teachers' third and fourth observations. The first three survey questions used a 2-point scale (e.g., yes or no) to solicit information about whether teachers were allowed to choose specific rubric competencies they wanted to address. In contrast, the next 12 questions used a 4-point scale (e.g., "To what extent do you agree/disagree with the following statement about your 3rd & 4th observation", 1: Strongly Disagree, 2: Disagree, 3: Agree, 4: Strongly Agree) to address focused coaching and conference quality. Refer to Appendix L for the administered PIFS.

Of the 37 first year teachers enrolled in the program at the time of administration, 28 completed the PIFS for a 76 percent response rate. Of the 21 first-year teachers assigned to the intervention condition, 16 completed the PIFS for a 76 percent response rate. Finally, of the 16 first-year teachers assigned to the control condition, 12 completed the PIFS for a 75 percent response rate.

ICP Participant Interview Transcripts. In order to gather information about teachers' perceptions of influential coaching practices, I conducted a semi-structured interview with 13 first-

year teachers. I asked all first-year teachers on the end of year survey if they had interest in participating in an interview about their coaching experiences. I also publicized that teachers would receive monetary compensation, in the form of a gift card, if they participated in a recorded interview.

Thirty-three of the thirty-seven (89 percent) first-year teachers indicated a willingness to participate in an audio-recorded interview. I randomly selected participants from the 33 interested parties by condition and content area, but the number of teachers responding to set up an interview was low. Consequently, I made the decision to use a convenience sample to try and solicit more participation than previously generated. Thus, I opened up the opportunity for any interested first-year teacher who (a) indicated a willingness to participate in an interview and (b) I had not previously contacted.

Thirteen teachers (39 percent) agreed to participate in an audio-recorded interview. Six intervention teachers participated in an interview as compared to seven control teachers. I conducted a series of t-tests to compare 13 participants against the 24 non-participants across all coach, teacher, or school characteristics. Results revealed participating teachers did not significantly differ on any demographic characteristics as compared to non-participating teachers. The interviews occurred immediately following teachers' final observation and conference in mid-April 2016. I chose to conduct interviews following the final observation, as opposed to immediately after the intervention, because I wanted teachers to have the entirety of their coaching experiences to draw from in the interview.

I used a semi-structured interview protocol (see Appendix M) to learn more about teachers' experiences with coaches' observations and conferences, what coaching practices teachers' perceived influencing their responsiveness to coaching, and why these practices mattered. I chose a semi-

structured format to ensure all interviews focused on these common elements but also allow for more open dialogue about other topics that emerge. Finally, I repeated the same questions across interviews so I could compare responses within and between conditions.

I conducted a phone interview with each teacher, ranging in length from 15 minutes to 25 minutes. The average length of each interview was approximately 20 minutes. Interviews with intervention and control teachers I previously observed with their respective coaches were slightly longer, likely due to feeling more at ease speaking with me. I audio-recorded interviews and transcribed verbatim.

Measures

In this section, I discuss the measures I constructed and used in my analysis of each research question. I discuss the measures used by research question and then transition to a discussion of the methods used to answer the questions guiding this study.

Were coaches trained in the intervention more likely to offer teachers' choice and focus coaching as compared to coaches who received no training?

This particular research questions addressed the extent to which participants implemented the intervention as intended, otherwise known as intervention fidelity (IF) (Mendive et al., 2015). Specifically, this question addressed the degree to which coaches implemented the teacher choice and focused coaching. IF is a multidimensional construct consisting of at least five dimensions: adherence, exposure or dosage, quality of implementation or delivery, participant responsiveness, and differentiation (Century, Rudnick, & Freeman, 2010; Durlak, 2010, Hulleman et al., 2013; Mendive et al., 2016; O'Donnell, 2008). Adherence is the extent to which participants' implement the intervention as designed, whereas dosage refers to the amount of participants' exposure to the

intervention. Additionally, quality addresses how well the intervention was implemented. Finally, responsiveness focuses on participants' engagement in the intervention, while differentiation concerns differences between intervention and control conditions (Hulleman et al., 2013).

I analyzed three dimensions of IF – adherence, dosage, and quality of implementation – to answer this research question. Rather than address all five dimensions of intervention fidelity, I focused on these three dimensions because I felt these measures could be measured better with the available data sources. For this study, I adopted a widely accepted model of intervention fidelity assessment (Hulleman et al., 2013; Nelson, Cordray, Hulleman, Darrow, & Sommer, 2012) to evaluate whether coaches trained in the intervention used this type of coaching. The model included the following components:

1. Specify core components;
2. Identify appropriate fidelity indicators;
3. Determine index validity (including reliability);
4. Combine indices where appropriate;
5. Link fidelity to outcomes where possible.

Below, I elaborate on the first four steps before discussing the fifth in a subsequent section. Additionally, I discuss how each step was integrated into my study.

Step 1: Specifying Core Components

Measuring intervention fidelity begins with delineating the implementation drivers – otherwise known as core components – that have a direct effect on the expected outcomes of the intervention (Fixsen, Blasé, Naoom, & Wallce, 2009). Delineating the core components of an intervention can then determine how best to measure different dimensions of fidelity. Table 3.11 presents an integrated conceptual (i.e., intervention's theory of change) and operational (i.e.,

intervention's core activities) logic model for this particular coaching model. I discuss this model in further detail below.

Table 3.11: Logic Model for Coaching Intervention

Intervention Components		Outcomes of the Intervention	
Training & Resources	FI Practices	Mediators	Outcomes
Training and coaching around Focused Coaching (i.e., implementation drivers) Training resources (ICP Program Rubric, Focused Coaching Training Materials)	Use of Focused Coaching practices in Visit #3 & #4 Allow teachers to choose rubric competencies.	Improved post-observation process (e.g., more time discussing a specific competency, more time discussing specific strategies). Improved engagement and investment in the observation process.	Improved teacher learning and performance as measured by EOY observation scores.

The initial step to improving teachers' instruction is training intervention coaches to implement the coaching model, including the specific resources needed to facilitate the training. The resources used for this intervention included the ICP program rubric, intervention overview and sample ICP teacher email (e.g., focused coaching training materials). Then, coaches incorporate the coaching practices into their work with first-year teachers, including addressing the single competency each teacher chose. Integrating choice and focused coaching results in an improved post-observation conference process and improved engagement and investment in the observation process. The logic model theorizes that an improved post-observation conference process yields more time spent discussing a single competency, thus presenting the opportunity for a coach to provide more specific feedback for intervention teachers. Moreover, the logic model assumes discussing a competency the teacher chose improves engagement and investment in the observation and conference process because the content is focused on the unique context and needs of each teacher. Finally, I expect more time spent discussing a single competency and improved engagement

and investment in the process yields improved teacher knowledge and skill (e.g., learning), thus leading to improved instruction and better classroom performance as measured by end of year observation scores.

I then identified the core components of the intervention (e.g., choice, focus, quality) that encompassed the integrated conceptual and operation logic model discussed above. Table 3.12 provides an overview of the specific actions – subcomponents – that capture that core components of the intervention. For example, the subcomponents affiliated with focused coaching included spending most of the conference discussing a single competency (e.g., duration) and providing feedback and suggestions aligned to the competency teachers' chose to address (e.g., focused feedback and suggestions, alignment).

Step 2: Identifying Fidelity Indicators

I then identified different indicators I could potentially use to measure each of three core components specified in Table 3.12. This is particularly important considering prior literature recommends the intervention's core components should include multiple dimensions of fidelity to present a comprehensive assessment of implementation. Common methods of measuring fidelity include participant surveys, direct observation of implementation, or participant interviews (Hulleman et al., 2013). For the purposes of this study, I used a participant survey and written feedback provided to each teacher to identify different measures of fidelity.

Table 3.12: Intervention core components and subcomponents

Core Components	Subcomponents	Definitions
Competency Choice	Pre-Visit Choice	Coach allows the teacher to *choose* one rubric competency on which to focus the third and fourth visits.
	Choice & Alignment	What the teacher chooses as the focus for the third and fourth visits is a rubric competency on which the teacher believes he/she needs to improve.
Focused Coaching	Duration	The amount of time the teacher and coach spend discussing a specific competency.
	Focused Feedback	The coaches' feedback (performance feedback, constructive criticism, evidence based statement, coach observations, etc.) addresses a single rubric competency.
	Feedback Dosage	The amount of time feedback focuses on a single rubric competency.
	Alignment	The feedback and suggestions address the competency on which the teacher chose prior to the visit.
	Focused Suggestions	The coaches' suggestions address a single rubric competency.
	Suggestions Dosage	The amount of time suggestions focus on a single rubric competency.
Improved Conference Quality	Helpfulness	The extent to which teachers found the feedback useful and will likely incorporate into practice.
	Empowerment	The extent to which teachers felt empowered as professionals.
	Learning	The extent to which teachers felt they learned a great deal about their practice.

Table 3.13 presents the total number of indicators I measured for each individual subcomponent and the total number of indicators per overarching core component. For example, the core component of improved conference quality included three subcomponents: helpfulness, empowerment, and learning. I then determined the number of indicators I could measure for each subcomponent. In this instance, helpfulness included a single indicator, whereas empowerment included two indicators. Four indicators were used to collectively measure improved conference quality.

Table 3.13: Number of fidelity indicators per component

Core Components	Subcomponents	Total # of Indicators	Indicators per Component
Competency Choice	Pre-Visit Choice	2	3
	Choice & Alignment	1	
Focused Coaching	Duration	1	12
	Focused Feedback	3	
	Feedback Dosage	1	
	Alignment	4	
	Focused Suggestions	2	
	Suggestions Dosage	1	
Improved Conference Quality	Helpfulness	1	4
	Empowerment	2	
	Learning	1	

I then applied exploratory factor analysis (EFA) to 12 PIFS survey questions using a four-point Likert scale to examine their underlying structure and to identify whether they measured the constructs of "focused coaching" of "conference quality". These survey items loaded together with a high level of internal consistency (Cronbach's Alpha = 0.92). A scree plot and the Kaiser criterion both suggested it would be reasonable to retain two factors, all with eigenvalues greater than one: 6.79 for Factor 1, and 2.54 for Factor 2. To help with the interpretation of these extracted factors, I applied promax rotation because I wanted to allow for the factors to correlate with each other. Table 3.14 summarizes these factors before and after rotation. The rotated factors loaded most strongly on the following sets of items:

- *Focused Coaching*: Items loading on this factor focused on spending the majority of discussing a rubric competency that teacher felt like she/he needed to address, receiving written and verbal feedback (e.g., constructive criticism and suggestions) around a single competency, and all (discussion and feedback) addressing the competency the teacher chose (See Table 3.14 Questions 4-11).
- *Conference Quality:* Variables loading most strongly on this factor included learning about to improve his/her practice, receiving useful feedback, likely implementing suggestions into practice, and feeling empowered as a professional (See Table 13.4, Questions 12-15).

Results from the exploratory factor analysis suggested I could use the survey questions to address two different core components of the intervention: focused coaching and conference quality. Specifically, focused coaching items gauged the extent coaches' enacted the intervention as intended (adherence). Lastly, survey items addressing conference quality gauged how well coaches implemented the intervention (implementation quality). I standardized factor scores for each teacher for ease of interpretation.

Additionally, I analyzed teachers' written feedback across the third and fourth observations (e.g., the intervention window). Although I had complete written feedback from all participants, I restricted my analysis to include only the 28 teachers who completed the PIFS and had complete written feedback. I deliberately made this choice because I sought to measure intervention fidelity only with participants who had complete data. Moreover, I reviewed two randomly selected transcripts from each condition to determine what core components could be measured through an analysis of written feedback. After reviewing the four transcripts, I concluded this data source limited my ability to detect choice or conference quality for two reasons. First, I could not determine if coaches' written feedback addressed the competency each teacher chose. For intervention teachers, I could match the competency they chose prior to the start of the intervention with the competency addressed in the written feedback; however, I had no way of determining if control coaches' written feedback addressed a competency teachers selected prior to post-observation conferences. Thus, I decided written feedback was not a valid data source for this core component because I could not adequately measure choice in *both* conditions. Second, no criteria exists, to my knowledge, to assess the quality of coaches' written feedback. I considered determining quality using my own criteria, but considered my opinion too subjective to accurately assess the quality of written feedback. Thus, I used written feedback exclusively to measure indicators of focused coaching.

Table 3.14: Rotated and Un-Rotated Exploratory Factory Analysis Loadings

	Rotated (Promax)		Un-Roated	
Variable	Factor 1	Factor 2	Factor 1	Factor 2
Q4. We (coach and myself) spent the majority of our debrief time discussing a single rubric competency.	0.88	-0.02	0.83	-0.26
Q5. We spent the majority of time discussing a rubric competency I felt I needed assistance with.	0.84	0.13	0.89	-0.15
Q6. The verbal feedback (e.g., constructive criticism, evidence from observation) I received addressed a single rubric competency.	0.48	0.52	0.81	0.25
Q7. The verbal feedback I received addressed the rubric competency I *chose* to address with my coach.	0.84	0.23	0.97	-0.07
Q8. The written feedback I received in [Online Portfolio Name] addressed a single rubric competency.	0.88	0.05	0.87	-0.22
Q9 The written feedback I received in [Online Portfolio Name] addressed the competency I *chose* to address with my coach.	0.91	0.07	0.92	-0.21
Q10. The suggestions I received in either my verbal or written feedback focused on how to improve in a specific rubric competency.	0.94	-0.26	0.72	-0.46
Q11. The suggestions I received in either my verbal or written feedback focused on how to improve in the specific rubric competency I *chose* to address.	0.99	-0.12	0.88	-0.38
Q12. I learned a great deal about how to improve my teaching as a result of my last two observations (i.e., Visit #3 & #4)	-0.10	0.96	0.54	0.74
Q13. I found the feedback I received from my coach useful.	0.04	0.94	0.67	0.68
Q14. I will put some of the ideas discussed in the debrief into practice.	-0.13	0.80	0.41	0.63
Q15. I felt empowered as a professional in my last two observations.	0.31	0.50	0.64	0.28

Of the 12 focused coaching indicators presented in Table 3.13, I derived four from my analysis of written feedback. These included the number of competencies addressed in the feedback, number of competencies with suggestions provided, amount of feedback provided per competency, and amount of suggestions provided per competency.

Steps 3 and 4: Determining Index Validity and Reliability

Next, I sought to determine how best to combine items across different data sources (e.g., teacher survey and written feedback) and dimensions of fidelity. Following the suggestions of Hulleman et al. (2013), I combined fidelity indicators across data sources for each core component. Prior research recommends adopting this approach because creating indices by core component helps identify components of the intervention that were more or less difficult to implement. Additionally, this approach allows for the examination of construct validity of the intervention's core components rather than providing an overall fidelity indicator (Abry et al., 2012).

Table 3.15 depicts my process of combining fidelity indicators across two different data sources. Specifically, this table presents the number of indicators from the different data sources, the dimension of fidelity to which items align, and their affiliated core components. Each core component of the coaching intervention was further delineated into respective subcomponents. For example, focused coaching included six subcomponents – duration, focused feedback, feedback dosage, alignment, focused suggestions, and suggestions dosage – measuring two different dimensions of fidelity (e.g., adherence and dosage). Moreover, I considered providing focused suggestions, a subcomponent of focused coaching (e.g., subcomponent five), an indicator of adherence because I expected coaches to provide suggestions around the specific competency addressed. In contrast, I classified the amount of focused feedback provided (e.g., feedback addressing a single competency) as an indicator of dosage because the *amount* of feedback could quantify teachers' exposure to the intervention.

As Table 3.15 indicates, not all core components had the same amount of items (e.g. four items for conference quality compared to 24 for focused coaching). Hulleman et al. (2013) suggest measures for each core component should include multiple dimensions of fidelity. However, some

core components (e.g., competency choice and conference quality) could only measure a single

fidelity component. For example, I felt adherence was the only fidelity component captured within

competency choice. Because I was only concerned about learning whether coaches offered choice

rather than "how much" choice teachers had (e.g., dosage) or "how well" coaches offered choice

(e.g., quality), adherence was the only applicable fidelity indicator. Additionally, certain core

components (e.g., conference quality) were teacher level outcomes and best captured using only a

single data source (e.g., teacher survey). I now turn to a more detailed presentation of data sources

presented in Table 3.15.

Table 3.15: Core Component Fidelity Indicators

Core Components	Subcomponents	Fidelity Components	Total # of Indicators		Indicators Per Comp.
			PIFS	C&W WF	
Competency Choice	Pre-Visit Choice	Adherence	2	0	3
	Choice & Alignment	Adherence	1	0	
Focused Coaching	Duration	Adherence	1	0	12
	Focused Feedback	Adherence	2	1	
	Feedback Dosage	Dosage	0	1	
	Alignment	Adherence	4	0	
	Focused Suggestions	Adherence	1	1	
	Suggestions Dosage	Dosage	0	1	
Quality of Implementation	Teacher Learning	Quality	1	0	4
	Helpfulness	Quality	2	0	
	Empowerment	Quality	1	0	

To gauge intervention fidelity, I used a single observation measure (e.g., online portfolio

written feedback) and one teacher self-report (PIFS). Since these data sources used different types of

variables (e.g., binary, ordinal, and continuous) and scales (e.g., 4-point likert scale), I standardized

some items first. Each teacher had four separate standardized scores.

Table 3.16: Methods for Standardizing Scores

Standardized Core Components	Method of Standardization	# of Indicators	Data Source	Fidelity Component
Competency Choice	N/A	3	PIFS	Adherence
Focused Coaching	EFA^	8	PIFS	Adherence
	Composite Measure*^	2	WF	
Focused Coaching	Composite Measure*	2	WF	Dosage
Conference Quality	EFA	4	PIFS	Quality
*Composite Measure: Teacher-level data was standardized for each indicator. Individual standardized scores were then averaged together to create a composite measure. ^Indicates these two standardized scores were averaged together for each teacher and then averaged at the condition level.				

Table 3.16 describes my methods for standardizing indicators across my different data sources. First, the three indicators of competency choice were binary variables (e.g., were you provided the opportunity to choose a competency to address) and I did not standardized due to non-normal distribution. Thus, I took teachers' responses for the three indicators and averaged them together. For example, a teacher responding "yes" to all three indicators scored a "1" whereas teacher responding with "no" twice and "yes" once scored a "0.33". Second, the EFA presented in Table 3.14 generated two additional standardized scores addressing focused coaching (Row 2) and conference quality (Row 5). Third, I measured adherence to focused coaching in the written feedback (Row 3) by first identifying the number of competencies each coach addressed. Afterwards, I identified the number of competencies each coach provided a suggestion for. Next, I determined the ratio between number of competencies addressed and number of competencies with suggestions. I then averaged and standardized results for the number of competencies addressed (e.g., focused feedback) and ratio of competencies addressed and competencies with suggestions across the third and fourth observations. I then added these two standardized scores to create a composite measure for adherence to focused coaching. Finally, I calculated dosage of focused

feedback and focused suggestions (Row 4). I first calculated the number of words used and the number of competencies addressed in the written feedback. Next, I divided the number of words used by the number of competencies addressed to determine the number of words used per competency. Then, I determined the number of words used for all suggestions provided. I coded suggestions as any text providing feedback around how a teacher could improve in a particular competency. For each suggestion provided, I identified where it began and concluded in the written feedback. I then added all of the words across suggestions. Finally, I divided the total number of words containing suggestions by the number of competencies addressed. In some cases, a coach might address five competencies and provide suggestions for one. Since I was concerned about identifying the amount of suggestive words for each competency, I divided by the number of competencies addressed rather than the number of competencies containing suggestions. I chose this approach because I speculated coaches focusing on fewer competencies would provide more detailed suggestions (e.g., more words per competency) as opposed to coaches addressing multiple competencies. I now turn to a discussion of how I combined these standardized into a composite score for each core component.

As presented in Table 3.16, each teacher had either an average score or a standardized score – derived from the PIFS and written feedback – for the respective fidelity construct and affiliated intervention core component. I aggregated teachers' average or standardized score for each fidelity construct at the group level, resulting in the intervention and control conditions having average scores. This method was consistent for adherence to competency choice, dosage of focused coaching, and quality of implementation. In the one instance where teachers had two separate standardized scores (e.g., adherence to focused coaching), I determined the mean of the two standardized scores for each teacher and then aggregated teachers' average standardized scores at the

group level. In forthcoming paragraphs I describe how I measured the achieved relative strength (ARS) to determine the salience of the intervention's core components across conditions.

Compared to teachers whose coaches received no training, did teachers whose coaches received the training have better observation ratings?

Teachers' (n=36) observation scores are the focus of my analyses measuring whether intervention teachers had better observation ratings. I used four observation scores in this study[4] – two prior to the intervention and two following the intervention. I also included scores for each competency across all four observations scores in the same file and imported into STATA for quantitative analysis. Next, I merged observation scores with teacher and school demographic information. For each teacher, I averaged individual competencies for observation one and two and then five and six at the program outcome level and standardized[5]. For example, I averaged the teachers' scores for competency 1B, 1C, and 1D and then standardized to get a standardized score for Outcome 1. Afterwards, I added each outcome together to create a teachers' standardized evaluation score. This resulted in a beginning of the year observation score (visit one and two) and end of year observations core (visit five and six) calculated on the same scale.

 While coaches' observation scores offered insight into teachers' instruction, I describe in more detail in Chapter 5 the important limitation that existed with these measures. I also introduced a potential source of bias in intervention coaches' final two observation scores because they were no longer blind to conditions. It is possible coaches could have scored intervention teachers higher at the end of the year to positively influence the results of this study.

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[4] Since the program requires first-year teachers to receive six scores, using the first and last two visits is the best option to measure the effect of the intervention given the constraints of the program. Although prior research (Kane et al., 2013) suggests three observations should be used to determine teacher performance at a given point, averaging the first two and last two visits should still provide a good representation of teacher performance.

[5] I made the decision to standardize after I averaged scores at the program outcome level because I noticed a more normal distribution as opposed to before.

***Compared to teachers whose coaches received no training, did teachers whose coaches
receive training report feeling more prepared and report better quality coaching?***

Because I was interested in knowing whether teachers who received the intervention felt

better prepared to teach and had better conference experiences, the mid- and end-of-year survey

asked teachers to respond to questions about their coaching experiences and sense of preparedness

to teach across different domains of practice (See Table 3.17 and 3.18). I also included survey

responses from both mid- and end-of-year surveys together.

