

A Multi-Case Analyses of Pre-service and In-service Teachers Response to Coaching Techniques

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Abstract

This multi-case analysis investigates two separate studies that involve pre-service and in-service teachers. These studies aimed to seek effective coaching models to improve instructional teaching strategies. Data in both studies were triangulated to find common and emerging themes, validating the efficacy of coaching and the improvement of teaching practices. While there are many formats of providing high-quality coaching experiences to both pre-service and in-service teachers, this study utilized after-action review and instructional coaching methods. These studies examined opportunities in which both pre-service and in-service teachers were able to rethink teaching practices to trigger change in instructional practice by igniting a metacognitive process. It is through a metacognitive process that teachers refine past, present and future teaching strategies.

Key Words: after-action review, in-service teacher, instructional coaching, on-going professional development, reflective teaching, pre-service teacher

Introduction

The No Child Left Behind Act (NCLB) of 2001, placed an emphasis on teacher quality, bringing the quest to accurately assess and improve education to the forefront (USDOE, 2011a). Improving teacher preparation programs is a common goal in American schools, as there is a growing need for teachers who can work effectively with students who have disabilities (Beare, Marshall, Torgerson, Tracz & Chiero, 2012), and meet the needs of diverse learners. This has emphasized the need for both pre-service and in-service to fully understand the content they teach, and the ability to refine their teaching approaches by reflecting on their teaching practices

Demand for heightened test scores over the past decade, have prompted professional development models to be at the forefront as an agent for initiating change in teacher pedagogy as a means to increase students outcomes. With an abundance of professional development models emerging in the United States, particularly with the push for teacher accountability, the United States public education system (federal, state, local)

have employed “coaches” as the active ingredient to encourage change in teacher pedagogy.

Coaching can be applied in various types of professional development models with both pre-service and in-service teachers to enhance the quality of education students receive in the classroom. Joyce and Showers (1981 & 1996) define coaches as ‘master’ educators who provide teachers with individualized guidance repeatedly over a period of several weeks, months, or even years. According to researchers (Darling-Hammond & McLaughlin, 1995; Guskey & Huberman, 1995; Hawley & Valli, 1999; Joyce & Showers, 2002) who have discussed the need for reform in educational professional development models, there is a need to move away from ‘brief’ workshops and/or experiences, to more specific types of professional development models. However, it is relatively rare that pre-service and in-service teachers in the U.S. have access to such aforementioned professional development involvement (Darling-Hammond, Wei, Richardson, & Orphanos, 2009).

Increased Training and Professional Development

High quality professional development such as coaching is intended to provide opportunities of intensive learning and should take place for both pre-service and in-service teachers. By using a reflective teaching model with pre-service teachers, future educators are prepared for reflective professional development. It is through the reflection process that both pre-service and in-service teachers can refine current teaching practices.

Pre-service Teachers

The shortage of well-qualified special education teachers has been described as severe, chronic, and pervasive, and efforts to increase numbers of qualified special education teachers have largely been ineffective in the past two decades (Boe & Cook, 2006; McLeskey, Tyler, & Flippin, 2004). In combination with drastic reductions in school-based funding and growth in class sizes, special educators may seek balance between the demands of high stakes testing and accountability. Many school districts find it difficult to fill positions that require special education certification (Payne, 2005; Ashby, 2012). Continuing explanation of factors with possible influence on teacher shortage and attrition include absence of certification, adequate yearly progress (AYP), and novice teachers.

The ability to meet these heightened expectations for teacher performance is developed through strong preparation in pre-service special education teacher programs. Novice special educators with robust pre-service classroom preparation are more likely to remain in the field as opposed to those who do not have these types of experiences (Connelly & Graham, 2009). Preparation that encourages instructional change requires not only awareness of context and teaching practices but also an understanding of the varying contexts involved in the construction and appropriation of knowledge (Collet, 2012). This preparation also has the potential to heighten initial effectiveness and increase the likelihood of novice teachers staying on the job long enough to become more experienced and effective (Darling-Hammond, 2010).