Table 3.17: Teachers' Sense of Preparedness to Teach

Variable	Rotated (Promax)			Un-Rotated		
At this point in the school year, how well prepared do you feel to -	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
Plan effective lessons?	0.98	-0.13	-0.16	0.62	0.03	-0.65
Perform routine administrative tasks?	0.15	0.75	-0.19	0.55	-0.54	0.01
Handle a range of classroom management or discipline situations?	-0.14	0.93	0.09	0.68	-0.51	0.31
Manage classroom routines?	-0.12	0.98	0.01	0.67	-0.58	0.27
Use a variety of instructional methods?	0.39	0.09	0.45	0.74	0.21	-0.04
Teach your subject matter?	0.96	-0.09	0.01	0.72	0.09	-0.55
Assess students?	0.26	0.31	0.35	0.73	0.02	0.04
Adapt and use curriculum and instructional materials?	0.57	0.07	0.29	0.76	0.13	-0.19
Differentiate instruction in the classroom?	-0.02	0.17	0.83	0.75	0.34	0.34
Use data from student assessments to inform instruction?	0.07	0.15	0.73	0.74	0.30	0.25
Work with English Language Learners (ELL/LEP/ESL)?	-0.19	-0.31	0.91	0.29	0.67	0.36

I applied two separate exploratory factor analyses to conference experiences and sense of

preparedness survey questions to examine their underlying structure and to identify latent

constructs. Also, I justified two separate exploratory factor analyses because separate groups of

questions (e.g., conference and preparedness items) used different scales. Sense of preparedness

items loaded together with a high level of internal consistency (Cronbach's Alpha = 0.86). A scree

plot and the Kaiser criterion both suggested I could retain three factors, all with eigenvalues greater than one: 4.98 for Factor 1, 1.62 for Factor 2, and 1.24 for Factor 3. I also applied promax rotation to these three factors. Table 3.17 summarizes sense of preparedness factors before and after rotation. The three rotated factors loaded most strongly on the following sets of items:

- *Teaching Subject Matter Content:* Variables loading most strongly on this factor addressed teachers' perceptions around effectively planning and delivering content-specific lessons (see Table 3.17, column 2, rows 1, 6, and 8).

- *Managing The Classroom:* Items loading on this factor addressed teachers' perceived preparedness to handle a range of classroom situations, manage classroom procedures, and perform administrative routines (see Table 3.17, column 3, rows 2-4).

- *Teaching All Students:* Variables loading most strongly on this factor addressed teachers' capacity to deliver instruction in ways all students can understand (see Table 3.17, column 4, rows 9-11).

Conference experience items also loaded together with a high level of internal consistency (Cronbach's Alpha = 0.92). A scree plot and the Kaiser criterion both suggested it would be reasonable to retain three factors, all with eigenvalues greater than one: 8.89 for Factor 1, 3.54 for Factor 2, and 1.08 for Factor 3. To help with the interpretation of these extracted factors, I applied promax rotation because I wanted to allow for the factors to correlate with each other. Table 3.18 summarizes the factors before and after rotation. The three rotated factors loaded most strongly on the following set of items:

- *Quality Coaching:* Variables loading most strongly on this factor focused on post-observation conferences offering a lively give and take, a thorough analysis of performance, feedback aligned to teachers' goals, and useful suggestions around instructional strategies (see Table 3.18, column 2, rows 1-6, 9, 11-13).

- *Conference Investment:* Variables loading most strongly on this factor addressed teachers' perceptions of post-observation conferences value, including evaluations identifying strength and weaknesses, having connections to teachers' professional goals, and promoting instructional improvement (see Table 3.18, column 3, rows 14-18).
- *Focused Coaching:* Items loading on this factor addressed specific and targeted feedback, particularly around classroom management and student engagement (see Table 3.18, rows 8-9, 11).

Table 3.18: Teachers' Perceptions of the Coaching Received

	Rotated (Promax)			Un-Rotated		
Variables	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
The post-observation conference with my field instructor was characterized by a lively give and take.	0.86	-0.11	-0.01	0.88	0.07	-0.15
I found the feedback I received useful.	0.79	-0.19	0.02	0.85	-0.01	-0.11
I will put some of the ideas discussed in the conference into practice.	0.59	-0.08	0.27	0.79	0.08	0.10
My field instructor's evaluation provided a thorough assessment of my teaching performance.	0.76	-0.15	0.05	0.83	0.02	-0.08
I learned a great deal about how to improve my teaching as a result of my evaluations.	0.99	-0.05	-0.19	0.86	0.11	-0.31
My evaluation provides an important basis for setting my professional development goals.	0.88	-0.04	0.02	0.88	0.14	-0.13
The feedback I received was specific and targeted.	0.48	-0.23	0.50	0.87	-0.03	0.27
The feedback focused on classroom management.	-0.14	0.19	0.99	0.43	0.31	0.74
The feedback focused on instructional strategies.	0.72	0.14	0.22	0.78	0.30	0.03
The feedback focused on student engagement.	0.47	-0.11	0.50	0.83	0.08	0.29
The feedback focused on subject matter content.	0.81	0.23	0.09	0.74	0.38	-0.08
The feedback focused on evidence of student learning.	0.58	0.04	0.35	0.77	0.20	0.16
The feedback focused on differentiation, scaffolding, or modification.	0.91	0.28	-0.31	0.65	0.39	-0.42
My field instructor's evaluations do little to identify the strength and weaknesses of my practice.	-0.07	0.85	0.02	-0.42	0.75	-0.01
My field instructor's evaluations are simply a matter of "going through the motions."	-0.07	0.89	0.05	-0.42	0.79	0.01
I spent too much time preparing for and participating in my field instructor's evaluations.	0.20	0.89	0.07	-0.15	0.85	-0.02

My field instructor's evaluations are more about making decisions regarding my certification status than promoting my professional improvement.	-0.00	0.94	0.04	-0.39	0.85	-0.01
There is little connection between my field instructor's evaluation and my goals for improvement.	-0.09	0.86	0.02	-0.45	0.76	-0.01

Analytic Strategy

In this section, I discus the analytic methods I used to answer my research questions; Figure 3.3 details the analytical process I engaged in to explore my data sources (rectangular outline). First, I begin by explaining the quantitative analyses (oval outline) I conducted to answer my first through fourth research questions (dashed outline). Then, I detail the qualitative analyses (oval outline) I undertook to answer my fifth research question (dashed outline). Specifically, I detail my process of creating and revising a coding rubric and applying these codes in order to find patterns in my interview data. Afterwards, I discuss how I derived findings from the coded data.

Figure 3.3: Flow Chart Connecting Data Sources with Analayses and Research Questions
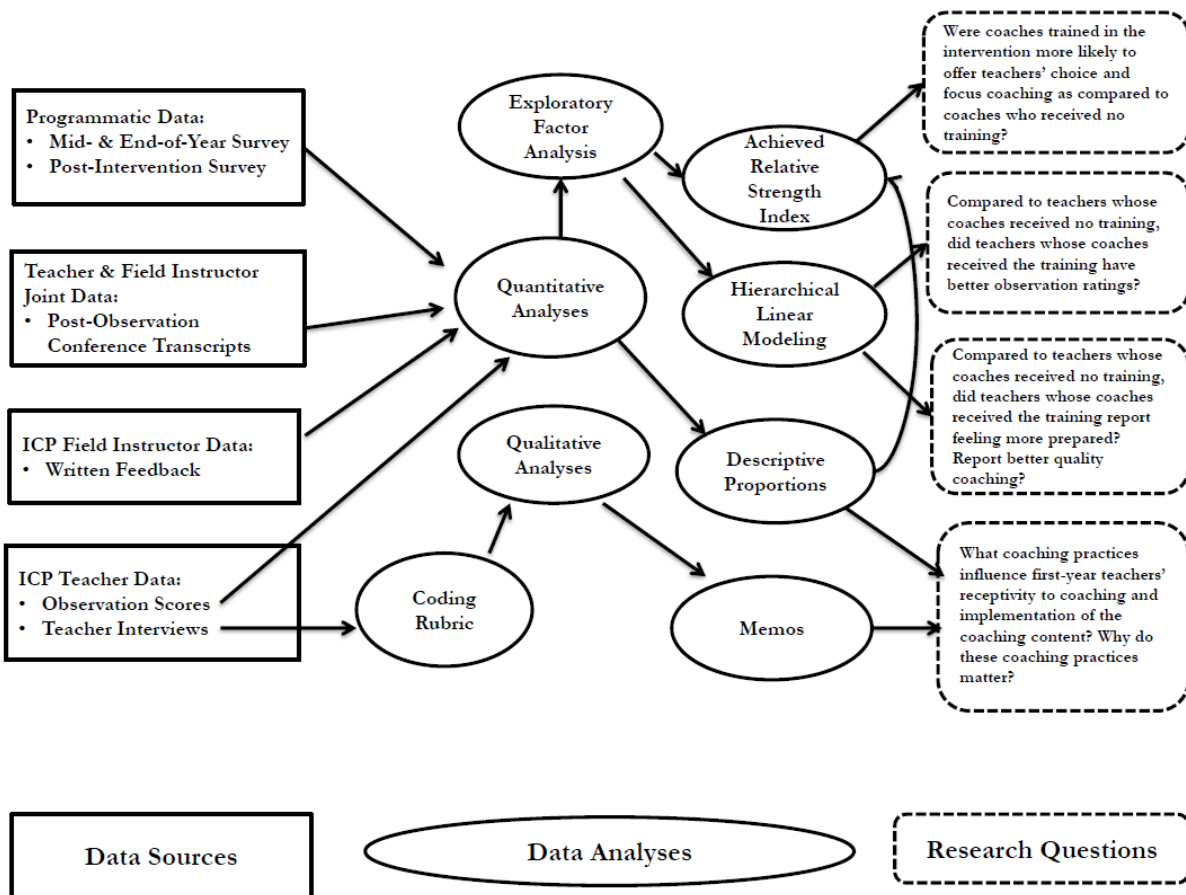
Were coaches trained in the intervention more likely to offer teachers' choice and focused coaching as compared with coaches who received no training?

Once I created indices for adherence, dosage, and quality of implementation, I compared the relative strength of the intervention's core components between intervention and control conditions. In doing so, I measured the difference between the intervention and control group's implementation of the intervention. Thus, I attempted to estimate the effects on the outcome as a result of the contrast between the intervention and control conditions (Hulleman & Cordray, 2009). Equation 1 describes my model for calculating the achieved relative strength index (ARS):

$$ARS = \frac{Mean_{Treatment} - Mean_{Control}}{\sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}} \quad (1)$$

Here, I computed the ARS by standardizing the average difference across conditions for each core component (Hulleman et al., 2013). Specifically, I subtracted mean scores for each condition and then divided by the pooled standard deviation. The pooled standard deviation comprised the sample size (n) and squared standard deviation (S^2) for both intervention (n_1, S_1^2) and control (n_2, S_2^2) conditions.

Compared to teachers whose coaches received no training, did teachers whose coaches received the training have better observation ratings?

To answer this question, I ran a series of ordinary least squares regression (OLS) models estimating teachers' end of year observation ratings as a function of receiving the coaching intervention. Equation 2 describes my general model:

$$EOY\_ObservationScore_{isb}$$
$$= \beta_0 + \beta_1 Intervention\_Participation_i + \beta_2 X_i + \beta_2 Z_s + \theta_b + e_{isb} (2)$$

In this specification, the end of year observation scores for teacher *i,* in school *s*, in randomization block *b*, is modeled as a function of a fixed intercept β_0, a dummy variable for whether teachers participated in the intervention $Intervention\_Participation_i$, a vector of teacher characteristics X_i, a vector of school characteristics Z_s, an indicator variable for the subject area (randomization) block θ_b, and a random error term e_{isb}. I also clustered standard errors at the coach level to account for coaches possibly rating teachers differently. Summarized in Table 3.5, teacher characteristics included beginning of the year observation scores, an indicator for gender, race/ethnicity, preparation features (e.g., whether they received any college education credits or had prior teaching

experience), and prospective longevity in the profession (e.g., length teachers planned on remaining

in education). School characteristics, summarized in Table 3.6, included percent of African-

American students, percent of white students, and school type (charter/public school). Additionally,

I examined multicollinearity (vif) and found percent limited English proficient (LEP) students,

percent black teachers, percent white teachers, enrollment, and percent economically disadvantaged

students were collinear with other covariates. I removed these predictors from my final models.

Finally, as robustness checks, I employed two different approaches. First, I used an alternative

model specification – two level multilevel (MLM) regression models to account for the nesting of

teachers within coaches. Next, I employed multiple imputation to determine if teacher attrition

biased estimates of the intervention's effect. Specifically, I imputed attrited teachers' end of year

observation scores. Estimates for each robustness check are included in Appendix N and Appendix

O respectively. I discuss results from both robustness checks in the next chapter.

Compared to teachers whose coaches received no training, did teachers whose coaches received the training report feeling more prepared or report better quality coaching?

I also ran a series of ordinary least squares regression (OLS) models estimating teachers'

preparedness and perceptions of conference quality as a function of receiving the coaching

intervention; Equation 3 describes my general model:

$EOY\_FactorScore_{isb}$

$$= \beta_0 + \beta_1 Intervention\_Participation_i + \beta_2 X_i + \beta_2 Z_s + \theta_b + e_{isb} (3)$$

Here, end of year factor score (e.g., sense of preparedness to teach) for teacher *i,* in school *s,* in

randomization block *b,* is modeled as a function of a fixed intercept β_0, a dummy variable for

whether teachers participated in the intervention $Intervention\_Participation_i$, a vector of

school characteristics Z_s, an indicator variable for the subject area (randomization) block θ_b, and a random error term e_{isb}. I continued clustering standard errors at the coach level and included the same teacher and school covariates described above except for one. I replaced teachers' beginning of the year observation score with teachers' mid-year factor score. The survey questions I used to construct each factor were only asked on the mid- and end-of-year survey. Thus, I included teachers' mid-year factor score as a teacher characteristic across models. I also used the same alternative model specification discussed above as a robustness check (Appendix P & Q). Finally, I did not employ multiple imputation as a robustness check because I was unable to impute estimates for teachers' end of year factor scores because 90 percent of attrited teachers did not have a mid-year factor score because they left the ICP prior to taking the mid-year survey window.

What coaching practices influence first-year teachers' receptivity to coaching and implementation of the coaching content? Why do these coaching practices matter?

Generating Codes. Following each interview, I drafted analytic memos addressing emerging themes and potential codes emanating from the data. Specifically, I drafted analytic memos with potential coding categories (e.g., specific influential practices, reasons why specific practices mattered) and representative sub-codes based on my recollections of the interview. After completing and transcribing all interviews, I re-listened and re-read my interview transcripts to further refine and revise the analytic memos I drafted following each live interview. At the conclusion of this process, I drafted an initial coding rubric of influential practices and the reasons why these practices mattered to first-year teachers. I decided to track on influential practices and associated reasons for why they mattered because these two aspects addressed my final research question. Table 3.19 summarizes the initial codes I developed based upon my analytic memos.

Table 3.19: Initial Coding Categories

Coding Category	Definition
Actionable Feedback	Feedback a teacher can immediately act upon in an upcoming lesson.
Decomposing Practice	Breaking a practice or suggestion into its constituent parts.
Contextual Suggestions	Providing suggestions that can be implemented within the context of the classroom or school.
Incorporating Teacher Choice	A coach allows a teacher to choose the specific rubric competency she wants to address in the post-observation conference.
Responsive to Feedback	A coach alters or adjusts her practice as a result of the feedback received from a teacher in prior conferences or earlier communications.
Sharing Perspectives	Coach shares her perspectives about what she did during her tenure as a teacher.
Modeling Practice	A coach demonstrates how a certain practice might be implemented.
Explaining Rationale	Coach explains her rationale behind why she chose to address a particular competency.
Collaborative Dialogue	Coach invites teacher into the discussion through questioning that prompts reflection or asking teacher to share perspectives on areas of improvement
Addressing The Positive	Coach initiates the conference with a discussion around the positive aspects of the teacher's practice.
Immediacy of Debrief	Scheduling the conference immediately following the observed lesson.
Rehearsing Practices	Teacher practices the suggestions/strategies addressed/modeled by the coach.
Narrowing Focus	A coach chooses to address a smaller number of competencies in the conference.
General Focus	A coach chooses to address many competencies in the conference.
Directing Resources	Coach directs teacher to different resources (e.g., books, articles, video clips, manipulatives) aligned to competencies discussed in the conference.
Running Record of Evidence	A coach collects real-time or minute-by-minute record of what occurred during the observation.
Follow Through	Coach follows-up on the action items discussed in the previous conference.
Coach Identified Competencies	A coach chooses the competencies to discuss with the teacher during the conference.

In terms of influential practices, my analytic memos suggested 19 coaching practices might matter to first-year teachers. Additionally, analyses of these memos suggested teachers had some common reasons why each coaching practice was particularly influential to teachers' receptivity to coaching. Table 3.20 displays the common reasons why teachers said certain coaching practices mattered to them. For example, teachers commonly cited having a lack of knowledge (Row 1,

Column 2) as a reason why actionable feedback (Row 1, Column 2) influenced their receptivity to coaching. Other common reasons across different coaching practices included: needing strategies teachers could implement the next day (e.g., actionable), desiring some positive praise due to consistent failure (e.g., consistent disappointment), and facilitating a sense of trust (e.g., following through). See Appendix R for my detailed initial coding scheme with relevant examples provided.

    Revision of Codes. I applied my initial codes to two randomly selected interview transcripts to check whether the coding categories sufficed or needed revision. I applied codes to only instances of influential practices, my initial unit of analysis. I distinguished something as influential by determining whether a particular practice preceded or followed by an explicit reference to an affirmative comment. For example, a teacher could remark, "I liked when my coach modeled a particular practice" or "modeling helped me see the components of a particular practice". In these two examples, referencing *liked* in the former and *helped* in the latter suggested modeling was an influential practice.

Table 3.20: Initial Coding Categories Around Why Certain Practices Matter

Coaching Practice	Reason	Definition
Actionable Feedback (AF)	Lack of Knowledge	AF mitigates first-year teachers' insufficient knowledge and experience.
	Ease of Incorporation	AF appear to be easier for a teacher to implement the following day.
Decomposing Practice (DP)	Lack of Knowledge	DP mitigates first-year teachers' insufficient knowledge and experience.
Contextual Suggestions (CS)	Actionable	CS makes teachers feel like they act on this feedback the following day.
	Valued	CS makes teachers feel valued because the coach understands the context or culture of the school.
	Achievable	CS presents itself as achievable because it fits within the expectations of the school.
Incorporating Teacher Choice (ITC)	Meaningfulness	ITC allows teacher to feel invested in the coaching process and more likely to implement feedback.
Responsive to Feedback (RF)	Valued	RF make teachers feel like their opinion matters to their coaches.

Sharing Perspectives (SP)	Similar Contexts	SP made teachers feel like suggestion might work because teachers taught in similar school environments.
Modeling Practice (MP)	Lack of Knowledge	MP mitigates first-year teachers' insufficient knowledge and experience.
Explaining Rationale (ER)	Establishing Alignment	ER helped teachers understand why coaches chose to address what they did.
Collaborative Dialogue (CD)	Less Formal Environment	CD created a less formal environment because the teacher felt included in the conversation.
Addressing The Positive (AP)	Consistent Disappointment	AP focused attention away from disappointments first-year teachers continually experience.
	Welcoming Environment	AP establishes a welcoming environment for teachers.
	Maintain Motivation	AP makes teachers feel successful and motivates them to continually focus on improving.
Immediacy of Debrief (ID)	Recency	ID affords teachers have fresh memory around what occurred during the observation.
Rehearsing Practices (RP)	Validate Understanding	RP allows coach to validate whether teacher enacted a practice correctly.
Narrowing Focus (NF)	See Improvement	First-year teachers felt like they could see problems being fixed as a result of NF.
	Expedited Implementation	NF allowed teachers to feel like they could implement a specific practice immediately.
	Building Blocks	NF made teachers feel like they were addressing the constituent part of a larger, more-complex practice.
	Sense of Possibility	NF made teachers feel like change or improvement in practice was possible because they didn't feel overwhelmed.
	Facilitates Focus	NF helped teachers focus attention a single practice to improve upon.
	Time	NF allowed coach and teacher to spend more time discussing a single element of practice.
General Focus (GF)	Address Complexities	GF made teachers feel like they were addressing teaching complexities by addressing many topics.
	Multiple Actions	GF made teachers feel like they could take multiple actions in upcoming lessons.
Directing Resources (DR)	Expedites Time	DR limits the amount of time teachers must spend seeking out their own resources.
Running Record of Evidence (RRE)	Mitigates Bias	RRE offers only evidence of classroom occurrences and removes coach's opinions.
Follow Through (FT)	Trust	FT makes teachers feel like coach cares about development.
	Accountability	FT makes teacher feel responsible for implementing suggestions provided.

Coach Identified Competencies(CIC)	Lack of Knowledge	First-year teachers suggest they have insufficient knowledge and experience.

I chose influential practices as my unit of analysis for two reasons: first, my research question only addressed influential practices; second, I found in the data that teachers often mentioned why this particular practice mattered when they perceived it as influencing their receptivity to coaching. I then coded each instance of an influential practice with either a zero or one. A zero indicated this instance did not include a reason why the practice was influential whereas a one included a reason. I then focused only on instances with a one so that I could further explore why certain practices influenced teachers' responsiveness to coaching. Moreover, I dropped codes from my initial coding scheme (presented in Table 3.19) never or rarely present in the data. These included collecting a running record of evidence, immediacy of the debrief, and rehearsing particular practices.

My second level of analysis – reasons why a particular coaching practice influenced teachers receptivity to coaching – focused on identifying teachers' perspectives around why a particular practice influenced their instruction. I reviewed only influential practices coded with a one to identify the reason why this particular practice mattered. I applied multiple codes within each practice if a teacher provided more than one reason. Additionally, I coded all transcripts the same way. Finally, to conduct this analysis, I used interview transcripts as my primary data source.

Analyzing Codes. I analyzed data in three stages: 1) calculating frequency of influential coaching practices, 2) comparing frequency of influential coaching practices across conditions, and 3) investigating why teachers perceived these practices as more or less influential.

After coding all data for influential coaching practices, I calculated the relative frequency of all influential coaching practices cited by first-year teachers. Because I was interested in whether

these practices differed across conditions, I then calculated frequency distributions separately for intervention and control teachers. This allowed me to investigate whether teachers in different conditions found certain coaching practices more or less influential to their responsiveness to coaching.

Because I was also interested in learning more about why certain practices influenced first-year teachers, I investigated teachers' perceptions around why they influenced receptivity to coaching. First, I identified the most commonly cited practices coded with a one (i.e., had a reason attached to it). Then, I analyzed the excerpts within each practice to determine the reasons most commonly cited by first-year teachers. Results from these three analyses are presented in the next section.