When teachers new to the field leave before developing a solid repertoire of research-based teaching practices, students are exposed to a “continual parade of ineffective teachers” (Darling-Hammond, 2003, p. 9).

Specialized instruction is designed to meet the unique educational needs of students with disabilities, particularly students with learning disabilities (LD) in the area of reading and Woolfolk-Hoy and Spero (2005) suggest that pre-service preparation experiences are key to the development of teacher efficacy (teachers’ confidence in producing positive student learning) (Gao & Mager, 2011; King-Sears & Bowman-Kruhm, 2011). Multiple qualitative studies have discovered that individualization for students with reading disabilities “...was not widely reported” (Scruggs, Mastropieri, & McDuffie, 2007, p. 273). For pre-service teachers to gain proficiency or to successfully perform a task, they must first develop the requisite skills to successfully complete the task and possess confidence to effectively use these skills (Burton and Pace, n.d.). In general, teachers with a higher sense of self-efficacy exhibit greater enthusiasm for teaching, have greater commitment to teaching, and are more likely to continue teaching (Allinder, 1994; Guskey, 1984; Hall, Burley, Villeme, & Brockmeier, 1992; Coladarci, 1992; Evans & Tribble, 1986; Trentham, Silvern, & Brogdon, 1985; Burley, Hall, Villeme, & Brockmeier, 1991; Glickman & Tamashiro, 1982).

It is possible that once pre-service teachers have increased knowledge of effective specialized instructional strategies and practices for students with disabilities, and feel increased confident in their teaching, their levels of self-

efficacy levels will increase. However, as Forlin and Chambers (2011) pointed out, it is necessary for university teacher preparation programs to provide the skills and strategies to teach students with disabilities in the area of reading effectively. The extent to which beginning educators feel prepared to teach students with reading or other related disabilities impacts the quality and quantity of instruction that students are likely to receive (King-Sears, Carran, Dammann, & Arter, 2012; Dieker, Hynes, Hughes, & Smith, 2008; Lee, Patterson, & Vega, 2011). Therefore, it is imperative that programs deliver quality opportunities for preparation methods and development to adequately prepare pre-service special education teachers (Garland, 2012).

In-service Teachers

Professional development opportunities for teachers tend to lend themselves to one-day workshops on various topics that do not specifically relate to the teachers’ classroom contexts or curriculum (Griffith, Ruan, Stepp, & Kimmel, 2014). The current research suggests that teacher professional development should be job-embedded, ongoing, and directly related to the challenges teachers face in daily classroom instruction (Deussen, Coskie, Robinson, & Autio, 2007). As professional development models emerge it is important to understand key components that lead to successful ongoing professional development. Professional development models, either one-shot or ongoing, have a very similar goal to increase teachers’ content knowledge and encourage best practices in the classroom. Joyce & Showers (1996) iden-

tify five kinds of professional development experiences: (1) theory, (2) demonstration, (3) practice, (4) feedback, and (5) in-class coaching that have contributed to the foundation of professional development models in education. Desimone’s (2009) model has five core features of effective professional development echoing that of Joyce and Showers. Desimone’s five features include content focus, collective participation, active learning, duration, and coherence (see Figure 1).

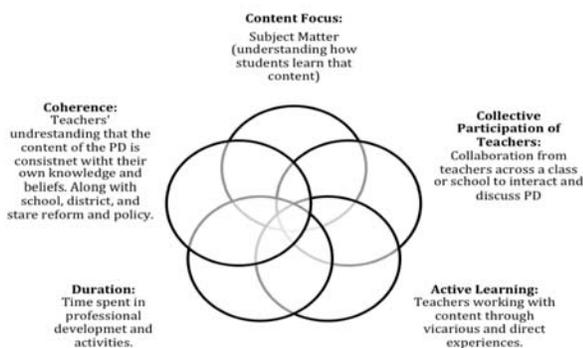


Figure 1. Five Features of Desimone’s Effective Professional Development.

The uniqueness of Desimone's five features allows teachers the time to focus on content and gain understanding into how students learn the content. The features allow teachers the opportunity to collectively participate with other colleagues through active learning. It is through active learning that teachers have vicarious and direct experiences with content. Vicarious experiences might include watching videos of expert teachers. Direct experiences incorporate discussion, classroom coaching, and reviewing student work embedded within and drawn from the classroom experience. Professional development that incorporates active learning is context specific and related to classroom instruction.

Professional Development Models

Creating high quality professional development models based on Desimone’s (2009) five core features of effective professional development and the five key professional development experiences identified by Joyce and Showers (1996) suggest that the models have direct experiences to incorporate discussion, classroom coaching, and reviewing of student work (Griffith et al., 2014). In order to create an environment of high quality professional development, one must understand that teaching is a cognitive process. McVee, Dunsmore, and Gavelek (2005) explain that schema and other cognitive processes build on the knowledge one gains through social interactions to become embodied actions. For example, when an instructional coach works with a teacher it is a form of social interaction, and the new knowledge that is developed is manifested in the form of higher-level instruction. McVee et al. (2005) also suggest that knowledge is situated in the transaction between world and individual, and that the transactions are mediated by culturally and socially enacted practices. Therefore, professional development models that promote high performing classrooms highlight the importance of cognitive process.

Vygotsky’s general law of cultural development explains that schemas emerge from the social interactions between an individual and his or her environment (Vygotsky, 1978), employing that we function on two levels first at the social level and then at the individual level. Harré (Callucci, DeVoogt Van Lare, Yoon, & Boatright, 2010) drawing

on Vygotsky's theory developed a conceptual framework for how individuals develop through a social process. This process has been elaborated on and identified as Vygotsky Space through the works of various researchers (Callucci, et al., 2010, McVee, Dunsmore & Gavelek, 2005). Vygotsky Space is a non-linear process of learning that may occur in any of the four quadrants identified by Callucci et al. (2010) and McVee et al. (2005). The four quadrants of Vygotsky Space are conventionalization (setting), appropriation (actions), transformation (private), and publication (new learning) (Callucci et al., 2010). The quadrants represent the space where individuals construct knowledge through social and internal experiences. Therefore, high quality professional development models need to allow for scaffolding between the four quadrants in order for individuals to cultivate growth.

Theories on Teaching Practice

Self-Efficacy

Bandura's research (1986, 1997) denoted self-efficacy as the concerns and judgments of how well one executed courses of action required when confronting prospective situations. Self-efficacy, developed through experience, includes experiences of mastering a task, social persuasion (where others tell an individual that he/she is good at something), identification with another seen as competent in the area, as well as the variable emotional and physiological state of the individual (Klassen, 2004). A teacher's self-efficacy is defined as a belief or judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or

unmotivated (Armor, et al., 1976). It is defined as one's feelings of personal competence for teaching in a classroom in which all students, regardless of ability, are educated together in common educational contexts (Andrews & Lupart, 2000; Tschannen-Moran & Woolfolk-Hoy, 2001).

Beliefs and personal attitudes shape who teachers are as individuals and the types of decisions they make in the classroom. On a daily basis, teachers' attitudes influence a school's social environmental factors (Kaufman & Ring, 2011). Teachers' senses of efficacy have been connected to student outcomes such as achievement, motivation, and students' own sense of efficacy (Anderson, Greene, & Loewen, 1988; Armor, et al., 1976; Ashton & Webb, 1986; Midgley, Feldlaufer, & Eccles, 1989; Moore & Esselman, 1992; Ross, 1992;). Teachers' belief of efficacy is also related to their behavior in the classroom. Efficacy affects the effort they invest in teaching, the goals set, and levels of aspiration. Teachers with a strong sense of efficacy tend to exhibit greater levels of planning and organization, are more open to new ideas, and more willing to experiment with new methods to better meet the needs of students (Berman, McLaughlin, Bass, Pauly, & Zellman, 1977; Guskey, 1988; Allinder, 1994). Beliefs in personal efficacy influence teachers' persistence when things do not go smoothly and their resilience when faced with setbacks.