Chapter 4: Results

Introduction

In this findings chapter, I first discuss whether coaches trained in the intervention offered teachers more choice and focused coaching. Afterwards, I describe whether intervention teachers had better observation ratings, reported feeling more prepared, and reported receiving better quality coaching in comparison to control teachers. Lastly, I report on coaching practices teachers report influenced their receptivity to coaching and why these practices mattered.

Were coaches trained in the intervention more likely to offer teachers' choice and focused coaching compared to coaches who received no training?

4.1 Descriptive Statistics

Teacher Surveys

Table 4.1 provides basic descriptive statistics from the Post-Intervention Fidelity Survey (PIFS) for teachers (n=28) who completed the survey and had written feedback from both the third and fourth observations. Additionally I conducted paired t-tests to determine if the difference in responses were statistically significant across conditions. Intervention teachers were more likely than control teachers to report receiving a list of potential rubric competencies to address in an upcoming observation (p<0.001, Question 1) and having the opportunity to select a rubric competency to address (p<0.001, Question 2&3). Additionally, intervention teachers were more likely to report spending the majority of their debrief discussing a single competency (p<0.001, Question 4 & 5), and receiving both written and verbal feedback around the competency they chose to address

(p<0.001, Question 7 & 9). Although intervention teachers reported better quality implementation

(Questions 12-15), the estimated differences were not statistically significant.

Table 4.1: Post-Intervention Survey – Teacher Results

Question	Construct (Component)	Overall (N=28) Mean (SD)	Intervention (N=16) Mean (SD)	Control (N=12) Mean (SD)
Before my third or fourth observation, my field instructor (over email or phone) identified a couple (3-4) rubric competencies he/she thought we could work on.	Adherence (Choice)	0.71 (0.46)	0.88*** (0.34)	0.50 (0.52)
I got to *choose* one rubric competency to focus both observations on (i.e., focus on Competency 2A for Visits #3 & #4).		0.71 (0.46)	0.94*** (0.25)	0.42 (0.51)
The rubric competency I *chose* was an area of practice I wanted to improve in.		0.71 (0.46)	0.94*** (0.25)	0.42 (0.51)
We (coach and myself) spent the majority of our debrief time discussing a single rubric competency.	Adherence (Focused Coaching)	2.71 (0.89)	3.25*** (0.58)	2.00 (0.74)
We spent the majority of time discussing a rubric competency I felt I needed assistance with.		2.89 (0.91)	3.38*** (0.50)	2.25 (0.97)
The verbal feedback (e.g., constructive criticism, evidence from observation) I received addressed a single rubric competency.		2.64 (0.89)	3.06** (0.57)	2.08 (0.90)
The verbal feedback I received addressed the rubric competency I *chose* to address with my coach.		2.82 (0.90)	3.31*** (0.60)	2.16 (0.83)
The written feedback I received in [Online Portfolio Name] addressed a single rubric competency.		2.60 (0.96)	3.13*** (0.62)	1.92 (0.90)
The written feedback I received in [Online Portfolio Name] addressed the competency I *chose* to address with my coach.		2.78 (0.92)	3.25*** (0.57)	2.16 (0.94)
The suggestions I received in either my verbal or written feedback focused on how to improve in a specific rubric competency.		2.89 (0.88)	3.19* (0.66)	2.50 (1.00)
The suggestions I received in either my verbal or written feedback focused on how to improve in the specific rubric competency I *chose* to address.		2.78 (0.92)	3.25*** (0.58)	2.16 (0.94)
I learned a great deal about how to improve my teaching as a result of my last two observations (i.e., Visit #3 & #4)	Quality Impelement.	2.75 (0.84)	2.81 (0.65)	2.67 (1.07)
I found the feedback I received from my coach useful.		3.11 (0.92)	3.38~ (0.62)	2.75 (1.13)
I will put some of the ideas discussed in the debrief into practice.		3.25 (0.75)	3.31 (0.60)	3.16 (0.93)
I felt empowered as a professional in my last two observations.		3.07 (0.89)	3.25 (0.77)	2.83 (1.03)

Written Feedback

Table 4.2 provides basic descriptive statistics for all written feedback (n=28) uploaded to teachers' online portfolio after the third and fourth observations. Similar to my analysis of teachers' survey responses, I conducted paired t-tests to determine if a statistically significant difference in written feedback existed across conditions.

Analyses of written feedback presented in Column 4-5 indicate intervention coaches were more likely than control coaches to address fewer competencies (p<0.001, Row 2), but provide more written feedback per competency (p<0.01, Row 4). Additionally, intervention coaches were more likely to provide suggestions for the different competencies address (P<0.05, Row 3) and provide more written text around suggestions per competency (P<0.01, Row 5).

Table 4.2: Written Feedback Analysis

Variable	Construct	Overall (n=28)	Control Group (n=12)	Intervention Group (n=16)
		Mean (SD)	Mean (SD)	Mean (SD)
# Comp. Addressed	Adherence	3.17 (2.13)	5.25 (1.28)	1.65*** (1.01)
# Comp: # Sugg. Comp		0.64 (0.31)	0.51 (0.27)	0.74* (0.30)
Feedback Per Comp.	Dosage	164.99 (128.24)	80.50 (53.53)	228.36** (132.30)
Suggestion Per Comp.		60.12 (66.46)	23.96 (23.86)	87.25** (75.52)

4.2 Achieved Relative Strength Index

I used teacher surveys and coaches' written feedback to determine if coaches trained in the intervention were more likely to offer teachers' choice, narrow the focus of conversations, and engage in better quality post-observation conferences. Table 4.3 summarizes the achieved relative strength index (ARS) for three different constructs of intervention fidelity: adherence, dosage, and implementation quality. I also used paired t-tests to determine if the ARS was statistically significantly different across conditions. Results suggest coaches trained in the intervention were significantly more likely to offer teachers' choice (p<.001, Row1) and focus coaching (p<0.001, Row

2) as compared to coaches in the control condition. In particular, intervention teachers reported greater opportunities to choose and receive coaching around a single competency and had significantly more exposure to coaching around a single competency (p<0.01, Row 3).

Adherence. The first core component of the intervention was choice – giving teachers the opportunity to choose a single rubric competency. Choice included coaches identifying three to four competencies for each teacher, the teacher selecting one of the identified competencies, and the teacher believing she needed to improve in this selected competency. As shown in Table 4.3, Row 1, Column 4 & 5, intervention teachers were likely to choose a single rubric competency to focus coaching around (p<0.001). Moreover, the ARS was substantially different between intervention and control conditions, corresponding to almost one and one-third of a standard deviation (Row 1, Column 8).

Table 4.3: Achieved Relative Strength Values Across Core Components of the Intervention

Core Component	Construct	N	Interv. Mean (SD)	Control Mean (SD)	Min	Max	ARSI
CC	Adherence	28	0.92*** (0.26)	0.44 (0.26)	0	1	1.29
FC	Adherence	28	1.61*** (1.48)	-2.15 (1.22)	-4.60	3.64	2.74
FC	Dosage	28	0.90** (2.21)	-1.20 (0.72)	-1.97	5.84	1.25
Q	Quality	28	0.23 (0.71)	-0.30 (1.27)	-2.52	1.34	0.54

Key: CC, Competency Choice; FC, Focused Coaching; Q, Quality
Note: N = 16 (Intervention), 12 (Control)

A second core component of the intervention was teachers receiving coaching around the rubric competency they chose. This component included a teacher receiving feedback – written and verbal – around the competency she chose prior to the observation. The focused coaching component in Table 4.3, Row 2, Column 4 & 5, revealed intervention teachers were more likely to receive coaching on this particular competency (p<0.001). Additionally, the claim of teachers receiving more coaching on a particular competency is further supported by an ARS of

approximately 2.74 standard deviations (Row, Column 8), equating to the largest difference in ARS detected in this analysis.

Dosage. Coaches employing the interventions' coaching practices likely provided substantial time for teachers to receive feedback and suggestions for improvement on a specific rubric competency. The measure for dosage addressed the amount of feedback a teacher received per competency. As shown in Table 4.3, Row 3, Columns 4 & 5, intervention teachers were more likely to spend additional time receiving feedback and suggestions on the selected rubric competency ($p<0.01$). Moreover, the ARS (Row, 3, Column 8) was substantially different between intervention and control conditions – a difference of approximately 1.25 standard deviations.

Quality of Implementation. The intervention assumed if coaches implemented these coaching practices as intended, it would likely yield better quality post-observation conferences. Quality of implementation addressed teachers' perceptions of whether they learned something in the conference, found the feedback useful, and foresaw using some of the suggested ideas. As shown in Table 4.3, Row 4, Column 4 & 5, there was no significant difference in the quality of implementation between intervention and control condition. Although a t-test revealed no statistically significant difference, the ARS (Row 4, Column 8) revealed a more modest difference between intervention and control conditions, corresponding to about a half of a standard deviation.

Compared to teachers whose coaches received no training, did teachers whose coaches received the training have better observation ratings?

Table 4.4 summarizes results from a series of ordinary least squares (OLS) regression models estimating teachers' end of year observation ratings as a function of receiving the coaching intervention; results are reported as standardized coefficients, indicating a mean of zero and standard deviation of one. In Model 1 I enter in teachers' beginning of the year observation scores with no

other covariates; in Model 2 I include teachers' beginning of the year observe scores and add school

characteristics; in Model 3 I include covariates from Model 2 and add remaining teachers

characteristics. Across models I adjust for teachers' randomization block and cluster standard errors

at the coach level to account for the possibility that different coaches might rate teachers differently.

Table 4.4: Compared to teachers whose coaches received no training, did teachers whose coaches received the training have better observation ratings?

VARIABLES	Model 1	Model 2	Model 3
Intervention	0.3544	0.3642	0.2420
	(0.328)	(0.335)	(0.232)
BOY Score	0.7135***	0.7156***	0.8143***
	(0.129)	(0.192)	(0.169)
% Black Students		0.5119	0.3261
		(0.507)	(0.522)
% White Students		0.7285	1.3864~
		(1.001)	(0.693)
Charter School		0.0090	-0.0007
		(0.488)	(0.318)
Male Teacher			0.6727~
			(0.283)
White Teacher			0.5541~
			(0.334)
No College Education Credits			-0.6017~
			(0.332)
Previous Teaching Experience			0.2969
			(0.339)
Remain In Education 11+ Years			0.7539*
			(0.297)
Constant	0.1913	-0.6266	-1.2518~
	(0.327)	(0.598)	(0.581)
Observations	36	36	36
R-Squared	0.43	0.45	0.70
Number of Strata	6	6	6

Results reveal no statistically significant difference in teachers' end of year observation

ratings between intervention and control conditions. Although not statistically significant, results

suggest intervention teachers, on average, received better end of year observation ratings compared

to control teachers. Specifically, intervention teachers scored between 24 to 35 percent of a standard deviation better than control teachers. Beyond intervention status, teachers with better beginning of the year observation ratings scored, on average, 71 to 81 percent of a standard deviation better than teachers with lower initial ratings; results were statistically significant ($p<.001$) across models. Additionally, teachers who suspect they might make a career in education (e.g., remain in education 11+ years), on average, scored 75 percent of a standard deviation ($p<0.05$) better than teachers who might remain in education for a shorter duration of time. All other remaining teacher characteristics were not statistically significant at the $p<0.05$ level.

Results from separate robustness checks also support estimates detected in my focal models. Estimates from an alternative model specification – multilevel level models to account for the nesting of teachers in coaches – suggest intervention teachers, on average, had 24 to 31 percent of a standard deviation better observation ratings as compared to control teachers. Thus, I interpret these results as evidence the estimates from my OLS models are not being driven by model specification. Additionally, estimates from focal models incorporating multiple imputation imply intervention teachers, on average, received 18 to 33 percent of a standard deviation better observation ratings. Obtaining similar estimates to my focal models after using multiple imputation suggests results are not overly influenced by participant attrition; however, somewhat lower estimates implies attrition slightly biases estimates upward. Appendix N and O include estimates from my separate robustness checks.

The current development study, per IES, is expected to provide pilot data regarding the intervention's promise for generating *intended* outcomes. Evidence of promise, in the context of an underpowered efficacy study, is typically classified as unbiased, non-statistically significant effect size estimates of change in the inappropriate *direction* (Buckley & Doolittle, 2013; IES, 2017). In light of

the expectations of promise for a development study, a 24 to 36 percent of a standard deviation estimate suggests the intervention *does* demonstrate promise for improving teachers' instruction. As I elaborate in the next chapter, prior literature also suggests that these effect sizes are practically meaningful.

Compared to teachers whose coaches received no training, did teachers whose coaches received the training report feeling more prepared?

Table 4.5 summarizes results from a series of ordinary least squares (OLS) regression models estimating teachers' end-of-year preparedness as a function of receiving the coaching intervention, beginning-of-year preparedness, and teacher characteristics. As indicated by the column titles, I used three factors – preparedness in teaching subject matter, preparedness in managing the classroom, and preparedness to teach all students – as the outcome measure for each of the models presented in this table. I also used the same model progression, discussed in the results for the preceding research question.

Results revealed no statistically significant difference between intervention and control teachers' preparedness across different domains of practice. While not statistically significant, results suggest intervention teachers felt better prepared to handle a range of classroom management issues (27 to 32 percent of a standard deviation) and teach all students (19 to 41 percent of a standard deviation). By contrast, control teachers reported feeling better prepared to teach their subject matter content (17 to 22 percent of a standard deviation) despite not resulting in a statistically significant estimate. Beyond intervention status, teachers with higher beginning of the year factors scores reported, on average, feeling better prepare to manage the classroom (55 to 59 percent of a standard deviation, $p < 0.01$) in my most robust models. Additionally, first-year teachers employed in schools with higher percentages of African-American students reported feeling less prepared to

teach all students (186 to 207 percent of a standard deviation, p<0.05). The remaining results

revealed no statistically significant differences across remaining teacher characteristics in my most

robust models (see Model 3).

Table 4.5: Compared to teachers whose coaches received no training, did teachers whose coaches received the training report feeling more prepared?

Variables	Teaching Subject Matter Content			Teaching All Students			Managing The Classroom		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intervention	-0.1650	-0.1910	-0.2190	0.4180	0.1878	0.2415	0.2862	0.2346	0.2765
	(0.291)	(0.317)	(0.388)	(0.359)	(0.335)	(0.406)	(0.245)	(0.251)	(0.302)
BOY Factor Score	0.3731*	0.3887*	0.3727	0.4385~	0.6210*	0.1868	0.5518**	0.5938**	0.5554**
	(0.155)	(0.171)	(0.220)	(0.226)	(0.231)	(0.361)	(0.123)	(0.136)	(0.170)
% Black Students		-0.1988	-0.0987		-1.8624**	-2.0727*		-0.0476	-0.2118
		(0.615)	(0.679)		(0.643)	(0.721)		(0.529)	(0.588)
% White Students		0.0985	0.6148		-0.6253	-0.6828		0.2034	0.4202
		(0.858)	(0.924)		(0.937)	(1.025)		(0.688)	(0.772)
Charter School		0.1184	0.1131		0.0936	0.1772		-0.5381~	-0.3887
		(0.387)	(0.475)		(0.401)	(0.459)		(0.312)	(0.374)
Male Teacher			0.2058			0.7101			0.0756
			(0.448)			(0.494)			(0.385)
White Teacher			0.3001			-0.3793			-0.0109
			(0.395)			(0.454)			(0.326)
No College Education Credits			-0.3306			-0.4950			-0.1702
			(0.368)			(0.398)			(0.303)
Previous Teaching Experience			-0.1458			0.2117			0.2867
			(0.432)			(0.477)			(0.356)
Remain In Education 11+ Years			0.5052			0.4391			0.3481
			(0.388)			(0.423)			(0.300)
Constant	0.5526*	0.6344	0.2457	0.2476	1.8461**	1.6391~	0.3371~	0.7483	0.4831
	(0.227)	(0.631)	(0.863)	(0.287)	(0.647)	(0.838)	(0.186)	(0.540)	(0.707)
Observations	35	35	35	35	35	35	35	35	35
R-Squared	0.1783	0.1915	0.3245	0.1848	0.4188	0.5078	0.4400	0.5028	0.5572
Number of Strata	6	6	6	6	6	6	6	6	6

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Similar to results from my preferred specification, in alternative specifications (See Appendix

P) none of the estimates on the intervention were significant; point estimates were generally similar

in magnitude and direction. I interpret maintaining non-statistically significant results as evidence

estimates are not driven by model specification.

Compared to teachers whose coaches received no training, did teachers whose coaches received the training report better quality coaching?

Table 4.6 summarizes results from ordinary least squares (OLS) regression models estimating end-of-year conference quality as a function of receiving the coaching intervention, beginning-of-year conference quality, and teacher characteristics. As indicated by the column titles, I used three factors – coaching quality, conference investment, and focused coaching – as the outcome measure for each of the models presented in this table. I also used the same model progression, discussed in the preceding the research questions.

Results revealed no statistically significant difference between intervention and control teachers' perceptions of conference quality. While not statistically significant, intervention teachers reported receiving, on average, better quality coaching (6 to 11 percent of a standard deviation) and more focused coaching in the post-observation conference (21 to 31 percent of a standard deviation). In contrast, intervention teachers reported having less investment in the conference process (17 to 38 percent of a standard deviation), however results were non-significant. Beyond intervention status, teachers with higher beginning of the year factor scores reported, on average, better conference quality (78 to 87 percent of a standard deviation, $p<0.001$), greater investment in the conference (27 to 43 percent of a standard deviation, $p<0.05$), and more focused coaching (60 to 65 percent of a standard deviation, $p<0.001$).

Results also revealed different kinds of teachers had different experiences with coaching received during post-observation conferences. Teachers working in schools with a greater percentage of black students reported being less invested in the conference process (158 to 168 percent of a standard deviation, $p<0.05$). Additionally, teachers working in schools with a greater

percentage of white students teachers reported receiving worse quality coaching (205 percent of a

standard deviation, p<0.01) and less focused coaching (168 percent of a standard deviation, p<0.05)

in my most robust models (Model 3). Finally, teachers who took zero undergraduate education

courses reported receiving more coaching focused on a single competency (80 percent of a standard

deviation, p<0.001)

Table 4.6: Compared to teachers whose coaches received no training, did teachers whose coaches received the training report better quality coaching?

	Coaching Quality			Conference Investment			Focused Coaching		
VARIABLES	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intervention	0.1141	0.2242	0.0625	-0.1749	-0.3801~	-0.3803	0.2125	0.2690	0.3149
	(0.279)	(0.240)	(0.275)	(0.275)	(0.211)	(0.262)	(0.281)	(0.282)	(0.302)
BOY Factor Score	0.8571***	0.8744***	0.7818***	0.4275*	0.2768*	0.2744*	0.6492***	0.6589***	0.6006***
	(0.155)	(0.135)	(0.152)	(0.132)	(0.111)	(0.128)	(0.160)	(0.159)	(0.165)
% Black Students		-0.4736	-0.3245		-1.5841**	-1.6818**		-0.4682	-0.9067
		(0.477)	(0.516)		(0.467)	(0.575)		(0.547)	(0.566)
% White Students		-2.1704**	-2.0530**		0.1961	0.2652		-1.5028~	-1.6951*
		(0.651)	(0.690)		(0.614)	(0.714)		(0.749)	(0.766)
Charter School		0.5204~	0.4018		-0.1042	-0.0551		0.3181	0.4815
		(0.298)	(0.329)		(0.265)	(0.324)		(0.337)	(0.356)
Male Teacher			0.5364			-0.0282			0.1444
			(0.323)			(0.303)			(0.352)
White Teacher			-0.2635			-0.0972			0.3905
			(0.280)			(0.270)			(0.307)
No College Education Credits			-0.0472			-0.1526			0.3430
			(0.280)			(0.265)			(0.308)
Previous Teaching Experience			-0.2975			0.0962			0.7977*
			(0.314)			(0.316)			(0.346)
Remain In Education 11+ Years			-0.1989			0.1356			-0.0890
			(0.278)			(0.260)			(0.306)
Constant	-0.1067	0.0632	0.2943	0.4275**	0.2768*	0.2744*	-0.4929*	-0.2324	-0.6597
	(0.207)	(0.466)	(0.576)	(0.132)	(0.111)	(0.128)	(0.215)	(0.553)	(0.655)
Observations	35	35	35	35	35	35	35	35	35
R-Squared	0.5353	0.7058	0.7646	0.2878	0.6434	0.6633	0.3794	0.4767	0.6195
Number of Strata	6	6	6	6	6	6	6	6	6

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Results from a separate robustness check (See Appendix Q) were also consistent with the estimates from my focal models. Similar to results from my preferred specification, all estimates on effects of the intervention were non-significant; point estimates were generally similar in magnitude and direction.

What coaching practices influence first-year teachers' receptivity to coaching and implementation of the coaching content? Why do these coaching practices matter?

While results from the prior research questions offer important insights into the effects of this particular intervention, the quantitative nature of these analyses do not allow for unpacking what coaches *could* do in post-observation conferences to enhance their impact. In light of the null effects detected in this study, understanding what coaches *could do* to improve their impact is particularly important. Specifically, this study seeks to explore what coaching practices coaches could employ to enhance teachers' responsiveness to coaching. Moreover, prior literature suggests understanding influences behind responsiveness is a promising starting point given suggestive evidence that responsiveness influences implementation (Wanless, Rimm-Kaufman, Abry, Larsen, & Patton, 2014; Wong, Ruble, McGrew, & Yu, 2017) and intervention success (Power, Blom-Hoffman, Clarke, Riley-Tillman, Kelleher, & Manz, 2005). Thus, this study interviewed 13 first-year teachers across conditions to understand what pedagogical coaching practices influence teachers receptivity to coaching and implementation of the coaching content.

Table 4.7 summarizes results from my analysis of 13 first-year teacher interview transcripts. As described in the Methods chapter, the interviews focused on gathering teachers' perceptions about coaching practices that influenced their receptivity to coaching and why these practices mattered. Column two presents the frequencies and percentages of different coaching practices across all interview transcripts; columns three and four are organized in the same way as column two

but summarize frequencies and percentages across different conditions. I coded 82 instances of

coaching practices across all interview transcripts; 42 instances occurred within control teacher

interview transcripts as compared to 40 for intervention teachers.

Table 4.7: What coaching practices influence first-year teachers' receptivity to coaching and implementation of the coaching content?

	Overall (n=13)^ # Instances (%)	Control (n=7)^ # Instances (%)	Intervention (n=6)^ # Instances (%)
Concrete Feedback	**27 (33%)**	**13 (31%)**	**14 (35%)**
Decomposing Practice	*18* (67%)*	*8* (62%)*	*10* (71%)*
Actionable Feedback	*15* (56%)*	*8* (62%)*	*7* (50%)*
Creating A Welcoming Environment	**16 (19%)**	**10 (24%)**	**6 (15%)**
Addressing The Positive	*7 (44%)*	*4 (40%)*	*3 (50%)*
Collaborative Dialogue	*4 (25%)*	*2 (20%)*	*2 (33%)*
Explaining Rationale	*2 (12.5%)*	*1 (10%)*	*1(17%)*
Sharing Perspectives	*1 (6%)*	*1 (10%)*	*0 (0%)*
Responsive to Teacher Feedback	*2 (12.5%)*	*2 (20%)*	*0 (0%)*
Limiting The Focus	**13 (16%)**	**5 (12%)**	**8 (20%)**
Modeling Practice	**10 (12%)**	**7 (17%)**	**3 (8%)**
Directive Coaching	**6 (7%)**	**2 (5%)**	**4 (10%)**
Coach Identified Competencies	*2 (33%)*	*1 (50%)*	*1 (25%)*
Directing Resources	*3(50%)*	*1 (50%)*	*2 (50%)*
Follow Through	*1 (17%)*	*0 (0%)*	*1 (25%)*
General Focus	**5 (6%)**	**2 (5%)**	**3 (8%)**
Incorporating Teacher Choice	**5 (6%)**	**3 (7%)**	**2 (5%)**

Note: The values in parentheses represent the percentage of a particular code to the total number of instances across all interviews. *Italicized* percentages represent the percentage of a particular sub-code to the number of parent codes cited.
^ I checked average number of instances identified per transcript to determine if a small number of teachers dominated the comments. Since participating teachers contributed, on average, approximately 6 instances with a 0.2 standard deviation, I concluded the instances were fairly representative of the interviewees.
*Some instances of concrete feedback (n=7) included references to both action oriented and decomposing practice. These instances of concrete feedback were double coded, thus resulting in instances of action oriented and decomposing practice codes exceeding the total number of concrete feedback instances.

Analysis of interview transcripts revealed that four main coaching practices – *concrete feedback*,

creating a welcoming environment, *narrow focus,* and *modeling practices* – dominated first-year teachers'

responses. *Concrete feedback* refers to feedback that was broken down into its individual parts (i.e.,

decomposing practice) and was perceived as something that could be implemented immediately (i.e.,

actionable). *Creating a welcoming environment* involves engaging teachers in the conference process, addressing positive aspects of teachers' practice, and being responsive to teachers' feedback. Finally, *narrowing focus* refers to instances where coaches addressed a limited number of rubric competencies, while *modeling practices* involves physically demonstrating for teachers how to implement or execute a particular practice. Table 4.6 reveals *concrete feedback* was cited most frequently, while the other three coaching practices were less commonly mentioned but still mentioned somewhat frequently. I first discuss results for *concrete feedback*, followed by *establishing a welcoming environment*, *narrowing focus*, and *modeling practice*. Additionally, I include the reasons why first-year teachers perceived these practices as influencing their receptivity to coaching.

Concrete Feedback

Providing *concrete feedback* was most commonly cited across first-year teacher interviews. I coded 27 instances of *concrete feedback* across 13 interviews, which equated to approximately one third of all teachers' responses for influential coaching practices. Specifically, teachers cited benefitting from feedback that could improve practice immediately (*actionable feedback*) and having feedback broken down into its constituent parts (*decomposing practice*) at relatively similar rates. Within these instances of *concrete feedback*, *decomposing practice* was cited 18 times while *actionable feedback* was cited 15 times. Additionally, teachers cited both decomposing practice and actionable feedback seven times within the same response. Control and intervention teachers reported *concrete feedback* with similar frequency. Intervention teachers cited *concrete feedback* approximately 35 percent of the time as compared to 31 percent for control teachers were code. Thus, teachers across conditions held similar beliefs around the importance of coaching providing *concrete feedback* to promote instructional improvement.

When asked to address why *concrete feedback* influenced their receptivity to coaching, teachers revealed three common reasons – *immediacy of incorporation, lack of knowledge*, and *expedited success*.

Immediacy of incorporation: First-year teachers commonly cited concrete feedback as suggestions, resources, or tools that could be implemented immediately into the classroom. Given the demand for practicing teachers to quickly learn and apply certain strategies, concrete feedback assisted first-year teachers in meeting the demands of their classroom. For example, one first-year teacher noted needing "little things that I can actually implement the next day, as opposed to a bunch of theory because I'm not in school, I'm actually practicing. I need things I can practice the next day" (Interview #4, 04/13/2016). This example highlights the need of practicing teachers to receive written or verbal feedback that assists teachers in immediately using a specific strategy or skill. Considering the challenge first-year teachers face trying to independently lead a classroom of students while also learning to teach, concrete feedback seemed responsive to these dual needs.

Lack of knowledge: First-year teachers also cited their *lack of knowledge* as common reason for why they felt concrete feedback influenced their receptivity to coaching. In particular, interviewees indicated that they lacked adequate knowledge of teaching as a result of their limited education backgrounds and abbreviated pre-service training. For instance, one first-year teacher commented, "[R]eally, you don't exactly know how to teach, in your first year, especially not having an education background" (Teacher Interview #4, 04/13/2016). Another said, "I think one of the things, especially with [ACP] is, [ACP] first-year teachers who did not student teach, we don't know anything" (Teacher Interview #1, 04/11/2016). In these instances, teachers cited *concrete feedback*, specifically around its emphasis on how to implement a particular practice, as helping them address some of the knowledge gaps resulting from limited pre-service training.

Expedited success: Additionally, first-year teachers cited *expedited success* as another reason why *concrete feedback* mattered. Interviewees frequently mentioned experiencing considerable disappointment and limited success during their first-year of teaching. However, *concrete feedback* helped them implement a strategy and experience some immediate success with it because they were aware of what strategy to incorporate and how to implement it. Thus, teachers felt like this type of feedback allowed them to procure some smaller successes that could potentially build momentum for more consistent success over time.

Creating A Welcoming Environment

I also coded 16 instances (19 percent of all teachers' responses) of interviewees mentioning responsiveness to coaching when coaches created a *welcoming environment*, including such practices as *addressing the positive, engaging in collaborative dialogue, explaining rationale, sharing perspectives*, and being *responsive to teacher feedback*. Among the respective practices comprising *creating a welcoming environment, addressing the positive* (7 instances) and *collaborative dialogue* (4 instances) were most frequently cited. This means teachers were more likely to feel a part of a welcoming environment when coaches discussed positive aspects of teachers' instruction and asked questions that prompted teachers to feel like they were engaging in a collaborative dialogue with their coach.

Although *creating a welcoming environment* was mentioned in almost 20 percent of all references to influential coaching practices, control teachers reported this practice more often than intervention teachers. Control teachers cited practices associated with *creating a welcoming environment* approximately a quarter of the time as compared to 15 percent for intervention teachers. Although control and intervention teachers reported instances of *addressing the positive* and *collaborative dialogue* with similar

frequency, control teachers reported more instances of coaches *sharing perspectives* and *responding to teacher feedback.*

When asked to consider why *creating a welcoming environment* influenced receptivity to coaching, teachers revealed two common reasons – *feeling successful* and *sense of partnership.*

Feeling successful: Teachers who mentioned *creating a welcoming environment* as an influential practice indicated that coaches *addressing the positive* allowed teachers to *feel successful*, despite feeling, at times, like they were not living up to expectations. For example, a teacher noted "I'm already hard on myself so it's important to have someone kind of say like hey, you might be hard on yourself but this is what you did really well and you should keep doing this" (Teacher Interview #2, 04/12/2016). Although this teacher knew she had room for improvement, *feeling successful* helped her believe she could leverage aspects of her teaching in the future and that her practice might not be as dismal as s/he perceived.

Sense of partnership: Additionally, first-year teachers cited having a *sense of partnership* as another reason why *creating a welcoming environment* mattered. Specifically, through *collaborative dialogue* teachers felt involved in the conference process and a part of a joint pursuit for teacher development. For example, one teacher noted about her coach:

Just [her] entering it as this just a conversation that we're going to have. How do you think it went? What do you need me to help you do it? Instead of being like, this what I saw, I'm an expert at this, so I'm going to tell you what you need to do. Of course, she still gave me her expert advice but I asked for it (Teacher Interview #4, 04/13/2016).

By asking questions that prompted the teacher to *reflect* on both her classroom performance and professional needs, the coach provided an opportunity for the teacher to play an active role in the conference. Additionally, recognition that a coach and teacher jointly pursue the teacher's development coach likely established an environment where a teacher felt comfortable *asking* for the coach's advice. Although it is not represented in this particular passage, teachers also mentioned

being more receptive to coaches' feedback because teachers did not perceive the feedback as being forced on when they felt actively involved in the conference and a part of joint pursuit of development.

Limiting The Focus

I also coded 13 instances (16 percent of all coded instances of influential practices) of interviewees mentioning coaches addressing a smaller number of competencies (*limiting the focus*) as a practice that influenced their responsiveness to coaching. Moreover, intervention teachers cited this practice more often (8 instances) than control teachers (5 instances). I suspect two reasons might explain this difference. First, results from my analysis of adherence to focused coaching suggest intervention teachers had more exposure to coaches narrowing the scope of conferences. Thus, intervention teachers likely had more opportunities to experience this particular practice and determine its benefit. Second, intervention teachers had experienced both more typical coaching (e.g., general scope) and focused coaching, thus providing them a contrast. It is possible exposure to this contrast influenced how intervention teachers responded.

According to interviewed teachers, addressing a limited number of competencies was particularly influential because it *facilitated focus, prompted inquiry into and refinement of practice,* and *addressed the building blocks of more complex practices.*

Facilitated Focus: Most teachers who cited *limiting the focus* as an influential practice indicated that addressing a single competency helped teachers focus their attention – both time and energy – on a single topic to improve on. *Limiting the focus* was particularly helpful because some first-year teachers cited not knowing how to prioritize their time or what practices to address. For example, one teacher commented, "I keep forgetting [what to address] because I'm just so

consumed with other stuff. Where if I had to deal with just that one thing, there's no way I'm going to forget that that's the one thing I'm working on" (Teacher Interview #11, 04/19/2016). Addressing a single competency helped first-year teaches identify what they needed to prioritize, thus allowing them more time to address certain practices that might spur instructional improvement.

Prompted Inquiry Into and Refinement Of Practice. Moreover, teachers mentioning the utility of *limiting the focus* suggested that it prompted inquiry into and further refinement of professional practice. Specifically, *limiting the focus* signaled to the teacher the importance of inquiry into practice as the basis for refining practice. For instance, one teacher mentioned, "I like the idea of really, really trying to hone in on *one* thing at a time, learn about it, try it out, and adjust [my practice]" (Teacher Interview #8, 04/15/2016). In this example, *limiting the focus* afforded the teacher the opportunity to identify a limitation in her practice, explore and integrate possible actions, and refine practice based on outcomes.

Building Blocks of More Complex Practices: Additionally, interviewees mentioned addressing the *building blocks of more complex practices* as another reason why *limiting the focus* mattered. Specifically, teachers felt *limiting the focus* instilled a belief of working towards more complex, long-term goals. For example, one teacher noted, "figuring out how to have teenagers not be disrespectful to one another is not something that I can fix in a week, but I can focus on something that is a building block to the longer-term goal [of having students be more respectful to each other]" (Teacher Interview #13, 04/26/2016). In this case, focusing on a single practice allowed the teacher to address something that was presently manageable while also working towards a longer-term goal. Moreover, focusing on the building blocks of a more complex practice allowed teachers to notice more immediate success, despite knowing it takes time to master a more complex practice.

Modeling Practice

Lastly, I coded 10 instances (approximately 12 percent of all instances coded) of teachers referencing receptivity to coaching when coaches *modeled practice* by physically enacting or demonstrating how to execute a particular practice. Additionally, teachers in the control condition (7 instances) cited this practice more often than intervention teachers (3 instances). While it is unclear why this difference existed, it is possible that control coaches engaged in this practice more often than intervention coaches or enacted it with better quality. This hypothesis might be plausible considering four control coaches assigned to three different coaches cited this practice. In contrast, two intervention teachers assigned to the same coach cited *modeling practice.*

Image of the Possible: Teachers expressed appreciation for when their coaches modeled practices as it provided them with an *image of the possible.* Specifically, teachers mentioned broadly knowing of a particular practice or technique (e.g., checking for understanding), but did not necessarily know how to enact it in the classroom. Thus, coaches' demonstration of a particular practice filled in some of the knowledge gaps teachers sometimes attributed to limited pre-service coursework and field experiences.

Chapter 5: Discussion and Implications

Discussion of Findings

In this section, I discuss three key findings and how these findings contribute to the practice of teacher coaching, research on teacher coaching, and refinement of the intervention. First, fidelity analyses revealed the core components of the intervention – teacher choice, focused coaching – had a stronger presence in the intervention condition as opposed to the control. Second, estimated differences between intervention and control teachers' observation ratings, perceptions of preparedness, and coaching quality, while not statistically significant, demonstrate the intervention's promise for generating intended outcomes. Finally, I discuss the importance of *concrete feedback*, *creating a welcoming environment, narrowing focus,* and *modeling practice* as coaching practices that might enhance teachers' responsiveness to coaching.

Finding I: Coaching was different across conditions. A central finding of this study was the coaching that occurred in the intervention condition was significantly different from the coaching that occurred in the control condition. Specifically, intervention coaches were significantly more likely to offer teachers' choice ($p<0.001$, ARS=1.29 SD), focus the coaching on a single competency ($p<0.001$, ARS=2.74), and provide more coaching ($p<0.01$, ARS=1.25 SD), in the form of time spent addressing a single competency and extensiveness of feedback, around the chosen competency. Detecting a significant difference in coaching across conditions demonstrates the intervention's promise for generating intended outcomes in two ways. First, implementation of the intervention *should* change activity and behavior in a manner consistent with the overall theory of

change (Buckley & Doolittle, 2013). Results indicating intervention coaches offered teachers more choice, spent more time focusing on a single competency, and provided more extensive coaching suggests implementation *did* change coaching activities and behaviors in a manner consistent with my theory of change (see Logic Model, Table 3.11). Second, results demonstrate the feasibility of this particular intervention to be delivered as intended in an authentic educational context. This finding is particularly important considering development studies *should* provide evidence the intervention can be implemented with fidelity in an authentic setting *before* scaling up to an efficacy and replication study (IES, 2016).

Results also align with prior literature suggesting intervention participants engaging in initial training and receiving ongoing support improve the likelihood participants accurately implement an intervention's core practices (Kretlow and Bartholomew, 2010). Additionally, results align with Kraft and Blazar's (2015) finding that coaches trained in a certain type of coaching tend to implement the original coaching plan with close fidelity.

Moreover, the simplicity of the intervention, in terms of amount of requirements, could have contributed to the strength of core components in the intervention condition. Specifically, I designed the intervention to be manageable for intervention coaches to implement within the context of the ICP. In fact, the intervention reduced the number of requirements coaches had to follow during the observation and post-observation conference process as compared to the control condition. This hypothesis is consistent with the notion that the complexity of the intervention influences the degree to which it is implemented as intended (Gresham, 2016).

Additionally, the ARS differential across conditions might attest to the attention placed on implementation fidelity. Whereas intervention fidelity analyzes the extent to which the program was implemented as designed, implementation fidelity addresses certain contextual factors that create

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essential conditions for the implementation of the intervention's core components (Hulleman et al., 2013). These factors, otherwise known as implementation core components (Fixsen et al., 2005), indirectly effect the intervention's impact, but provide the facilitative condition for implementation. In this study, it is possible that removing the evaluation component of typical observation cycles enabled an environment where intervention coaches could implement a core component (e.g., focused coaching). Thus, removing the evaluation requirement might have allowed intervention coaches the opportunity to focus on fewer competencies as opposed to addressing multiple competencies within a single post-observation conference.

Finally, this study makes three important contributions as it relates to experimental research analyzing intervention fidelity within a coaching program. First, this is one of the first experimental coaching studies to thoroughly assess intervention fidelity. Most experimental research on teacher coaching has looked exclusively at the effectiveness of such programs without exploring the extent to which the intervention was implemented as intended (Allen et al., 2011). While the majority of experimental studies yielded positive results, if studies do not address intervention fidelity and detect null effects, they run the risk of committing a Type III error, whereby results are attributed to an ineffective intervention rather than limited implementation (Mendive et al., 2016).

Second, studies analyzing intervention fidelity only examined implementation in the intervention condition. For example, Kraft & Blazar (2015) found the Match Teacher Coaching program was implemented with a high degree of fidelity whereby each teacher in the intervention received between four to five weeks of coaching and addressed the core components of the MTC coaching plan. Although this analysis is helpful when interpreting their results, it is possible control teachers received informal mentoring or additional professional development that could have influenced some of the variation in results across conditions. Thus, if control teachers received some

form of informal mentoring or support, then this study might have underestimated the true effect of the intervention by not capturing program elements in both conditions (Hulleman & Cordray, 2009).

Third, this is one of the first experimental coaching studies to analyze multiple dimensions of intervention fidelity. Whereas most prior literature explored either *adherence* (Neuman & Cunningham, 2009) or *dosage* (Kraft & Blazar, 2015), this study attempted to look at *adherence, dosage, and quality of implementation.* Thus, I attempted to fulfill prior literature's call to provide rigorous evidence of implementation fidelity (Desimone, 2009; Wayne, Yoon, Zhu, Cronen & Garet, 2008) and offer more practical guidance on the nature of implementation fidelity in experimental settings (Cordray, 2007).

Finding II: The intervention demonstrated promise for producing intended outcomes. In the context of an underpowered efficacy study, un-biased effect size estimates of change in the *appropriate* or *hypothesized* direction demonstrate promise for generating *intended* outcomes (Buckley & Doolittle, 2013). While non-significant, intervention teachers, on average, received better observation ratings compared to control teachers. Specifically, intervention teachers scored between 24 to 36 percent of a standard deviation better than control teachers. Thus, estimated effects in the appropriate (e.g., positive) direction indicate the intervention's *promise* for generating improved classroom instruction.

Prior research also suggests that these results are promising. First, findings from my study are within range of estimates from Kraft et al.'s (2016) meta-analysis of experimental coaching studies. Moreover, there are reasons why estimates in the Kraft et al. (2016) analysis would be larger than those in my work. In particular, most of the studies included in the meta-analysis had much stronger treatment contrasts because the intervention teachers typically received coaching plus additional professional development supports (e.g., training workshops, video resources) as

compared to no coaching or professional development supports in the control condition. In contrast, my study had a more subtle, but important treatment contrast where the *content* of coaching was the only difference across conditions. Specifically, intervention and control teachers received coaching and the same professional development supports (e.g., bi-weekly ICP seminar instruction) with the only difference being the *content* – choice plus focus compared to less choice and focus – of the coaching received. Given the subtlety of the treatment contrast in the present study, it makes sense why estimates are towards the bottom of Kraft et al. (2016) effect size range (14 to 92 percent of standard deviation).

Second, Ronfeldt and Campbell's (2016) evaluation of teacher education programs (TEP) offers the strongest evidence results from the present study are meaningful. Drawing on observation ratings from 9,500 TEP graduates across 183 TEP programs, the authors found TEP programs in the top-quartile had observation ratings that were, on average, 31 percent of a standard deviation better than TEP programs in the bottom-quartile. The difference in magnitude is comparable to the average difference in observation ratings between a first- and second-year teachers (β=0.33, p=0.11), an amount the authors argue is meaningful. Thus, it is reasonable to conclude the estimated effects of the present study, ranging from 24 to 36 percent of a standard deviation, not only show promise, but are meaningful in light of prior research.

I also considered whether the intervention demonstrates promise for improving teachers' perceptions of preparedness and coaching quality. Results from this underpowered efficacy study with a subtle, but important treatment contrast revealed the intervention yielded null effects. Specifically, teachers across conditions reported no statistically significant difference in preparedness to teach across instructional domains and the quality of coaching received. However, two non-significant trends provide additional suggestive evidence in support of the intervention's promise.

First, estimates trended in the positive direction concerning intervention teachers' preparedness to differentiate and teach all students (18 to 42 percent of standard deviation) and manage the classroom (23 to 28 percent of a standard deviation). It is notable that intervention teachers favorably reported on preparedness to teach all students and manage the classroom because over half of intervention teachers (54 percent) chose and received coaching on a rubric competency addressing one of these two constructs. Additionally, estimates for coaching quality (6 to 11 percent of a standard deviation) and focused coaching (21 to 31 percent of a standard deviation) also trended in a positive direction. These results provide additional support for the intervention's *promise* for strengthening perceptions of preparedness and coaching quality (Buckley & Doolittle, 2013).

Prior research provides additional insight into why non-significant, yet positive estimates for the effects of the intervention on perceptions of preparedness and coaching quality suggest the intervention has promise. Specifically, having greater autonomy over instructional decisions might improve teachers' perceptions of preparedness and self-efficacy (Ronfeldt et al., 2013) and increase the likelihood teachers report greater satisfaction with professional development (Gates Foundation, 2014). Moreover, positive estimates for the effects of the intervention on feelings of preparedness and coaching quality align to prior research suggesting focusing on a specific competency enhances teachers' perceptions of self-efficacy (Archer et al., 2016) and receptivity to coaching and feedback (Reinke et al., 2013). Finally, I suspected intervention teachers would report better quality coaching because I assumed more focused coaching would yield more specific and actionable feedback (Hill & Grossman, 2013), a form of feedback which prior research has found teachers to favor because it supports implementation in the classroom (Biancarosa, G., Bryk, A., & Dexter, E., 2010). Though not significant, intervention teachers tended to report better quality coaching, as expected.

It is not entirely clear why intervention teachers' perceptions of preparedness to teach subject matter content or investment in the conference process trended in a negative direction. It is possible intervention teachers *were* better prepared to teach subject matter content and *were* more invested in the conference process, but my method for measuring subject matter preparedness and investment (e.g., teachers' perceptions) did not capture these differences. One could also imagine some teachers in the intervention were disappointed by the shift in coaching from the fourth to the fifth and sixth observation and reacted negatively to the change. However, I am less confident in the latter scenario given how intervention teachers' perceptions of conference quality, which I suspect are related to conference investment, trended in a positive direction. Regardless, understanding why results did not trend in a positive direction is particularly important since one goal of a development study is refining the intervention in preparation for scaling up to an efficacy study. Understanding how coaches might enhance teachers' investment in the conference process is especially important in light of Wanless et al.'s (2014) argument that engagement in and responsiveness to coaching influences implementation of the content discussed. I now turn to a discussion of specific pedagogical practices coaches could use to potentially influence investment.