An expectation of efficacy is the individual's conviction that he or she can orchestrate the necessary actions to perform a given task, while the outcome expectancy is the in-

dividual's estimation of the likely consequences of performing that task at the expected level of competence (Bandura, 1986). Educators who have high self-efficacy beliefs are educators who strongly believe their instructional actions will lead to desired educational outcomes for the learning of students with disabilities (King-Sears, Carran, Dammann, & Arter, 2012). Novice teachers are more likely to view students with disabilities in a negative manner and perceive them as less likely to achieve high educational standards than their experienced counterparts (Mariano-Lapidus, 2013).

Woolfolk-Hoy and Spero (2005) suggest that pre-service preparation experiences are key to the development of teacher efficacy, that is, teachers' confidence in producing positive student learning (Gao & Mager, 2011). For individuals to gain proficiency or to perform a task, they must first develop the requisite skills to successfully complete the task and possess confidence to effectively use these skills (Burton and Pace, 2009). Teachers with a higher sense of self-efficacy exhibit greater enthusiasm for teaching, have greater commitment to teaching, and are more likely to continue teaching (Allinder, 1994; Guskey, 1984; Hall, Burley, Villeme, & Brockmeier, 1992; Coladarci, 1992; Evans & Tribble, 1986; Trentham, Silvern, & Brogdon, 1985; Burley, Hall, Villeme, & Brockmeier, 1991; Glickman & Tamashiro, 1982). It is possible that once pre-service teachers have increased knowledge of specialized instructional practices, explicit instruction while teaching students in combination with mentor coaching (after-action review), and increase their confidence in teaching, their levels of self-efficacy levels will increase. Forlin and Chambers

(2011) reiterate the fact that it is absolutely necessary for university teacher preparation programs to provide the skills and strategies that enhance personal efficacy and enable pre-service special educators to instruct students with disabilities more effectively.

Coaching and the Vygotsky space.

Vygotsky's general law of cultural development explains that schemas emerge from the social interactions between an individual and his environment (Vygotsky, 1979), employing that we function on two levels, first at the social level and then at the individual level. Drawing on Vygotsky's theory, Harré (cited in Callucci et.al., 2010) developed a conceptual framework for how individuals develop through a social process. This process has been elaborated on and identified as Vygotsky Space through the works of various researchers (Callucci et.al., 2010, & McVee et.at. 2005). Vygotsky Space is a non-linear process of learning that may occur in any of the four quadrants of Vygotsky Space (Callucci et.al. 2010 & McVee et.al.,2005). The four quadrants of Vygotsky Space are conventionalization (setting), appropriation (actions), transformation (private), and publication (new learning) (Callucci et al., 2010). The quadrants represent the space where individuals construct knowledge through social and internal experiences (See Figure 2).

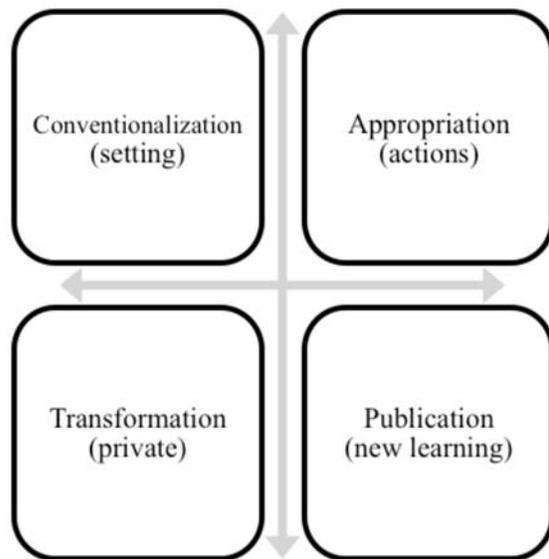


Figure 2. Vygotsky Space. (Note: Adapted from McVee et.al , 2005)