Finding III: Certain practices might influence teachers' responsiveness to coaching. While quantitative findings suggest the intervention demonstrates promise for generating intended outcomes, they do not provide much insight into what coaches could *do* in post-observation conferences to improve their impact. Since refining the intervention is expected after pilot data collection and before scaling up to an efficacy study, understanding what coaches could do to strengthen their impact is particularly important. Thus, this study also explored what pedagogical practices coaches could employ to influence teachers' responsiveness to coaching and improve the likelihood teachers implement the content discussed. Understanding influences behind

responsiveness is particularly promising given the relationship between responsiveness, implementation (Wanless, Rimm-Kaufman, Abry, Larsen, & Patton, 2014; Wong, Ruble, McGrew, & Yu, 2017) and intervention success (Power, Blom-Hoffman, Clarke, Riley-Tillman, Kelleher, & Manz, 2005).

First-year teachers mostly agreed upon coaching practices likely influencing their receptivity to coaching. Although some differences existed across conditions, there was considerable agreement around the importance of coaches providing concrete feedback during post-observation conferences. This finding confirms prior research on teachers' professional learning suggesting that it's more successful when feedback is explicit or concrete and uses multiple sources of data (Desimone & Pak, 2017). However, prior research has not clarified what constitutes concrete feedback. Thus, my explication of concrete feedback attempts to name specific components of this particular practice. Specifically, teachers cited two components – actionable feedback and decomposing practice – that contribute to concrete feedback. Actionable feedback typically refers to feedback individuals can incorporate or act upon immediately in their practice (Wiggins, 2016). First-year teachers valued actionable feedback because they felt like they could address a relevant problem of practice immediately. However, feeling like you can immediately act does necessarily equate to a teacher knowing *how* to implement the feedback. Therefore, concrete feedback comprises a second component, decomposing practice, to assist teachers in learning how to implement a particular practice. Decomposition refers to breaking a practice into its constituent parts, thus making aspects of a practice visible to a novice teacher (Grossman et al., 2009). Thus, making a practice visible might assist a novice in learning how to implement the actionable feedback.

Moreover, first-year teachers cited three other influential coaching practices that are consistent with promising approaches described in previous research on positive psychology, new

teacher induction, and teacher coaching. First, creating a welcoming environment was the most commonly cited influential coaching practice outside of providing concrete feedback. This makes sense given what prior research says about its two core components: addressing the positive and collaborative dialogue. Prior research on positive psychology suggests positive experiences or encouragement can promote important traits such as engagement, satisfaction, and perseverance, while also combating the detrimental effects of negative experiences (Seligman & Csikszentmihalyi, 2000). Moreover, new research exploring the effects of new teacher induction suggests supportive communication from an administrator is the most consistent predictor of a new teacher staying in her current school (Ronfeldt & McQueen, 2017). Additionally, research on teacher professional development suggests interactions through collective participation create a productive learning environment (Little, 1993; Ronfedlt et al., 2015) and can facilitate teacher learning (Desimone, 2009). In sum, coaches addressing the positive and engaging in collaborative dialogue likely create a coaching environment that is both engaging and conducive to learning.

Finally, narrowing the focus and modeling, although less commonly cited, coincides with previous studies suggesting these practices might matter. In particular, addressing fewer competencies in a post-observation conference might allow coaches to work at a smaller grain size and provide more specific and actionable feedback (Hill & Grossman, 2013). Specifically, focusing on a single competency enables coaches to take a broad teaching practice (e.g., facilitate a classroom discussion), decompose it into its constituent parts, and offer more specific and actionable feedback to a teacher. Modeling practice, on the other hand, allows for a teacher to observe an expert engage in a particular practice (Desimone & Pak, 2017). Although modeling can be beneficial, prior research suggests that, in isolation, forces the teacher to serve as a passive agent in the conference (Putnam & Borko, 2000). Thus, modeling is likely beneficial when it occurs in tandem with opportunities for a

teacher to practice what the coach modeled. Some first-year teachers mentioned rehearsal as an influential coaching practice, but it was not as frequently mentioned as other practices previously discussed. Therefore, modeling and rehearsal working in tandem might enhance teachers' capacity to successfully enact a particular practice in an authentic setting.
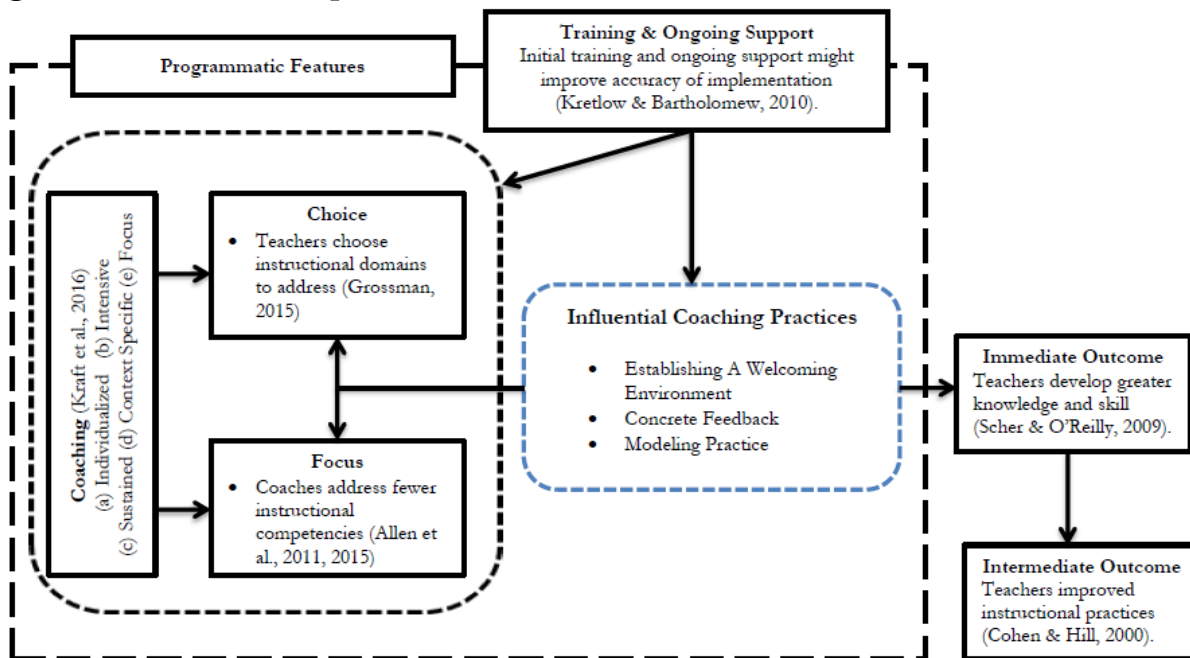
Revision of Conceptual Framework

Findings from this development study suggest a number of revisions to my initial conceptual framework, shown in Figure 5.1. I begin this section describing the aspects of my initial conceptual framework reaffirmed by this study. I then describe three main revisions I made to the initial conceptual framework based upon my findings. First, the initial conceptual framework did not consider programmatic features enabling this type of coaching. Second, my framework includes pedagogical coaching practices that might influence teachers' responsiveness to coaching and improve the likelihood coaching content is implemented. Finally, I emphasize how initial training and ongoing support could address both coaching structure and pedagogical practices (e.g., process).

Findings from this study reaffirm several aspects of my original conceptual framework in Chapter 2 (see Figure 2.1). Achieved Relative Strength (ARS) analyses revealed the presence of two core components – choice and focused coaching – were stronger in the intervention condition. This suggests initial training and ongoing support sustained implementation throughout the duration of the intervention. This finding, presented as the black rectangle towards the top right of Figure 5.1, affirms previous studies suggesting initial training and ongoing support improves overall implementation of an educational intervention (Kretlow & Bartholomew, 2010). Next, results provide some suggestive evidence that intervention teachers had stronger observation ratings, perceptions of preparedness, and perceptions of coaching quality. Though non-significant, there is

reason to believe results are meaningful; specifically, average differences in observation ratings between intervention and control conditions (a) fell within the range of results included in Kraft et al.'s (2016) meta-analysis and (b) were comparable to differences in average observation ratings between first and second year teachers. Thus, results from this study seem to reaffirm the notion that the *structure* of the intervention – choice (Grossman, 2015) and focused coaching (Allen et al., 2011, 2015) – show promise for improving teacher knowledge, skill, and instruction. The intervention's core components (e.g., choice and focus) remain depicted on the left of Figure 5.1, while the intended outcomes (e.g., knowledge, skill, instruction) are presented towards the right of the conceptual framework.

Figure 5.1: Revised Conceptual Framework

Although some findings support aspects of my initial conceptual framework, other findings suggest revisions are needed. The preliminary conceptual framework focused on initial training and ongoing support as levers for sustaining a high level of intervention fidelity. While the initial training

and subsequent support helped sustain a high level of intervention fidelity, other factors likely contributed to these results. Specifically, results indicated intervention coaches were significantly more like to focus on a single competency in the conference and in teachers' written feedback. One possible contributing factor was removing the evaluation component for intervention teachers' third and fourth visit to allow coaches to focus the observation and post-observation conference on the competency each teacher chose. The influence of initial training, ongoing support, and removing evaluation on implementation of the intervention's core components supports prior literature advocating the importance of attending to *implementation fidelity* (Hulleman et al., 2013). Specifically, implementation fidelity refers to contextual factors (e.g., removing the evaluation component) or programmatic supports (e.g., initial training) that enable implementation (Fixsen et al., 2005). Thus, I added a black rectangular dash line – encompassing training, ongoing support, and removing the evaluation component – to the perimeter of Figure 5.1 to highlight the importance of attending to contextual factors and programmatic supports enabling implementation.

Findings from this study suggest certain coaching practices – concrete feedback, creating a welcoming environment, and modeling practice – might influence teachers' receptivity to coaching. However, my original conceptual framework did not attend to or consider whether certain coaching practices might influence teachers' receptivity to coaching or implementation of the content discussed. Thus, another revision to the framework, depicted as the blue dash rounded rectangle in Figure 5.1, addresses the different pedagogical coaching practices cited as influencing teachers' receptivity to a particular type or model of coaching. Specifically, including certain influential coaching practices suggests the *process* (e.g., what *practices* coaches could employ) of the post-observation conference might improve teachers' responsiveness to coaching and influence teachers' implementation of the content discussed. Addressing pedagogical approaches is particularly

important given prior literature suggesting post-observation conference are typically facilitated in ways that likely close down opportunities for teacher learning (McQueen, 2015).

The final revision I made to my conceptual framework addressed the initial training and ongoing support provided to coaches, shown as the black arrows at the top of Figure 5.1. Findings from interviews with first-year teachers suggest certain coaching practice (e.g., *process* of the post-observation conference) might influence teachers' receptivity to coaching and implementation of the content discussed. Specifically, several first-year teachers reported that certain coaching practices – concrete feedback, creating a welcoming environment, narrowing focus, and modeling practice – influenced their receptivity to coaching. These results led me to change my framework from initial training and ongoing support focusing solely on the *structure* of the intervention to attending to both *structure* and *process*. In my earlier framework, initial training and ongoing support attended to the intervention's core components, but did not attend to different pedagogical practices coaches could employ to enhance teachers' receptivity to coaching on a single competency. Thus, I kept the arrow pointing from the initial training and ongoing support towards the *structure* (e.g., black dash line outside intervention's core components) of the post-observation conference and added an arrow pointing towards the *process* (e.g., blue dash line outside of influential practices) of the post-observation conference. With more of a focus on what coaches are supposed to do and what practices they might employ, I suspect, coaches will enhance teachers' receptivity to coaching on a single competency, and, in doing so, improve the likelihood teachers implement the content discussed. I discuss this further in my Implications section.

Study Limitations

This study had several strengths including randomization to intervention and control conditions, investigating different dimensions of intervention fidelity, and a mixed-methods approach to answering the research questions. However, my findings should be interpreted within the context of a development study, which had several notable limitations that could have influenced results; I elaborate below.

First, I question the reliability of coaches' observation ratings. The ICP attempted to measure inter-rater reliability at the final professional development, but the workshop was poorly attended. Given the absence of several members from both conditions, the ICP did not have an accurate sense of whether different coaches would consistently score an episode of practice. Thus, I cannot rule out the possibility teachers in both conditions may have performed similarly but coaches in the intervention condition were more lenient. Greater leniency in the intervention condition could bias estimates upward. Second, intervention coaches were no longer blind to their condition when they completed their fifth and sixth evaluations of teachers in the intervention group. Thus, it is possible intervention coaches scored teachers higher than their true performance, for instance, because of an expectation for the intervention to be successful. In other words, it is possible an intervention coach scored a teacher higher than what her practice warranted. If this were the case, the intervention coach would have inflated teachers' evaluation scores and biased estimates upward. Future evaluation studies on teacher coaching should include independent raters to evaluate teachers' instruction to mitigate potential sources of bias.

Second, the conservative attrition standards from the What Works Clearinghouse (2015) suggest the combination of overall (22 percent) and differential (13 percent) teacher attrition to be *high*. While a post-attrition balance check of teachers remaining in the analytic sample indicates

balance on different characteristics at baseline, *high* attrition could still introduce bias on unobserved characteristics for instance. Finding estimates to be slightly lower in magnitude in robustness checks using multiple imputation may further concerns over bias due to attrition, and raises questions about whether it is possible to attribute differences in the outcomes *solely* to the intervention (What Works Clearinghouse, 2015). Third, several of the measures used to answer the different research questions relied on self-reported teacher data. Self-reported data limited my ability to identify whether coaches actually implemented the intervention's core components as intended, whether teachers received better quality coaching, and whether teachers were better prepared to teach across different domains of practices. Moreover, I could not triangulate self-reported data with observational data on implementation (e.g., adherence, dosage, quality), conference quality (e.g., evaluation of post-observation conference), or sense of preparedness (e.g., evaluation of teachers' practice across different instructional domains). While teachers did comment on implementation, conference quality, and preparedness, I could not verify whether these constructs occurred in practice. How teachers responded across surveys could have been more indicative of what they perceived at the time. Therefore, I cannot rule out the possibility teachers' responses do not reflect what actually happened; rather, results must only apply to teachers' perceptions of implementation, conference quality, and sense of preparedness. For example, during a post-observation conference, a coach modeled for a teacher how she might better elicit students' thoughts during a whole class discussion. In doing so, the teacher received what I constitute as quality coaching because she was able to observe a visual enactment of a particular practice that could be implemented in the classroom. However, the teacher hoped she might see the coach model this practice in front of live students rather than in the post-observation conference. Thus, the teacher does not know, in regards to the practice modeled, how applicable it will be in her classroom. Consequently, the teacher's perception

of a lack of applicability might leave her feeling slighted by the coaching she received. This could

lead the teacher to *report* worse quality coaching, despite *receiving* better quality coaching in practice.

Fourth, the absence of observational conference data limits the quality of my fidelity

analysis. Measuring adherence, dosage, and quality are most reliable when observational data is

analyzed (Gresham, 2016). Initially, I planned to observe and audio-record the majority of post-

observation conference so I could gauge whether coaches adhered to the intervention's core

components, teachers' exposure to the core components, and how well coaches facilitated the

conference. In particular, observational data would afford me the opportunity to check whether

coaches offered teachers' choice, addressed a single competency, and the amount of time spent

focusing on a single competency. However, only eight coach-teacher pairs consented to observing

and audio-recording the conference. Because I needed to measure fidelity using the same sample size

across data sources, I determined adherence, dosage, and quality mostly from the self-reported data

discussed above. Although I included written feedback in my analysis of adherence and dosage, this

data source is still limited because there was no way to determine if these results mirrored what

occurred in post-observation conferences. For example, an intervention field instructor could have

addressed a single competency in the written feedback, but addressed multiple competencies during

the post-observation conference. Including fidelity analyses with observation data could significantly

strengthen future impact studies on coaching interventions. Moreover, observational data, in

addition to gauging adherence and dosage, could help measure how well the conference was

facilitated. This type of data would have complemented the self-reported teacher data and placed

less reliance on how teachers' felt about their conference experiences.

Furthermore, fidelity analyses around quality of implementation might not reflect this

particular construct. Specifically, the construct of quality, as it relates to intervention fidelity, gauges

how well the intervention was implemented (Hulleman et al., 2013). However, questions reflecting quality in my fidelity analyses addressed teachers' learning, usefulness of feedback, putting suggestions into practice, and feeling empowered as a professional. While important, these questions do not necessarily address how well the teacher implemented the intervention's core components; rather, these questions are more likely the result of quality implementation of the core components.

Moreover, my dual role as both the lead investigator and ICP program team member poses two potential problems. First, serving as the lead investigator and as an ICP program member might have influenced intervention coaches' implementation of the intervention. Specifically, my dual role might have put undue pressure on intervention coaches to implement the intervention as intended. For example, an intervention coach might have felt pressure to offer teachers' choice and focus on a single competency because she knew the person monitoring implementation was a member of the ICP program team. Second, my dual role presented a conflict of interest. Specifically, I had a vested interest in the success of the intervention and might have advocated against any programmatic decision or policy that could have negatively impacted the intervention. For example, the ICP program team wanted to bring all coaches together after the first professional development for the intervention and control conditions. However, in an effort to prevent intervention coaches from sharing what they learned with control coaches, I advocated to keep all coaches separate for the entirety of the PD. I recognize, intervention and control coaches could have discussed the intervention at another point, but I sought to close down one potential opportunity where this could happen. Thus, it possible my dual role could have influenced the results of this study.

Additionally, limiting my qualitative analysis to a single data source is problematic. In particular, I could not triangulate findings across different sources to verify the claims I make. It is likely the case that during an interview, teachers will not recall all pedagogical coaching practices that

would likely be present in observational data. Thus, different data sources may privilege different kinds of pedagogical coaching practices, which triangulation helps guard against. Moreover, it is likely other influential coaching practices exist, but I failed to uncover them. In particular, observational data might provide evidence of moments in a conference where a teacher was particularly engaged or receptive. These instances could be used to (a) uncover what pedagogical practice coaches used to solicit this response and (b) discuss with teachers *why* this particular practice solicited a particular response from them.

Finally, I cannot rule out the possibility the intervention's core components spilled over into the control condition. I randomized intervention and control teachers at the coach level as opposed to the school level. Consequently, I assigned some teachers working in the same school to different field instructors and separate conditions. It is possible intervention teachers discussed with control teachers the structure and process of the intervention which, in turn, influenced the control teachers to ask their field instructors to engage in a similar process. For example, a control teacher could have discussed with a treatment teacher the helpfulness of addressing a single competency in the post-observation conference. This conversation could have influenced the control teacher to ask her coach to address a single competency for subsequent observation cycles. Thus, I cannot rule out that some components of the intervention spilled over into the control condition and changed control coaches' practices. If spillover did occur, then intervention effects are likely biased. Specifically, if a control coach started addressing a single competency for consecutive observations, then it is possible her instruction improved and she received better observation ratings than she would have had spillover not occurred. This form of bias likely reduced the estimated effect, whereby the true effect would be greater than the estimated effect. If so, this suggests my estimates are conservative.

Implications

Despite these limitations, the suggestive and promising evidence from this study, while not conclusive, offer several potential implications for the practice of teacher coaching, research on teacher coaching, and revision of the intervention. In this section, I begin by discussing two important considerations for the practice of teacher coaching. I then discuss three potential implications for future research on teacher coaching. Finally, I conclude this section with recommendations for a potential redesign of the intervention.

Potential Implications for the Practice of Teacher Coaching. This study has two potential implications for the practice of teacher coaching. First, teacher education programs could implement choice and focused coaching. Second, teacher education programs could also support coaches in learning to provide concrete feedback, create welcoming environments, narrow focus, and model practice. I discuss each in more detail below.

Integrating Choice and Focus. Though not statistically significant, positive results suggest the intervention demonstrates promise for improving teachers' instruction and their perceptions of preparedness, and for promoting coaching quality. In particular, the estimated difference between intervention and control teachers' observation ratings teachers is comparable to the average difference in observation ratings between first and second year teachers (Ronfeldt & Campbell, 2016). Additionally, results from this study are consistent with the broader literature which indicates choice and focus to be important characteristics of promising professional learning experiences (Garet et al., 2001; Merriam, 2001).

Given the intervention's promise, one potential implication is pre-service and in-service teacher education programs consider developing a coaching model where teachers choose certain competencies to address and coaches focus their work together on the selected competencies. For

example, programs might consider having coaches conduct two to three baseline observations to gather evidence on four competencies a teacher might need to improve in. Then, coaches could provide teachers with the four potential competencies to address and the teacher selects one of the four to address in subsequent observation cycles. The remaining competencies could eventually be taken up after the coach sees sufficient growth in the initial selected competency.

Supporting coaches learning of influential practices. Qualitative results from this study suggest four pedagogical coaching practices might influence teachers' receptivity to coaching: offering concrete feedback, creating a welcoming environment, narrowing focus, and modeling practice. Thus, one possible implication is for teacher preparation programs to focus the initial training and ongoing support on coaches learning about these four potentially influential coaching practices. For example, in the initial training, coaches could listen to a brief presentation on the two elements of concrete feedback – actionable and decomposed – and then watch a brief video of a first-year teacher asking questions to a small group of students. After watching this instance of practice, coaches could practice providing concrete feedback, both written and verbal, to a partner who assumes the role of the teacher in the video. In this example, coaches have the opportunity to not only learn about an influential practice, but to also practice incorporating concrete feedback into a simulated post-observation conference.

Recommendations for Future Research on Teacher Coaching. Based upon the results and limitations of this study, I offer three recommendations for future research on teacher coaching. The first is to further explore the relationship between intervention fidelity constructs and outcomes of interest. The second is to further investigate whether *choice* and *focus* demonstrate promise for generating intended results. The third is to further examine whether certain pedagogical coaching

practices *actually* influence teachers' receptivity to coaching and implementation of the coaching content.