Instructional coaching is a social interaction that allows individual schemes to emerge through the environment. The techniques used by the instructional coaches of this study (i.e., collaboration, relationship building, active coaching cycles, digital technologies, and reflective questioning) are discussed in relation to Vygotsky's Space. Instructional coaches use collaboration to create a team learning community. The team learning community is the foundation for all coaching experiences because coaching is a partnership between both the coach and the teacher. It is through collaboration that the coach creates a safe environment (conventionalization) for teachers to develop and strengthen their individual schemata about teaching. Coaches establish collaboration by building relationships with the teachers. The relationships set boundaries and expectations for

coaching cycles. This also aids in the establishment of safe learning environments. Collaboration and relationships are the foundational blocks for successful coaching sessions.

When the coach has established a safe learning environment he or she can begin the coaching cycles. The coaching cycles are established so that the teacher has an active role in the process. One of the four quadrants of Vygotsky's Space is appropriation (actions). This quadrant is what allows the individual to be actively involved on both the social level and the individual level of schema building. Through coaching cycles the coach and teacher work together to address best teaching practices. An active coaching cycle begins with a "pre-conference". During the pre-conference the coaching lesson is outlined with the roles and responsibilities of both the coach and teacher identified, and what and how the lesson will be taught delineated. The coaching lesson is then taught by either the teacher, coach, or by co-teaching. Regardless of who is teaching, both the teacher and coach have action related responsibilities during the lesson (see Table 1). It is through action that an individual can grow on both social and individual levels (transformation and publication). The active coaching cycles provide this opportunity for teacher growth.

Table 1. *Action Related Responsibilities for an Effective Coach When Observing a Lesson*

<i>Observation</i>	Coach observes the teacher teaching and highlights areas of the lesson to discuss with the teacher.
<i>Demonstration</i>	Coach teaches a lesson using specific teaching strategies and the teacher observes and takes notes for discussion during the follow-up.
<i>Co-Teaching</i>	The coach and teacher both share a role in teaching the lesson.

Using digital technologies throughout a coaching cycle can also provide a mechanism for coaches to discuss teaching pedagogy with teachers. Audio and/or video recordings place the coach and teacher back into the lesson that was taught. By using digital technologies in this capacity both the coach and teacher are able to identify areas of the lesson that they would like to expand on or refine. Reviewing a video or listening to an audio recording takes place during the follow-up conference, the final step in a coaching cycle. During this follow-up, coaches used reflective questioning to generate a thinking process for the teacher that demonstrated both transformational (private) and publication (new learning) quadrants of Vygotsky Space. Based on the techniques used in the coaching cycles, teachers exposed to high quality coaching models are given the opportunity to learn on

both the social and individual levels and among all four quadrants of Vygotsky’s Space.

Coaching As An Agent of Change

Many contributors in coaching may influence the final outcome of coaching and its correlation to a teacher’s ability to implement new teaching strategies and increase student outcomes. As students construct knowledge, so do teachers. Therefore, coaches have to be aware of the construction of knowledge in order to provide the rich coaching experience for teachers to transform their teaching practices. Various types of coaching such as after-action review and instructional coaching are used to implement improved teaching practices at both early childhood and secondary levels.

After-Action Review

After action review consists of a professional conversation discussing success as well as areas of needed improvement for future performance. It can be used to further develop pre-service special education experiences by developing an early disposition of collaboration and continuous improvement, and to enable individual reflection on teaching experiences and to understand why interim objectives were or were not accomplished. After-action review also encourages pre-service special education teachers to understand what lessons can be drawn from their past experiences, and how to evaluate these lessons to improve performance (Baird, Holland, & Deacon, 1999; Britton & Anderson, 2010).