Learning more about intervention fidelity. As described in my findings, the coaching that intervention teachers received was significantly different from the coaching control teachers received. While providing suggestive evidence the intervention can be implemented in an authentic educational setting, my study did not disentangle the relationship between different fidelity measures (e.g., choice, focus, and quality of implementation) and my outcome of interest (e.g., teachers' instruction). Thus, we do not know which components of the intervention had more or less of an impact on teachers' instruction. For example, this study does not investigate the relationship between receiving more written feedback addressing a single competency (e.g., dosage) and teachers' instruction. Therefore, future studies should attempt to link intervention fidelity measures to the outcome of interest by modeling teachers' instruction as a function of adherence, dosage, or implementation quality. Ideally, these analyses would help identify which measures of fidelity are more promising for improving teachers' instruction,

Learning more about the promise of choice and focus. The current research design focused exclusively on the intervention's influence on teachers' instruction. However, development studies, according to IES, should address whether the intervention demonstrates promise for improving *student outcomes*. Thus, future research should consider connecting a coaching intervention, like the one used in this study, to student performance. One possible approach to measuring student performance is to use the accountability assessments already collected in most states. To yield a more precise estimate for the effect of the intervention, it would be advisable to adjust for students' prior assessment scores.

Learning more about the influence of certain coaching practices. In this study, first-year teachers identified several pedagogical coaching practices – concrete feedback, creating a welcoming

environment, narrowing focus, and modeling practice – that they felt influenced their receptivity to coaching. While teachers' perceptions offer important insight into what *could* influence teachers' receptivity, this study did not uncover whether certain coaching practices *actually* influence teachers' implementation of the coaching content. For example, it is possible that teachers are particularly receptive to coaching when offered concrete feedback, but do not implement the content discussed when returning to the classroom. Thus, a future study could extend the work discussed in the preceding paragraph by observing teachers' instruction following the post-observation conference, whether live or recorded, to determine whether teachers implemented the coaching content. This line of research would not only provide insight into whether certain practices influence teachers' receptivity to coaching, but also reveal whether certain practices influence teachers practice.

Refining the Intervention. One expectation of a development study is to engage in an iterative process of revising the pilot intervention in order to fully develop a *promising* intervention capable of scaling up to a sufficiently powered efficacy study. Based on limitations in the present study, I recommend that future research consider three revisions – improving reliability of measures, conceptualizing quality of implementation, and mitigating teacher attrition – to the research design to address these limitations. I elaborate on each below.

Improving reliability of measures. One limitation of the current research design – reliability of ratings – could be addressed in a future study of this intervention. In particular, I question the reliability of teachers' end-of-year evaluation ratings because coaches were no longer blind to condition and the ICP did not test for inter-rater reliability (IRR). Thus, an improved research design could include independent observers evaluating all participating teachers' instruction. If this occurs, then teacher preparation program implementing the intervention could first calibrate independent observers' IRR to ensure reliable estimates of teacher performance across the program.

Once an acceptable level of IRR is calibrated, independent observers blind to condition might observe, either in person or watching a video recording of a full class period, and evaluate teachers' instruction. While I still advocate for coaches continuing to observe, coach, and evaluate teachers for internal purposes (e.g., program planning, certification recommendations), I recommend only including independent observers' evaluations of teachers' instruction when estimating effects of the intervention.

Conceptualizing quality of implementation. The current research design did not have a clear articulation of what quality implementation is for a particular type of coaching. Thus, it is possible that analyses about the quality of implementation did not adequately reflect this particular construct. Given this, an improved research design could address this limitation in two ways. First, a future study might consider conceptualizing what quality implementation looks like for a coaching model incorporating *choice* and *focus*. Specifically, the intervention could conceptualize what ideal implementation looks like when a teacher chooses a rubric competency to address and receives coaching targeted on the specific competency selected. In doing so, a future iteration of the intervention could (a) assist coaches in understanding what this intervention might look like in practice and (b) yield fidelity analyses more accurately measuring this particular construct.

Second, by conceptualizing implementation quality, future research can develop ways to measure this construct during implementation. For example, independent observers blind to condition could evaluate implementation quality during post-observation conferences. Such evaluations, whether in-person or via recorded video, would push research beyond perceptions of implementation quality to measuring this construct in practice. Additionally, measuring this construct will provide future research the opportunity to analyze whether better quality implementation predicts better teacher instruction.

Mitigating teacher attrition. Finally, the present study had *high* attrition. This is particularly problematic because if treatment teachers who leave are systematically different than control teachers who leave in a way that is related to observation ratings, then results are likely biased. One possible revision is a teacher preparation program implementing the intervention requires a set amount of first-year teachers assigned to coaches' caseload. In the current study, the ICP asked, prior to assignment, if coaches had a limit on the number of first-year teachers they wished to support. Two coaches desired to support a single first-year teacher. Consequently, randomization placed these coaches in the control condition, resulting in more teachers assigned to the intervention condition as compared to the control condition. If these two coaches had a caseload of two first-year teachers, the number of teachers assigned to each condition at randomization would have been equal. Thus, if attrition occurred at the same rate, differential attrition using conservative standards from the What Works Clearinghouse would have moved from a red designation to a yellow designation. Therefore, balancing coaches' caseload is a possible revision to mitigate attrition bias in future iterations of the intervention.

While results from this study suggest the intervention has promise for generating intended outcomes and might warrant a future efficacy study, I recommend conducting a second development study after incorporating the revisions previously discussed. I am concerned that I permitted a considerable source of bias by allowing coaches no longer blind to their condition to evaluate teachers after the intervention concluded. This limitation, in addition to others concerning the research design, might have influenced the results. Thus, revising the intervention with the present study's limitations in mind and retesting in a future development study would offer more credible evidence concerning the promise of the intervention.

Such a follow-up efficacy study should seek to partner with a teacher education program with enough coaches (~182) and first-year teachers (~364)[6] to detect a statistically significant effect with an effect size of 24 percent of standard deviation[7]. While this number might not be reasonable for most teacher education programs, reducing the number of coaches employed and increasing the number of first-year teachers supported might diminish the quality of the intervention. Moreover, a future efficacy study should continue randomizing participants at the coach or teacher level to increase statistical power. While sampling at the school-level might mitigate against potential spillover effects, it would further contribute to the underpowered natured of coaching studies. Moreover, prior research suggests increased statistical power is more important than potential disadvantages from spillover effects (Kraft et al., 2016).

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[6] I used PowerUp to determine the sample size required to detect a significant effect for the estimated differences found in this study. The basic assumptions for this 2-level stratified random sample included: alpha equaling 0.05, target power equals 0.80, rho (ICC) equaling 0.05, average teacher cluster equaling two, P (proportion of sample randomized to treatment) equaling 0.50, r-squared one equals 0.40, r-squared two equals 0.10, and 5 level 2 covariates.

[7] I selected an effect size of 24 percent of a standard deviation because this was the estimate I detected in my most robust ordinary least squares (OLS) regression models.

Appendix A: 2015-2016 ICP Program Rubric

	Program Outcome 1: Plan and Prepare for Effective Instruction
1A: Unit Planning (Not assessed by coaches)	• Teacher makes overt references to essential questions or big ideas of the unit • Students are able to identify the essential questions or big ideas of the unit • Teacher makes connections between lesson activities and unit objectives
1B: Lesson Planning	• Lesson fits clearly into a larger learning trajectory • Lesson activities are age- or grade-appropriate • Lesson includes a variety of frequent informal assessments and checks for understanding • Lesson activities encourage disciplinary thinking and doing • Lesson activities are logically sequenced and connect to each other • Lesson activities build upon one another, allowing for increasingly complex thinking and doing • Students have access to multiple resources and/or manipulatives throughout the lesson
1C: Teacher Preparation	• Teacher has all necessary materials to enact the lesson, including a detailed lesson plan, student handouts, technologies, and manipulatives • Teacher demonstrates fluency in explaining content • Teacher readily and effectively responds to student questions or other learning needs • Teacher reteaches material when needed, using a different delivery or method
1D: Lesson Structure	• Class activities support the objective and are tied to unit goals • Teacher seeks student contributions in explaining key ideas • Students engage with the content in a variety of ways during the lesson • Learning activities build upon each other throughout the lesson • Directions and procedures are clearly communicated to students • Teacher checks for student understanding of directions and procedures before an activity • Students ask one another for clarification of directions and procedures

Program Outcome 2:
Facilitate an Environment that Supports Student Engagement

2A: Behavior Management	• Students are on-task and engaged in learning throughout the lesson • Behavioral issues and interruptions are minimal or nonexistent • Students self-and peer-monitor their behavior in ways that are mutually respectful • Teacher uses subtle cues and reminders to address off-task behavior • Teacher uses empowering tools (e.g. specific praise) to help students identify appropriate behavior
2B: Physical Space	• Teacher and students can see, hear, and approach one another • Student work is displayed on classroom walls • Décor is relevant to class content • Student seating arrangement is conducive to the lesson activities
2C: Norms, Routines, and Procedures	• Transitions are managed in a timely and effective manner • Behavioral expectations are posted in the classroom • Community building strategies are used to build a positive climate, such as chants, mantras, class meetings, etc. • Routines and directions for managing time, space, and materials are clear
2D: Active Facilitation	• Teacher uses facilitation strategies that encourage dialogue around the content and learning objectives, such as turn and talk; think, pair, share; and referring to text or materials • Teacher and students actively listen to one another and participate in an extended dialogue • Teacher poses questions that promote higher order thinking • Teacher questions are clear and coherent • Teacher questions and comments make use of students' prior experiences Teacher uses appropriate pacing and wait time • Students ask content-based questions and make relevant comments
2E: Student Engagement	• Students show a positive affect during the lesson activities • Students relate personal interests and experiences to the content of the lesson • Student interactions are on-task and self-directed • The majority of students actively participate in the lesson

Program Outcome 3:	
Build Positive Rapport and Relationships with Students to Support Learning	
3A: Positive Interpersonal Relationships	• Teacher greets every student • Teacher calls students by name • Teacher holds brief side conversations with students • Teacher shares relevant personal stories • Students and teacher smile, laugh, and/or otherwise demonstrate enjoyment in their work together • Students are consistently supportive of each other
3B: Student investment, interest and autonomy	• Teacher uses class mantras/chants • Teacher uses affirmative praise • Teacher references students interests, experiences, and prior knowledge in connection with the content • Teacher identifies and takes advantage of "teachable moments" • Teacher provides students with choices • Teacher uses a community problem, need, or resource as a basis for teaching and learning content

Program Outcome 4:	
Use Disciplinary Literacy to Teach Content	
4A: Effective Reading & Interpretive Strategies	• Teacher provides students with opportunities to interpret disciplinary materials • Students are active in the process of interpreting disciplinary related content and/or texts • Students explain the content and purpose of disciplinary texts in their own terms
4B: Academic Language	• Disciplinary vocabulary is purposefully integrated throughout the lesson • Key vocabulary needed to understand content is appropriately discussed during the lesson • Teacher uses disciplinary language throughout the lesson • Students use, or attempt to use, the language of the discipline during discussions and activities
4C: Disciplinary Resources	• Teacher provides students with exemplary models of disciplinary texts • Students have the opportunity to create disciplinary texts • Teacher uses a diverse array of technologies, materials, and tools that encourage disciplinary thinking • Teacher asks students questions that encourage disciplinary thinking

Program Outcome 5: **Enact Instruction to Meet Student Needs**	
5A: Modified Instruction	- Teacher constantly monitors students' learning - Teacher offers extra assistance or support to students in need - Teacher acknowledges and directly addresses common misconceptions - Teacher adjusts instruction as appropriate to accommodate student misconceptions, questions, engagement, or interests - Teacher draws from multiple strategies and/or uses external resources to adjust instruction - All students are included in the educational process
5B: Scaffolded Instruction	- Lesson includes multiple and varied strategies that match the intended learning outcome - Students work together surrounding the development of their understanding of content - Teacher provides students with frequent and specific feedback - Teacher offers students extensions to student thinking - Teacher consistently provides students with appropriate assistance in order to scaffold their learning of content - Teacher provides both encouragement and affirmation for students to progress their learning - Students have structured opportunities to reflect on their own learning

Program Outcome 6: **Assess Student Learning**	
6A: Multiple forms of Assessment	- Teacher checks for understanding throughout the lesson, using various assessment strategies such as questions, white board responses, and monitoring individual work - Teacher's ongoing informal assessments gauge the learning of all students
6B: Criteria for Assessment	Teacher previews upcoming assessment tasks with students, including their alignment with the learning objectives and the criteria under which they will be evaluated
6C: Data Tracking	- Teacher uses data to communicate progress to individual students and to the class as a whole - Teacher invites students to assist in planning next steps for improvement based on assessment data - Teacher and students are well-versed in reading and interpreting data and converse fluently about progress monitoring and goal setting

Program Outcome 7:
Relate and Communicate Effectively with Parents, Families & Community

7A: Communication with Families and Community	• Teacher involves parents and community members in the classroom • Teacher refers to or draws upon resources gathered from the community during teaching Students are actively encouraged to communicate about classroom activities with their families

Program Outcome 8:
Reflect on Practice and Contribute Professionally to the Learning Community

8A: Reflection on Lessons and Practice	• During observation debriefings, teacher makes an accurate assessment of a lesson's effectiveness, citing specific examples to support his/her claim • Teacher incorporates ideas generated through his/her reflections and the observation debriefing conversation into upcoming lessons
8B: Building Relationships	• Teacher is open to developing his/her practice and is receptive to feedback and suggestions • Teacher actively engages in debriefing conversations with the Field Instructor • Teacher is prompt, courteous, and professional in interactions with the Field Instructor • Teacher complies with program policies for Field Instruction
8C: Professional Development	• Teacher attends all program seminars, workshops, etc. • Teacher seeks out and uses feedback from colleagues, supervisors, and instructors to enhance his/her practice • Teacher pursues practice-based professional development opportunities • Teacher applies what s/he has learned through professional development into his/her practice • Teacher demonstrates knowledge of, or interest in, resources available through local, state, and/or national professional organizations Teacher uses resources from local, state, and/or national professional organizations to enhance his/her practice

Appendix B: Intervention-Professional Development (IPD) #1

Intervention Professional Development
Session #1
November 10, 2015
1:00PM – 3:00PM

Design Rationale
The first Intervention Professional Development (IPD) is designed with the intention of meeting the following objectives:
1. Orient field instructors to the purposes and goals of Visits #3 & #4.
2. Orient field instructors to the processes and structures of their coaching visits.
    a. Discuss the timeline of coaching visits.
    b. Discuss the resources provided for coaching visits.
    c. Discuss the follow-up from coaching visits (e.g. submitting to Chalk and Wire).
    d. Discuss the communication process for identifying struggling corps members.
3. Develop field instructors' capacity to observe and facilitate a post-observation conference around a single competency.

To Do	☐ Print Out Analysis Forms (Yellow Paper)
	☐ Print Out Handouts (Light Blue Paper)
	☐ Print Out Survey/PD #2 Interest Form (Green Paper)
	☐ Print Out List of FIs for PD (2 attendance forms)
	☐ Reserve & Pick-Up Audio Recorder
	☐ Bring Teach Like A Champion 2.0 Copies
	☐ Create Field Instructor Folders (to include documents)
	☐ Print Out TLC 2.0 Rubric Alignment
Session Component	**Talking Points**
Welcome and Overview 1:05-1:12 Minutes	Welcome ▪ Thank field instructors for attending today's professional development Overview ▪ As a program, we are constantly thinking about what types of support work best for our field instructors and our corps members. ▪ Ideally, we want to develop a support structure that a) is well received by teachers, b) helps improve their practice, and c) is both manageable and effective for our field instructors. ▪ In order for our program to make progress towards these goals, we want to try a modified visit structure for the next two visits to see if this is something we can adopt as a program. ▪ In particular, we want to see if a) non-scored visits, b) reducing the number of outcomes to observe, and c) adding in CM choice about what they need assistance on is an effective direction to move (Kiel will speak more about is this momentarily). ▪ In order to answer these questions, we had to randomly select field instructors to try out these non-scored/focused visits so that we could compare CM survey results and observation scores across our program to see if one model is better for our CMs. ▪ Thus, we are excited to welcome you here because we have randomly selected you all to try out this model for the next two visits with your 1st year CMs. ▪ We know this will provide helpful insight around what direction to move forward in the future that works best for our teachers and our field instructors. ▪ I'll now turn it over to Kiel to provide more in-depth information around what we want you to address in the next (2) visits. Goal: Field instructors understand the purposes and goals of focused coaching. Specifically, field instructors will know WHAT they are doing and WHY they are doing it.
Focused Coaching 1:12-1:25	Focused Coaching ▪ As Jean mentioned, our goal as a program is to create a field instruction system that makes both your job

	more manageable and is well received by corps members.
	▪ A common theme I have noticed in both corps member and field instructor feedback across the years addresses the challenges associated with observing, evaluating, and coaching on 22 rubric competencies combined with having limited face-to-face time to conference with corps members about the practices they struggle with.
	▪ We also know that adding in the element of choice* for corps members to decide what the focus coaching on might strengthen their willingness to integrate feedback into their practice
	*An asterisk is placed next to choice because, as I describe in a little bit, choice needs to be grounded in field instructors' impressions of what CMs need to improve in. Choice is not corps members choosing whatever they want to focus on. This is more of "informed choice".
	▪ Taken this all together our program has spent a lot of time thinking about a system of support that might be most helpful both you and corps.
	▪ Thus, we want to pilot or "test" whether this system of support is well received by field instructors and corps members and helps improve corps members' performance.
	▪ Thus, as Jean mentioned, we want to try (a) condensing the amount of competencies you observe and coach corps members on, (b) include an element of *informed* corps member choice, and (c) implement in a non-evaluative setting.
	▪ Specifically this will look like….
	Overarching Structure
	▪ Field instructors will **observe** and **coach** first-year corps members on (1) selected competency for Visit #3 & #4.
	▪ This will occur in a non-evaluative setting (e.g. non-scored visit).
	Specific Details
	Informed Choice
	▪ You (in this PD today) will identify (4) competencies you believe each of your first-year teachers needs the most assistance with.
	▪ It's important to note here we wanted these competencies to specific to the needs of each teacher versus picking one competency to address for all teachers.
	▪ In your upcoming scheduling email to first-year corps members, we want you to list these (4) competencies and have CMs choose (1) to focus visit #3 & #4 on.
	▪ To address potential questions you have about this, (a) Jean will be sending an email to your first-year CMs to alert them to this structure for Visit #3 & #4 and (b) we have also provided some sample text for you to include in an email if it's easier for you.
	Post-Conference Next Steps
	▪ In Chalk and Wire, we want you to select "N/A" for ALL rubric competencies.
	▪ In regards to written feedback, provide the "normal" amount of feedback you provide. Instead of providing it across multiple competencies, please focus your written feedback around the (1) competency you discuss.
	▪ In the google spreadsheet, rather than providing a score, please input the competency you address with the CM (e.g., 2A, 4A, etc.)
	Additional Notes/Addressing Potential Questions (Create Separate Slide For This)
	▪ Review FAQ Handout
	Goal: Field Instructors clearly understand what they will be doing during visits #3 & #4.
Identifying CM Needs 1:25-1:45 *5 Min – Overview* *15 Min - Analysis*	▪ As I mentioned before, one beneficial element of this design is offering coaching and support to CMs that is unique to their individual situation. ▪ In order for this to work, we need to identify a range of competencies that CMs need to make significant improvement in based on your evaluations from Visit #1 & #2. ▪ In other words, what competencies do you believe if CMs show significant improvement in, their practice as a whole will significantly improve? ▪ To identify these practices, I have gone ahead and created a CM analysis form that includes each CMs observation ratings and comments. ▪ What we would like for you to do is for each corps member, (a) review the observation ratings and

	• comments across visits and (b) identify (4) competencies for each CM YOU BELIEVE if improved will significantly impact CMs instructional practices. ■ If you haven't yet observed/evaluated CMs a second time, please base your analysis off the first visit and then update/revise as needed once you have visited CMs a second time. ■ We will spend the next (15) minutes conducting this analysis (or shorten it if needed) and then come back together as a group afterwards. Goal: Field Instructors identify (4) competencies CMs could significantly improve in.
Observing (1) Competency 1:45-1:58 *3 Min – Overview* *5 Min – Partner Discuss* *5 Min – Group Discuss*	■ Since we will significantly reduce the amount of competencies you focus on in your next two observations with first year teachers, I think it will be helpful for us to discuss how this might shape your practice as field instructor. ■ More specifically, how might you observe around a single competency and how might this be different compared to looking across 22 competencies? ■ We will spend the next (5) minutes discussing with our neighbor our thoughts to these questions and then we will come back and share out together as a group for (5) minutes. Goal: Field Instructors have a better idea about how to observe around a single competency based on collaborative discussion.
Coaching Around (1) Competency 1:58-2:10 *2Min – Overview* *5 Min – Partner Discuss* *5 Min – Group Discuss*	■ Thank you all for that discussion. Your insight was incredibly helpful and I trust this helped you consider how you might approach observing corps members around a single competency. ■ Now I think it will be helpful to transition our conversation to how a focus on a single competency will shape how we lead a conference with our first-year Corps Members. ■ Specifically, (a) how might you coach (e.g., verbal and written feedback) around a single competency, (b) how might this be different from coaching across multiple competencies? ■ We will spend the next (5) minutes discussing with our neighbor our thoughts to these questions and then we will come back and share out together as a group for (5) minutes. Note: **KIEL** make sure you address both verbal and written feedback. Goal: Field Instructors have a better idea about how to coach around a single competency based on collaborative discussion.
Observing & Coaching Around 2A 2:10-2:30 *2Min – Overview* *3Min – Review 2A* *8Min – Partner Discuss* *7 Min – Group Discuss*	■ Thank you again for a very helpful and insightful discussion. ■ Now that we've contemplated and discussed more broadly about how to observe and coach around a single competency, I would like to apply these new insights into a specific competency. ■ I have chosen competency 2A: Behavior Management because I know it is something most, if not all of you, have observed and coached first-year Corps Members on at this point in the year. ■ Specifically, let's address the following questions (1) how might you observe around 2A: Behavior Management if your CM chose to address this competency, and (2) how might you coach (verbal & written feedback) around 2A: Behavior Management if your CM chose to address this competency. ■ Let's spend the next (3) minutes reviewing Competency 2A on **Handout C,** looking specifically at the competency description and observable practices. ■ Now that we have reviewed Competency 2A, let's spend the next (8) minutes with our partner discussing the (2) questions presented on the PowerPoint. ■ Lets take the next (7) minutes to share out as a group. Note: **KIEL** make sure you synthesis the discussion at the end. Goal: Field Instructors have a better idea about how to coach around a specific competency based on collaborative discussion.
Next Steps 2:30-2:40	■ Thank you all for engaging in this discussion both with your partner and as a group. ■ I hope this discussion has helped you consider ways in which you might observe and coach teachers around a single competency. ■ I do want mention the book in front of you, Teach Like A Champion 2.0, and its alignment to the program rubric might be a helpful resource for you if you want to discuss some specific practices CMs might use that address the competency they have chosen to address. Note: **KIEL** make sure you reference this is what Field Instructors in the upstairs PD have been addressing today (i.e., learning more about these practices).