Ellis and Davidi (2005) emphasized

three functions that after-action reviews serve: self-explanation, data verification, and feedback (see Figure 3). After-action review is an effective tool for increasing learners' self-efficacy; the rationale being that it helped learners make sense of their past behavior by creating valid cognitive models of reasons for whether their performance was successful (Ellis, Mendel, & Nir, 2006). Thus, after-action review may also boost self-efficacy by fostering appraisals of performance for novice teachers. Additionally, after-action review assists learners in identifying more internal and specific causes of behavior, which lead to a greater sense of control and accountability, and a more accurate model of their performance (Ellis, et al., 2006).



Figure 3. Three major functions of after-action review.

According to Collet (2012), instructional change required not only awareness of content and practices, but also more importantly, an understanding of the contexts involved in the construction and appropriation of knowledge. These experiences enabled pre-service teacher candidates to apply the knowledge they have learned in the college classroom in the context of real-world classrooms, thereby solidifying and deepening their understanding and skills in the teaching profession as well as providing contextualized professional development, creating opportunities of the construction of beliefs and prac-

tices to be grounded in teaching experiences (Collet, 2012; Britton & Anderson, 2010).

After-action review can supplement what pre-service teachers learn in pedagogical based classes in a meaningful way. As pre-service special education teachers are challenged to view how their actions influence student outcomes, teacher preparation programs need to afford ample opportunities to practice skills and understand the consequences of their actions through reflection, conversations, and consideration of multiple viewpoints (Brent, Wheatly, & Thomson, 1996; I'Anson, Rodrigues, & Wilson, 2003; Miller, 2009). For after-action review to be the most effective, goals need to be clarified to ensure understanding and to minimize the gap between where pre-service special education teachers start and the ending goal (Hattie, 2012). Therefore, it is important for a pre-service teacher to be cognizant of what he or she already knows in order to articulate what he or she wants to learn. The effectiveness of the coaching program or after-action review is modulated by the clarity of the shared vision, the way individuals in the program experience change, and the quality of communication within the coaching relationship (Reinke, Sprick, & Knight, 2009).

Instructional Coaching

Instructional coaches are placed in schools to construct leadership roles and to provide on-site, collaborative professional development addressing teachers' math, science, reading/writing knowledge, pedagogy, and curriculum in an effort to enhance instruction and improve student achievement (Campbell & Melkus, 2011). Therefore, ini-

tiating a metacognitive process for teachers is necessary to determine how curriculum and teaching strategies fit into their teaching styles. Also, teachers have to determine what is best practice for the current students they have in their classroom. Coaches have three important roles in order to carry out their work: (1) build a relationship, (2) have an adequate knowledge of content, and (3) act as a catalyst to initiate the metacognitive process of refining past, present, and future teaching strategies in teachers (Fisher, Frey, Nelson, 2012; & Elish-Piper, L'Allier, 2010).

With these three identified roles come many challenges for the coach that have not been addressed by literature (Callucci et al., 2010). If educators are to sustain a process of refining past, present, and future teaching strategies through a professional development model of instructional coaching three main targets are to be identified as the focus of the coaching. These include the support of leadership, focus on teacher knowledge, and implementation of new teaching strategies in the classroom. The coach reinforces this focus by applying technique, duration, and expertise of content. However, in order for instructional coaching to continue successfully in schools, there must be more research done that investigates several components limited in the findings of current coaching studies.

Changes can occur when coaching is used with teachers and schools, but the lack of investigation on specific coaching techniques and guidelines makes it difficult to pin point the link between coaching professional development models and teacher/student outcomes (Callucci et al., 2010). Marsh et al. (2010) did

find a small significant relationship between a coach's routine and duration and teacher/student growth in their study of coaches. Nowak (2003) states that coaching provides the additional support needed for teachers to implement various programs or practices. Nowak's idea of coaching is complemented by Poglinco, Bach, Hovde, Rosenblum, Saunders, and Supovitz (2003) who provide a good summary of coaching. Poglinco et al. (2003, pg 38) summarize coaching in the following way: "Coaching provides ongoing consistent support for the implementation of instruction components. It is nonthreatening and supportive-not evaluative."