	▪ To recap our PD and next steps, I want to quickly reference **Handout D on Page 4** titled "Next Steps" ▪ Go Over Each Component ▪ Are there any questions? Goal: Field Instructors have full understand of what is expected of them following this Professional Development.
Success Coaching (Jean) 2:40-2:55	▪ I would now like to turn it over to Jean to discuss the "Success Coaching" initiative and what it might mean to you. *Jean Presents* ▪ As a follow-up to Jean, this is why I have listed in the next steps a section about what to do if you have a concerned CM. ▪ Also, if you HAVE A CMC in your group, you will be still providing a non-scored coaching visit and a member of the program team will be the one providing the score for your CM. We want to provide you the opportunity to provide the coaching without it being in an evaluative setting for the CM.
Closeout 2:55-3:00	▪ Lastly I have a quick reflection/survey that I would like to ask. ▪ This will help provide our program team with some additional insight into your thoughts about this structure. ▪ These are also anonymous so please speak candidly about this. ▪ Also, there is a PD form in your folder that asks you about which date for the next PD works well. My plan is to conduct (2) separate PDs so it makes it easier for you all. Please fill out your name on this one so I know who prefers which date. ▪ Once you are done you are free to go. If you have any questions that arise, please feel free to email or call Kiel.

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Appendix C: Intervention-Professional Development (IPD) #2

Intervention Professional Development
Session #2
January 7, 2016
Virtual Session
1:00-3:00 PM

<u>Design Rationale</u>
The second Intervention Professional Development is designed with the intention of meeting the following objectives:
4. Debrief field instructors' experiences with the first coaching visit.
5. Discuss how to build coherence between the first and second coaching visit.
    a. Identify what FIs should look for in their second visit.
    b. Determine how to use feedback from the first visit to facilitate second coaching conference.
6. Orient field instructors to EOY process.

To Do	☐ Send Out Reflection Form ☐ Send Out Interview Request ☐ Print Out FI Analysis Forms ☐ Create Google Form for FI Reflection & Interview Request
Session Component	Talking Points

Welcome, Overview, & Process
1:05-1:10
	Goal: Field instructors understand the progress they have made since CSPD #1 (e.g. number of visits, observations from the field).
	
	Welcome
	▪ Thank field instructors for attending our second and last coaching specific professional development.
	▪ Mention how I am excited about what can be learned from our first coaching visits and how we can work together to establish connections between our first and second visits.
	Overview
	▪ Our final coaching/non-evaluative visit will occur during the 4th visit with ALL FIRST-YEAR corps members.
	▪ During this visit we will continue focus on the competency you and your CM addressed in your first coaching/non-evaluative visit.
	▪ You will continue with the same process from the first coaching visit
	  o Address the single competency in the post-observation conference and in your written feedback.
	  o In Chalk and Wire, we want you to select "N/A" for ALL rubric competencies.
	  o In the google spreadsheet, continue inputting the competency you address with the CM (e.g., 2A, 4A, etc.)

Debriefing Coaching Visit #1
25 Minutes
1:10-1:35
 	
5-7 Min Individual
15-18 Min. Group
	Set-Up Debrief
	● I want to spend some time both individually and collectively to consider our (and our CMs) experiences with the focused coaching/non-evaluative visits.
	● Specifically, I want us to consider the following questions:
	  o How would you assess (pros/cons) your first focused coaching visit?
	  o How was this focused coaching visit different, if any, from your previous visits this year with your first-year CMs?
	  o How do you think CMs responded/reacted to this focused coaching visit (consider receptivity to choosing a competency before the visit, addressing only one competency in visit, etc.)?
	● Let's spend the next (5-7) minutes considering this individually. Afterwards we'll come back together as a group and share out.
	
	Goal: Field instructors collectively debrief their first coaching visit to discuss strengths and areas of

	improvement of coaching and common topics or areas were discussed.

Making Connections Between Visits: Collecting Evidence 25 Minutes 1:35-2:00
 	
5-7 Min. Group
4-5 Min. Indiv. Analysis
5 Min. Group
10 Min Analysis
	• One of the benefits of this coaching pilot is the opportunity to address a single competency across two visits with your first-year CMs.
	• Thus, the potential exists to assist CMs in improving in this competency because you have more time than usual to focus on one competency.
	• In order for us to maximize our time coaching CMs around a single competency of focus, I'd like for us to consider how we can connect what was discussed/addressed in your first coaching visit to this upcoming visit.
	• In other words, how might we build off of coaching visit #1 in coaching visit #2?
	• Thus, I'd like us to consider the following:
	    ○ Based of what was discussed/addressed in your last visit, what might you look for in your upcoming visit?
	• I'd like for us now to review an example of the written feedback provided to a first-year corps member in the first coaching visit.
	    ○ Please spend the next 4-5 minutes reviewing the written feedback provided to this corps member.
	    ○ Afterwards, we will come back as a group to discuss what we might want to look for with this corps member.
	• Now let's consider question A posed at the bottom of the attachment. Based on this written feedback, what might this FI look for in his/her next observation with this particular CM?
	• Lastly, I've prepared for you the written feedback each of you provided to your first year CM during the first focused coaching observation.
	    ○ Going through a similar process as a our first example, I'd like for you to a) review the feedback provided and b) consider what you might be looking for in the next observation.
	    ○ We will spend between 8-10 minutes on this particular task.
	
	Goal: Field Instructors collectively discuss how to make connections between visits and develop an idea of what to look for/what to do in Focused Coaching Visit #2.

Making Connections Between Visits: What to Address 2:00-2:15
 	
3-4 Min Indiv. Reflection
12 Min Group Discuss (4 Min per Q)
	• Now that we've had a chance to consider what might be looking for in our CMs classroom during the next observation, I'd like for us to consider what we might choose to address with the CMs in our verbal and written feedback.
	• I'd like for us to consider the following three questions:
	    ○ How might you address what you discussed/addressed in the first coaching visit?
	    ○ What might you address if the CM has made improvement in this competency (based on what you addressed in the first visit)?
	    ○ What might you address if the CM is continuing to struggle in the competency you addressed in the first coaching visit?
	
	Goal: Field Instructors collectively discuss what how they a) might address what was discussed in coaching visit #1 and b) what they might address if significant improvement has been made.

Next Steps: After Coaching Visit #2 & Beyond 2:15-2:25	• We will spend the next 5 minutes reviewing the next steps for Coaching Visits #2 and Evaluation Visit #5 & #6
	• The Next Steps Are As Follows:
	    ○ Address the single competency in the post-observation conference and in your written feedback.
	    ○ In Chalk and Wire, we want you to select "N/A" for ALL rubric competencies.
	    ○ In the google spreadsheet, continue inputting the competency you address with the CM (e.g., 2A, 4A, etc.)
	    ○ We (Jean or myself) will communicate with your CMs towards the end of 4th cycle to let them know they will be evaluated again during Visit #5 & #6
	    ○ Assess CMs across all competencies in Visit #5 & #6 and provide comments for at least 3 competencies (e.g. what you did for visit #1 & #2)
	    ○ Return to whole group PDs in March & April.
	
	Goal: Field instructors will understand what they need to do following the second coaching visit.

Q&A 2:25-2:30	• I will now spend the remaining time answering any questions. Goal: Allow field instructors to offer any relevant questions.

Close Out 2:30-2:40	• To close our PD, I'd like to spend the next 10 minutes reflecting on a couple of questions I have typed into a google form. The form is provided in the individual email I sent you this morning.
	• After 10 minutes we will close out as a group.
	• I want to thank you all for your participation in this pilot. The program really appreciates the effort you have put into this. We look forward to reviewing the results and digging deeper with both you and CMs about your experiences. We will likely report on these results over the summer/towards the beginning of next year. Ultimately your participation in this pilot will strengthen the support we provide to all of our CMs in the field. Thank you.

Appendix D: Sample Intervention Email

<u>Sample Email Text</u>

Dear XX,

It was great seeing you a couple weeks ago during your second observation. I'm happy with the progress you've made thus far and look forward to our continued work together. You recently received an email from [ICP Direction Name], about how my next two observations will be non-scored visits focusing on (1) rubric competency that you choose. I have identified (4) competencies I think we could possibly work on based on my evaluation from the first two observations. The (4) competencies I have identified are:

Competency ##:
Competency ##:
Competency ##:
Competency ##:

Please let me know which competency you want me to focus on during Visit #3 & #4. As Jean mentioned, it is our hope that by focusing on (1) competency we will make significant improvement in this area. If you have any questions about this, please let me know.

[Text About Scheduling Observation]

Appendix E: Coach Characteristics Balance Check

Table E: Coach Characteristics Balance Check At Randomization

Education Experience	2.1000	Coaching Experience	0.4692	Program Experience	-0.3923
	(6.197)		(4.994)		(0.439)
Female	0.0538	Male	-0.0538	Black	0.0615
	(0.148)		(0.148)		(0.218)
White	-0.0615	Bachelors	0.1000	Masters	-0.0615
	(0.218)		(0.087)		(0.218)
Specialist	-0.0615	PhD	0.0231	Non-Education Degree	-0.0769
	(0.218)		(0.124)		(0.088)
Education Degree	0.0769	K-Grade 5	-0.0846	Grade 6-8	0.1462
	(0.088)		(0.209)		(0.179)
Grade 9-12	-0.0846	K-Grade 8	0.0231	Elementary	0.0154
	(0.209)		(0.124)		(0.215)
ELA	0.0692	Math	-0.1308	Science	0.0231
	(0.193)		(0.164)		(0.124)
Public	0.1538	Charter	-0.0769	Religious	-0.0769
	(0.119)		(0.088)		(0.088)
Same School Teaching Exp.	0.1462	Non. Same Sch Teaching Exp.	-0.1462		
	(0.179)		(0.179)		

Appendix F: Teacher Characteristics Balance Check

Table F: Teacher Characteristics Balance Check At Randomization

Variable	Value	Variable	Value	Variable	Value	Variable	Value
Age	0.0952	Visit 1 Score	-0.1425	Visit 2 Score	-0.0781	Tch. Pers. 6-10 Years	0.1124
	(1.179)		(0.154)		(0.165)		(0.081)
BOY Score	-0.1103	Female	-0.0743	Male	0.0743	Tch. Pers. 11-Plus Years	-0.0705
	(0.155)		(0.173)		(0.173)		(0.098)
Asian	-0.0076	Black	-0.0210	White	-0.0114		
	(0.059)		(0.145)		(0.145)		
K-Grade 5	0.0038	Grade 6-8	-0.0381	Grade 9-12	0.0343		
	(0.220)		(0.155)		(0.180)		
Elementary	0.0038	English	0.0171	Math	-0.0229		
	(0.220)		(0.151)		(0.155)		
Science	-0.0705	Social Studies	0.0800	World Language	-0.0076		
	(0.149)		(0.080)		(0.063)		
Charter	0.1486	State Run Auth.	-0.0381	Pubic School	-0.1105		
	(0.187)		(0.154)		(0.097)		
Ed. Credits No Response	0.0400	Ed. Credits None	-0.3143*	Ed. Credits 1-3	0.1524		
	(0.040)		(0.149)		(0.100)		
Ed. Credits 4-6	0.0400	Ed. Credits 7-9	-0.0952	Ed. Credits 10-12	0.0400		
	(0.040)		(0.062)		(0.038)		
Ed. Credits 13-15	0.0400	Ed. Credits 16-plus	0.0971	Masters Deg. No Resp.	0.0400		
	(0.040)		(0.110)		(0.040)		
No Prev. Teaching	-0.0667	Previous Teaching	0.0267	Ed. Pers. 1-2 Years	-0.0705		
	(0.154)		(0.149)		(0.110)		
Ed. Pers. 3-5 Years	0.1295	Ed. Pers. 6-10 Years	0.0800	Ed. Pers. 11-Plus Years	-0.1390		
	(0.135)		(0.053)		(0.126)		
Tch. Pers. None	-0.0305	Tch. Pers. 1-2 Years	0.0495	Tch. Pers. 3-5 Years	-0.0610		
	(0.097)		(0.131)		(0.126)		

Appendix G: School Characteristics Balance Check

Table G: School Characteristics Balance Check At Randomization

Enrollment	-341.097*	% Black	-0.1031	% Hispanic	0.0749
	(133.776)		(0.131)		(0.080)
% White	0.0285	% Other	0.0001	% Male	-0.0033
	(0.100)		(0.005)		(0.014)
% Female	0.0033	% Economic Disadvantaged	0.0774~	% LEP	0.0591
	(0.014)		(0.044)		(0.082)
% SPED	0.0065	Attendance Rate	-0.6632	% Black Teachers	-0.1144
	(0.019)		(2.042)		(0.083)
% Hispanic Teachers	0.0126	% White Teachers	0.1008	% Other Teachers	-0.0023
	(0.010)		(0.080)		(0.043)
% Male Teachers	-0.0277	% Female Teachers	0.0267	% Highly Effective	-0.1024
	(0.041)		(0.041)		(0.070)
% Effective	0.1166	% Minimally Effective	-0.0144	% Ineffective	0.0000
	(0.101)		(0.079)		(0.033)

Appendix H: Coach Characteristics Post-Attrition Balance Check

Table H: Coach Characteristics Balance Check Post-Attrition

Education Experience	-0.5000 (6.526)	Coaching Experience	1.2778 (5.280)	Program Experience	-0.6111 (0.444)
Female	0.0556 (0.162)	Male	-0.0556 (0.162)	Black	0.0556 (0.231)
White	-0.0556 (0.231)	Bachelors	0.1111 (0.095)	Masters	0.0278 (0.229)
Specialist	-0.1667 (0.226)	PhD	0.0278 (0.136)	Non-Education Degree	-0.0833 (0.097)
Education Degree	0.0833 (0.097)	K-Grade 5	-0.0833 (0.224)	Grade 6-8	0.1389 (0.159)
Grade 9-12	-0.0833 (0.224)	K-Grade 8	0.0278 (0.136)	Elementary	0.0278 (0.229)
ELA	-0.0278 (0.197)	Math	-0.0556 (0.162)	Science	0.0278 (0.136)
Public	0.1667 (0.131)	Charter	-0.0833 (0.097)	Religious	-0.0833 (0.097)
ICP School	0.1667 (0.194)	Non-ICP School	-0.1667 (0.194)		

Appendix I: Teacher Characteristics Post-Attrition Balance Check

Table I: Teacher Characteristics Balance Check Post-Attrition

Age	0.0327 (1.466)	Visit 1 Score	-0.2330 (0.143)	Visit 2 Score	-0.1829 (0.154)
BOY Score	-0.2079 (0.141)	Female	-0.0685 (0.188)	Male	0.0685 (0.188)
Asian	-0.0149 (0.075)	Black	-0.0565 (0.149)	White	0.0238 (0.150)
K-Grade 5	0.0060 (0.218)	Grade 6-8	-0.0744 (0.187)	Grade 9-12	0.0685 (0.207)
Elementary	0.0060 (0.218)	English	0.0030 (0.183)	Math	-0.0446 (0.187)
Science	-0.0446 (0.161)	Social Studies	0.0952 (0.095)	World Language	-0.0149 (0.080)
Charter	0.0417 (0.202)	State Run Auth.	0.0506 (0.185)	Pubic	-0.0923 (0.117)
Ed. Credits No Response	0.0476 (0.048)	Ed. Credits None	-0.3065~ (0.164)	Ed. Credits 1-3	0.1756 (0.115)
Ed. Credits 4-6	0.0476 (0.048)	Ed. Credits 7-9	-0.1250 (0.076)	Ed. Credits 10-12	0.0476 (0.045)
Ed. Credits 13-15	0.0476 (0.048)	Ed. Credits 16-plus	0.0655 (0.109)	No Prev. Teaching	-0.0536 (0.170)
Previous Teaching	0.0060 (0.164)	Ed. Persistence 1-2 Years	0.0179 (0.124)	Ed. Persistence 3-5 Years	0.0982 (0.129)
Ed. Persistence 6-10 Years	0.0952 (0.061)	Ed. Persistence 11-Plus Years	-0.2113 (0.138)	Tch. Persistence None	-0.0298 (0.108)
Tch. Persistence 1-2 Years	0.0982 (0.144)	Tch. Persistence 3-5 Years	-0.1042 (0.163)	Tch. Persistence 6-10 Years	0.0804 (0.095)
Tch. Persistence 11-Plus Years	-0.0446 (0.115)				

Appendix J: School Characteristics Post-Attrition Balance Check

Table J: School Characteristics Balance Check Post-Attrition

Enrollment	-315.4583~	% Black	-0.1281	% Hispanic	0.0528
	(161.252)		(0.128)		(0.080)
% White	0.0758	% Other	0.0000	% Male	0.0022
	(0.085)		(0.006)		(0.016)
% Female	-0.0022	% Economic Disadvantaged	0.0742	% LEP	0.0736
	(0.016)		(0.047)		(0.090)
% SPED	0.0145	Attendance Rate	-1.2568	% Black Teachers	-0.0833
	(0.021)		(2.379)		(0.087)
% Hispanic Teachers	0.0023	% White Teachers	0.1259	% Other Teachers	-0.0490
	(0.010)		(0.083)		(0.042)
% Male Teachers	-0.0543	% Female Teachers	0.0531	% Highly Effective	-0.0712
	(0.048)		(0.048)		(0.079)
% Effective	0.1645	% Minimally Effective	-0.0710	% Ineffective	-0.0217
	(0.101)		(0.083)		(0.028)

Appendix K: Teacher Mid- and End-of-Year Surveys

Please answer the following:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1	The post-observation conference with my field instructor was characterized by a lively give and take.	○	○	○	○	○	○
2	I found the feedback I received useful.	○	○	○	○	○	○
3	I will put some of the ideas discussed in the conference into practice.	○	○	○	○	○	○
4	My field instructor's observation/evaluation provided a thorough assessment of my teaching performance.	○	○	○	○	○	○
5	I learned a great deal about how to improve my teaching as a result of my evaluations.	○	○	○	○	○	○
6	My observations/evaluations provides an important basis for setting my professional development goals.	○	○	○	○	○	○
7	The feedback I received was specific and targeted.	○	○	○	○	○	○
8	The feedback focused on classroom management.	○	○	○	○	○	○
9	The feedback focused on instructional strategies.	○	○	○	○	○	○
10	The feedback focused on student engagement.	○	○	○	○	○	○
11	The feedback focused on subject matter content.	○	○	○	○	○	○
12	The feedback focused on evidence of student learning.	○	○	○	○	○	○
13	The feedback focused on differentiation, scaffolding, or modification.	○	○	○	○	○	○
14	Observation cycles (in-person observations, debriefs, written feedback, and observation scores) do little to identify the strength and weaknesses of my practice.	○	○	○	○	○	○
15	Observation cycles are simply a matter of "going through the motions."	○	○	○	○	○	○
16	I spent too much time preparing for and participating in observation cycles.	○	○	○	○	○	○

17	Observation cycles are more about making decisions regarding my certification status than promoting my professional improvement.	○	○	○	○	○ ○
18	There is little connection between observation cycles and my goals for improvement.					

At this point in the school year, how well prepared do you feel to -

		Not at all prepared	Somewhat prepared	Well prepared	Very well prepared
1	Plan effective lessons?	○	○	○	○
2	Perform routine administrative tasks (e.g. take attendance, make announcements, etc.)?	○	○	○	○
3	Handle a range of classroom management or discipline situations?	○	○	○	○
4	Manage classroom routines?	○	○	○	○
5	Use a variety of instructional methods?	○	○	○	○
6	Teach your subject matter?	○	○	○	○
7	Assess students?	○	○	○	○
8	Adapt and use curriculum and instructional materials?	○	○	○	○
9	Differentiate instruction in the classroom (e.g., target instruction to individual students)?	○	○	○	○
10	Use data from student assessments to inform instruction?	○	○	○	○
11	Work with English Language Leaners (ELL/LEP/ESL)?	○	○	○	○

Appendix L: Post-Intervention Fidelity Survey (PIFS)

Name: _____

The following questions ask about your field instruction experiences during your third and fourth observations (i.e., the last two visits from November-Present Day). The [ICP Name] program team has provided field instructors with different coaching approaches and strategies to use during these last two visits with first-year CMs. The purpose of this survey is to determine which coaching approaches and strategies were/were not helpful to your practice.

Please **circle** either Yes or No for the next three questions.

1. Before my third or fourth observation, my field instructor (over email or phone) identified a couple (3-4) rubric competencies he/she thought we could work on.	Yes	No
2. I got to *choose* one rubric competency to focus both observations on (i.e., focus on Competency 2A for Visits #3 & #4).	Yes	No
3. The rubric competency I *chose* was an area of practice I wanted to improve in.	Yes	No

Note: If you circled "No" for #2, please circle "No" for #3.

To what extent do you agree or disagree with the following statements regarding your 3rd and 4th observations. Please **circle** you level of agreement.

1=Strongly Disagree   2=Disagree   3=Agree   4=Strongly Agree

4. We (field instructor and myself) spent the majority of our debrief time discussing a single rubric competency (e.g., 1D: Lesson Structure, 2A: Behavior Management, 5A: Scaffold Instruction)	1	2	3	4
5. We spent the majority of time discussing a rubric competency I felt I needed assistance with.	1	2	3	4
6. The verbal feedback (e.g., constructive criticism, evidence from observation) I received addressed a single rubric competency.	1	2	3	4
7. The verbal feedback I received addressed the rubric competency I *chose* to address with my field instructor.	1	2	3	4
8. The written feedback I received in Chalk & Wire addressed a single rubric competency.	1	2	3	4
9. The written feedback I received in Chalk & Wire addressed the competency I *chose* to address with my field instructor.	1	2	3	4
10. The suggestions I received in either my verbal or written feedback focused on how to improve in a specific rubric competency.	1	2	3	4
11. The suggestions I received in either my verbal or written feedback focused on how to improve in the specific rubric competency I *chose* to address.	1	2	3	4
12. I learned a great deal about how to improve my teaching as a result of my last two observations (i.e., Visit #3 & #4)	1	2	3	4
13. I found the feedback I received from my field instructor useful.	1	2	3	4

14. I will put some of the ideas discussed in the debrief into practice.   1   2   3   4

15. I felt empowered as a professional in my last two observations.   1   2   3   4

Appendix M: Sample Interview Protocol

Teacher Post-End of Year Survey Interview

Purpose: I appreciate your willingness to speak over the phone and participate in this interview today. This study seeks to learn more about the features of coaching you receive from your field instructor. Specifically, I am interested in the different forms and features of coaching that you found beneficial during your first-year in the classroom. Obviously, there are no right or wrong answers for any of the questions we discuss; I am just interested in hearing your perspective. Please know your insights will go a long way to helping me understand the support the program provides to first-year teachers.

These interviews will only be available to me after we conclude today. If at any point, you feel uncomfortable and do not wish to continue participating, you may skip a question or stop the interview. I will be following a script to ensure I ask you all of the questions I have prepared. I am happy to clarify or rephrase questions. If you care for my opinions about certain questions, please hold off until the end of the interview and I will (selectively) answer them at that point. Do you have questions before we begin?

Recording: I am going to audiotape the interview because I am interested in your ideas and want to make sure that I have a good record of everything you say. Do I have your permission to do this?

Thank you. Do you have any questions before we get started with the interview questions?

A little bit about the structure of this interview: I'll start off by asking you some questions about your experiences with your field instructor this past year. Then I will ask you about some of your end-of-year survey responses. I may also ask some questions based on your responses provided in this interview.

Note: Blue text refers to questions from the end-of-year survey. They are meant to build on the teachers' answers they provided.

explore what types or features of coaching were more or less beneficial to intervention and control teachers

Relevant RQ	Construct Measured	Question
Overarching Question	Background questions to initiate the conversation and develop rapport.	• Could you please tell me your name and what content/grade level you supported this year? • When you think about this past year, how would you describe your experiences with your field instructor?
Transition: I'd like to discuss more about your perceptions around the support and coaching you received this year. In doing so, I might ask you more about your responses on the end of year survey. In case you forgot how you responded, I have your answers with me and will read them back to you.		
RQ 2	Teachers' perceptions around the quality of support received.	• In your opinion, how would define "quality" support and coaching for first-year teachers? • Given this, how would you assess the support you received from your field instructor this past year?

		• As it relates to this assessment, you mentioned "XX" in your end-of-year survey, could please tell me a little bit more about this? *Allow for follow-up based on teachers' responses.*
RQ 3	Teachers' perceptions of coaching practices that influence responsiveness to coaching?	• When you think about your definition of "quality" support and coaching for first-year teachers, take me through what a coach/field instructor would be doing? • (Based on response above) Could you fill in what this might encompass before the field instructor observers you, during the observation, during the debrief, and afterwards? • In regards to these responses, what could your field instructor have done more of? What could she/he done less of? • In regards to this, you mentioned "XX" in your end-of-year survey, could please tell me a little bit more about this? *Allow for follow-up based on teachers' responses.*
Conclude: I really appreciate your candor in responding to my questions. These are all of the questions I had planned for us today. Do you have any questions for me? I will be mailing your compensation in the mail this afternoon/tomorrow morning so hopefully you receive it in the coming days. Thanks again for your participation, I greatly appreciate it.		

Appendix N: Robustness Check: Multi-Level Models (MLM)

Table N: Compared to teachers whose coaches received no training, did teachers whose coaches received the training have better observation ratings?

VARIABLES	Model 1	Model 2	Model 3
Intervention	0.2435	0.3068	0.2788
	(0.326)	(0.297)	(0.293)
BOY Score	0.5517***	0.6426***	0.7226***
	(0.154)	(0.152)	(0.134)
Grade K-5		0.6411*	0.9419**
		(0.303)	(0.311)
% Black Students		0.6763	0.4330
		(0.506)	(0.438)
% White Students		1.0432	1.4159*
		(0.672)	(0.584)
Charter School		0.3068	0.1425
		(0.297)	(0.263)
Male Teacher			0.4796*
			(0.230)
White Teacher			-0.3910
			(0.252)
No College Education Credits			0.3261
			(0.245)
Previous Teaching Experience			0.6316**
			(0.220)
Remain In Education 11+ Years			0.2788
			(0.293)
Constant	-0.0754	-0.7657	-1.3783*
	(0.230)	(0.554)	(0.583)
Observations	36	36	36
Number of groups	21	21	21

Appendix O: Robustness Check: Multiple Imputation

Table O: Compared to teachers whose coaches received no training, did teachers whose coaches received the training have better observation ratings?

VARIABLES	Model 1	Model 2	Model 3
Intervention	0.3301	0.3164	0.1754
	(0.352)	(0.350)	(0.349)
BOY Score	0.8267***	0.8665***	0.7663**
	(0.220)	(0.225)	(0.213)
% Black Students		0.1345	0.4072
		(0.703)	(0.625)
% White Students		0.6723	1.4451~
		(0.922)	(0.834)
Charter School		0.0229	-0.0720
		(0.433)	(0.397)
Male Teacher			0.6073
			(0.394)
White Teacher			0.5603
			(0.345)
No College Education Credits			-0.6210~
			(0.336)
Previous Teaching Experience			0.3090
			(0.353)
Remain In Education 11+ Years			0.6678~
			(0.342)
Constant	-0.0311	-0.2191	-1.0036
	(0.269)	(0.697)	(0.711)
Observations	45	45	45
R-Squared	0.28	0.29	0.57
Number of Strata	6	6	6

Appendix P: Robustness Check: MLM (Preparedness)

Table P: Compared to teachers whose coaches received no training, did teachers whose coaches received the training report feeling more prepared?

Variables	Teaching Subject Matter Content			Teaching All Students			Managing The Classroom		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intervention	-0.1522	-0.1587	-0.2929	0.2248	0.0636	-0.0796	0.2982	0.3150	0.2685
	(0.290)	(0.275)	(0.289)	(0.340)	(0.290)	(0.328)	(0.253)	(0.219)	(0.241)
BOY Factor Score	0.4245**	0.4185**	0.5000***	0.4637*	0.5560**	0.5248*	0.5466***	0.5215***	0.5144***
	(0.133)	(0.139)	(0.143)	(0.204)	(0.180)	(0.249)	(0.113)	(0.118)	(0.127)
Grade K-5		-0.2161	0.1492		-0.2173	-0.0643		-0.1827	-0.1117
		(0.293)	(0.356)		(0.298)	(0.391)		(0.237)	(0.303)
% Black Students		0.1811	0.2907		-1.6657**	-1.6977**		0.3007	0.2286
		(0.518)	(0.506)		(0.544)	(0.582)		(0.449)	(0.451)
% White Students		0.2425	0.6698		-0.3859	-0.3000		0.0218	0.2777
		(0.739)	(0.732)		(0.812)	(0.844)		(0.611)	(0.629)
Charter School		-0.1587	-0.0974		-0.3025	-0.4104		0.3150	0.0041
		(0.275)	(0.306)		(0.301)	(0.333)		(0.219)	(0.274)
Male Teacher			0.5324~			0.1153			-0.0466
			(0.279)			(0.378)			(0.241)
White Teacher			-0.4192			0.0209			-0.2802
			(0.291)			(0.353)			(0.245)
No College Education Credits			-0.1701			-0.3260			0.0960
			(0.319)			(0.326)			(0.269)
Previous Teaching Experience			0.3110			-0.0031			0.2613
			(0.270)			(0.361)			(0.228)
Remain In Education 11+ Years			-0.2929			-0.0736			0.5050
			(0.289)			(0.323)			(0.567)
Constant	0.5703**	0.7090	0.0341	0.3666	1.7904**	1.8112*	0.3385~	0.3162	0.2685
	(0.220)	(0.581)	(0.722)	(0.274)	(0.610)	(0.792)	(0.190)	(0.515)	(0.241)
Observations	35	35	35	35	35	35	35	35	35
Number of groups	20	20	20	20	20	20	20	20	20

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Appendix Q: Robustness Check: MLM (Quality)

Table Q: Compared to teachers whose coaches received no training, did teachers whose coaches received the training report better quality coaching?

VARIABLES	Coaching Quality			Conference Investment			Focused Coaching		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intervention	-0.0660	-0.0705	-0.1760	-0.1686	-0.2827	-0.3321	0.1461	0.1066	0.2355
	(0.307)	(0.290)	(0.299)	(0.260)	(0.213)	(0.234)	(0.335)	(0.329)	(0.264)
BOY Factor Score	0.7515***	0.7153***	0.5761***	0.5052***	0.4218***	0.4566***	0.5744***	0.5312**	0.4433**
	(0.148)	(0.145)	(0.156)	(0.118)	(0.101)	(0.101)	(0.157)	(0.164)	(0.135)
Grade K-5		0.0328	0.1824		-0.0487	-0.0166		0.1311	0.1237
		(0.307)	(0.373)		(0.223)	(0.287)		(0.346)	(0.322)
% Black Students		-0.3379	-0.2361		-1.1083*	-0.9880*		-0.5367	-1.2552**
		(0.516)	(0.520)		(0.433)	(0.459)		(0.577)	(0.483)
% White Students		-1.3500~	-1.6570*		0.4000	0.6856		-0.9626	-1.5404*
		(0.722)	(0.738)		(0.608)	(0.635)		(0.787)	(0.694)
Charter School		-0.0113	-0.1198		-0.1648	-0.2480		-0.0694	0.3275
		(0.301)	(0.308)		(0.227)	(0.245)		(0.339)	(0.280)
Male Teacher			0.3560			-0.0396			-0.0332
			(0.340)			(0.253)			(0.286)
White Teacher			-0.0816			-0.1680			0.5806*
			(0.287)			(0.232)			(0.261)
No College Education Credits			0.2506			-0.2715			0.5738*
			(0.301)			(0.238)			(0.271)
Previous Teaching Experience			-0.0998			-0.1776			1.1691***
			(0.309)			(0.259)			(0.282)
Remain In Education 11+ Years			-0.5293~			0.1712			-0.2049
			(0.274)			(0.222)			(0.251)
Constant	0.0020	0.5458	2.2427***	0.1274	1.1525*	1.4818*	-0.4254~	0.3777	-0.0051
	(0.226)	(0.562)	(0.501)	(0.197)	(0.466)	(0.577)	(0.248)	(0.593)	(0.630)
Observations	35	35	35	35	35	35	35	35	35
Number of groups	20	20	20	20	20	20	20	20	20

Standard errors in parentheses

*** $p<0.001$, ** $p<0.01$, * $p<0.05$, ~ $p<0.1$

Coaching Practice (CC)	Coaching Practice Sub-Codes	Reasoning (SC)	Reasoning (SC)
Directive Coaching	Coach Identified Competencies	Lack of Knowledge	
	Directing Resources	Expedites Time	
	Follow Through	Trust	
		Accountability	
Creating Welcoming Envir.	Addressing The Positive	Consistent Disappointment	
		Develop Rapport	
		Maintain Motivation	
	Collaborative Dialogue	Less Formal Environment	Open To Feedback
			Address Insecurities
	Explain Rationale	Establishing Alignment	
	Sharing Perspectives	Similar Contexts	
	Responsive to Teacher Feedback	Valued	
Valuing Teacher As Professional	Contextual Suggestions	Actionable	
		Valued	
		Achieveable	
	Incorporating Teacher Choice	Meaningfulness	Investment
			Likely Implementation
Explicit Feedback constituent parts (could combine with decomposing practice).	Actionable	Lack of Knowledge	Insufficient Training
			Experience Gap
		Ease of Incorporation	Likely Implementation
	Concrete/Decomposed	Expedite Success	
		Collaboration	
		Lack of Knowledge	Build Toolbelt
Model Practice		Lack of Knowledge	Implementation
Narrow Focus		Expedite Improvement	Feel Successful
			Build Momentum
		Expedited Implementation	Clarity
		Building Blocks (Grain Size)	Addressing Long Term Goal
		Sense of Possibility	Less Overwhelmed
		Facilitates Focus	

		Time	Break Down
			Focus
General Focus		Address Complexities	
		Multiple Actions	

Coaching Practice	Definition/Example
Actionable Feedback	Feedback a teacher can immediately act upon (it's easy to understand). A hallmark of actionable feedback is a teacher feeling like they can use this the following lesson OR day.
Concrete/Explicit Feedback	Teacher feels like she/he can implement the feedback provided the next lesson or day to improve the area of concern observed. The teacher likely feels she/he can implement the feedback because the teacher understands WHAT she/he needs to do but also HOW to do it. Feeling like they know HOW to do it is likely the result of breaking down a practice into its • NOTE: decomposing practice does not necessarily mean a coach will model the practice.
Contextual Suggestions	Providing suggestions (not necessarily actionable or concrete) that fit OR can be implemented within the context of the classroom or the school. • Work within the confines of what the school prioritizes
Decomposing Practice	Breaking a specific suggestion into it's constituent parts (e.g., Grossman/Ronfeldt piece) to allow teacher a) understand what constituents this suggestion and b) see how it might look in practice
Modeling Practice	A coach provides a visualization for HOW a certain practice should be implemented into practice. Modeling would include a coach breaking a practice (e.g., facilitating a discussion) into its constituent parts whereby he/she names the parts so a teacher can SEE how the practice should be done. *Edit: Modeling could also be a visual resource modeling the practice. Edit 2: Modeling DOES NOT necessarily mean doing this in front of live students.* • See quote about "what does differentiation look like" from Transcript #2
Rehearsal	Teacher practices the suggestions/competencies addressed/modeled by the coach.
Narrow Focus	Coach chooses to address a smaller set or number of competencies with the beginning teacher. These may/may not lead up to a larger/more complex practice (e.g., serving as building blocks)
Incorporating Teacher Choice	Coach allows teacher to choose what [specific competency] is the focus of the post-observation conference
Address The Positive	Coach chooses to initiate the conference with a discussion of the positive aspects of the teachers' practice previously observed.
Explain Rationale	Coach explains the rationale for why she/he chose to address a particular topic, likely grounded in evidence collected during the observation.
Follow Through	A coach follows-up on the action items she/he set forth during the conference. This might include sending a resource or following-up via email like the coach said she/he would.
Collaborative Dialogue	Coach invites the teacher into the discussion by prompting the teacher reflect on his/her own practice (e.g., what went well, what did not go well) OR asking teacher his/her thoughts about what improvements need to be made.
Directing Resources	Coach assists the teacher towards resources (paper source or visual source) to address the area of concern.
Running Record of Evidence	Coach collects real-time OR minute-by-minute record of what is occurring during the observation.
Sharing Perspectives	Coach shares perspectives about what she/he did during her tenure as a teacher OR what she/he has observed other

	teachers doing in similar contexts.
Responsive to Teacher Feedback	Coach alters or adjusts his/her practice as a result of feedback received from the teacher in prior conferences or earlier communications.
General Focus	Coach chooses to address many (#?) competencies or domains of practice during the post-observation conference.
Reasoning (Coaching Practice)	**Definition/Example**
Lack of Knowledge (Actionable Feedback)	Alternative Route teachers suggest they have **insufficient knowledge** and **experience** because they did not have extensive (e.g., time) training (e.g., methods coursework and student teaching) thus they need actionable feedback to address these gaps (they also don't know HOW to address certain knowledge gaps/problems) • Additionally, without an education background and having limited experience teaching, the teacher has NEVER seen certain practices in action so it's helpful for the teacher to view it.
Ease of Incorporation (Actionable Feedback)	Suggestions that are actionable appear to be easier for the teacher to implement the following day, thus increasing the likelihood that a teacher will implement it. Because the teacher believes he/she can do this, they will be more likely to actually incorporate it. • Interview Transcript #9 (Compliment Jar)
Procure Success (Concrete Feedback)	Teacher feels like they can do something successful the next day when the coach provides concrete feedback.
Collaboration (Concrete Feedback)	Teacher feels like the coach and herself/himself are apart of the solution/working in partnership (e.g., the ownership does not feel like it's all on the teacher to be the mechanism of change) when concrete feedback is provided.
Lack of Knowledge (Concrete Feedback)	Teacher feels like she/he does not have the requisite knowledge or skill to implement suggestions or feedback without concrete steps. Teachers also knows **how to use** this particular strategy in the classroom,
Actionable (Contextual Suggestions)	Teacher feels like he/she can act upon the suggestions provided because they COULD work within the context of the school (e.g.,, school policies/focus, curriculum focus, etc.) OR the suggestion is possible given the performance/current achievement of the students in the class.
Valued (Contextual Suggestions)	Suggestions that fit within the context of the school or classroom makes the teacher feel valued because the coach is tailoring suggestions to the needs of the teacher (feeling valued is likely the result too of feeling like the coach is listening to his/her needs).
Achieveable (Contextual Suggestions)	Feel like the suggestions or practices discussed can actually be implemented but serve as a building block to something bigger (Transcript #14)
Lack of Knowledge (Decomposing Practice)	Alternative Rout teachers suggest they have a lack of knowledge around HOW to **implement** a specific practice or suggestion.
Lack of Knowledge (Modeling Practice)	Alternative Rout teachers suggest they have a lack of knowledge around HOW to **implement** a specific practice or suggestion.
Expedites Learning (Modeling Practice)	Teachers feel like modeling (whether in person or a visual resource) cuts down on the amount of time it takes for the teacher to figure out how to implement the suggestion of feedback.
Validation (Rehearsal)	Rehearsal allows for the teacher to SHOW coach she/he understands how to implement a specific practice and affords coach opportunity to validate teacher understands/has internalized the practice.
See Improvement (Narrow Focus)	Beginning teachers feel like they can see the issues being fixed in the classroom in an expedited fashion. When coaches narrow the focus of the coaching to a few competencies (1-2). Seeing more immediate improvement helps teachers feel successful and generate momentum in their progress. • "I feel like I accomplished something and having success in one area feels like building a platoon, having building

	blocks where confidence is developed so teacher can move onto next area of growth" (Transcript #7)
Expedited Implementation (Narrow Focus)	Beginning teachers feel like they can implement the suggestions immediately because they know exactly WHAT (clarity) to focus on when coaches narrow the focus of the coaching to a few competencies (1-2). Focusing on many competencies might leave teachers less clear on what they should address.
Building Blocks (Narrow Focus)	Beginning teachers feel like when you address a narrow set of competencies (what seem deem as "building blocks") they feel like they are addressing the constituent parts of more complex practices OR longer term goals that they want to work towards. Additionally, the larger goals or tasks take time to see movement/improvement BUT focusing on the building blocks (of the larger goals) allow you to accomplish smaller goals AND see change happen. This also allows the teacher to feel better about his/her performance as a teacher/builds momentum. • "Figuring out how to have teenagers not be disrespectful to one another is not something that I can fix in a week, but I can focus on something that is a building block to the longer term goal [of having students be more respectful]"
Sense of Possibility (Narrow Focus)	A coach choosing to have a narrower focus within a conference helps the teacher feel like change/improvement is possible because he/she does not feel overwhelmed with everything that **could** be addressed in the classroom. Also helps break the complexity of teaching into more manageable chunks that helps a beginning teacher feel like she/he can improve. • "I am much better when I can address one problem at a time rather than try to fix everything at once" (Transcript #8)
Facilitates Focus (Narrow Focus)	Assists the teacher in becoming focused around a single element of practice AND helps teacher focus attention (both time and energy) around one thing to improve on. Beginning teachers cite not knowing to prioritize time and narrowing focus assist teachers in knowing exactly what to focus on. • "I keep forgetting because I'm just so consumed with other stuff. Where if I had to deal with just that one thing, there's no way I'm going to forget that that's the one thing I'm working on" • "I can check it and people can check it."
Time (Narrow Focus)	Addressing a single competency allows for a teacher and coach to spend more time during the conference breaking down a specific practice, getting clear on HOW to address the competency (break down). Moreover (as it relates to time) "time" allows you to go into more detail about the problem or the suggestions (and learn WHY we're doing it). Additionally, focusing on a single competency allows for the beginning teacher to focus on one practice so she/he can put their time, thinking, and energy into one area of practice until they feel comfortable and positive about it.
Congruence (Incorporating Teacher Choice)	When a coach addresses a competency a teacher does not necessarily agree should be the focus, the feedback is less likely to be received favorably and the likelihood of implementation decreases. Teacher choice helps ensure the competencies addressed in the conference are meaningful to the teacher. This results in the teacher feeling **invested** in the coaching process and more likely to **implement** the practice/feedback offered.
Consistent Disappointment (Address The Positive)	First-year teachers working in a challenging context (e.g., Detroit) face considerable challenges on a daily basis. Having a coach recognize positive aspects of a teacher's performance helps them feel like they are not consistently underperforming or failing.
Welcoming Environment (Address The Positive)	Initiating the conference with the positive creates a more welcoming environment where the teacher does not feel judged or pressured to begin to conversation.
Maintain Motivation (Address The Positive)	Teachers are already self-critical of their practice and know they have deficiencies so addressing the positive in the conference helps teachers stay motivated to improve over time. Helps teacher feel positive about some aspects of his/her

	classroom practice.
Establishing Alignment (Explain Rationale)	Teacher might feel like it's the best use of time when the coach discusses/explains her rationale for choosing what she/he did. When evidence is provided as to WHY this competency is selected, then the teacher establishes alignment around what and why will be discussed.
Trust (Follow-Through)	Following through makes the teacher feel like you care about their growth and development as a teacher, but also want to serve as a facilitator of their improvement.
Accountability (Follow-Through)	Follow-through with what teacher was SUPPOSED to do holds the teacher accountable where they feel like they are responsible for doing and helps teacher remember the context of the previous discussion.
Less Formal Environment (Collaborative Dialogue)	Inviting the teacher into the conference / share his or her thoughts created a less formal environment. Make teachers receptive/open to the feedback because she/he didn't feel like everything was mandated to her. Also assists in addressing the teachers insecurities because inviting her into the conversation makes the teacher like she wasn't completely wrong about she did.
Expedites Time (Resource Sharing)	With limited experience, teachers don't necessarily know where to go for solutions and resource sharing cuts down on the amount of time to vet resources
Lack of Knowledge (Chosen Competencies)	As first-year teachers with limited professional knowledge and experience, having competencies chosen by the coach helps focus the teacher on areas of practice in need of improvement.
Mitigates Bias (Running Record of Evidence)	Non-objective feedback allows for the teacher to see and read what was occurring during the observation without the coach interjecting his/her opinion, thus mitigating potential bias. Also allows for the teacher to further refine his/her impressions of the observed lesson.
Similar Contexts (Sharing Perspectives)	Beginning teachers feel receptive to coaches sharing their perspectives on what might work or has worked because most coaches worked in the same geographic location with similar students, so teacher might be more inclined OR receptive to this feedback.
Valued (Responsive to Feedback)	Coaches receptive to teacher's feedback AND/OR altering practice based on teacher's feedback makes the teacher feel supported/feel like the coach genuinely wants teacher to develop and improve.
Address Complexities (General Focus)	Teachers believe so much is going on in teaching that a general focus helps address a multitude of domains of instructional practice, thus allowing teachers to potentially improve across domains.
Multiple Actions (General Focus)	Teacher feels like if the practice (action) is something that she/he can change the next day, it's helpful to have a bunch of these action items because they can expedite improvement

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