Methodology

Study 1: Pre-service Teachers

This study utilized an exploratory mixed-methods design due to qualitative and quantitative data being collected simultaneously. Participants included eight (N=8) pre-service teachers. A pre- and post- data measure was completed titled the Teacher Sense of Efficacy Scale (TSES), (also referred to as the Ohio State Teacher Efficacy Scale) (Tschannen-Moran & Woolfolk-Hoy, 2001) by each participant and measured pre-service special education teachers' sense of self-efficacy. All participants had the opportunity to teach lesson on 5 separate occasions and were observed on their frequency of providing opportunities to respond within the virtual classroom environment. Types of opportunities to respond that were tallied in terms of frequency are listed in Table 2.

Table 2. *Types of Opportunities to Respond Collected Within the Virtual Classroom*

<i>Academic</i>	<ol style="list-style-type: none"> 1. Questions verbatim from the lesson plan 2. Yes/no (close-ended) 3. Original (teacher made)
<i>Management</i>	
<i>Behavioral</i>	

Participants met with the researcher (coach) upon completion of each teaching session for immediate after-action review. The researcher spoke specifically on observations of opportunities to respond that were provided during the session and focused on observable areas of strength and weakness, specifically opportunities to respond and how further opportunities to respond could be conducted in future teaching sessions. Participants took information learned from each after-action review session with the researcher (coach) and were observed during subsequent sessions in the virtual teaching environment to see if the information was applied in their teaching practices.

Study 2: In-service Teachers

Instructional coaches used specific techniques to meet the objective of this professional development model. The coaches defined their techniques as flexible, but purposeful. They set up their coaching relationships as partnerships, because collaboration between the coach and team are key elements to having successful coaching sessions. Before a coach can begin to initiate a process of change, the coach has to

establish a relationship with the faculty. They do this by gaining respect through active coaching cycles in which everyone has a role in the process. The active coaching cycles consist of observations, demonstration, and co-teaching lessons that lead to reflective conversations.

Although the coach's goal is to establish healthy professional relationships, they face challenges in the process. The identified challenges for these coaches were time, coaching objective, non-responsive teachers, and inconsistent roles. Time played a role in how much time the coach got to spend in follow-up conversations, when they would be able to set up a coaching cycle, and how the active coaching cycle would be carried out. Time is valuable to both parties, and coaches had to work to stay focused on coaching objectives. Staying focused on an objective became a challenge for coaches when they had to re-direct conversations or follow the lead of the teacher instead of staying on course. Not only did coaches face challenges with time and coaching objectives, but with non-responsive teachers as well. Non-responsive teachers were identified as resistant teachers who pushed against the instructional process. These teachers were consistently described as saying they do not need help, or they understood the new strategy they are being asked to use. They may have participated in team meetings, but not in one-on-one coaching cycles, which created a challenge for the coach in order to meet the teacher's goals. Non-responsive teachers are often the ones that need the most help, and the coach has to take any opportunity to build a relationship with

the teacher. In conjunction with the other three challenges coaches deal with is the challenge of inconsistent roles between the coaches and the agency or district. Because building administration has some authority over the instructional coaches, it is difficult to always fulfill the obligations set by the agency/district and building administration.

Each challenge faced by the coach was addressed by either support from administration or colleagues, critical conversations, and/or progress monitoring data. The coaches used their resources to address and conquer challenges. They indicated that by having support from their administration and colleagues they were able to have critical conversations to address concerns and issues with teachers. One way the coaches were able to address challenges was through discussion of data. Progress monitoring data were used as confirming and disconfirming information for instruction. Challenges emerged on a regular basis, but with options for addressing them the coaches felt they could face each challenge more effectively.

Through coaching techniques, the coach was able to provide teachers with the opportunity to rethink their teaching practices. The way coaches allowed teachers to do this was through reflection time and open-ended questions. Reflection time came from coaches allowing teachers to truly self-reflect on what and how teaching was occurring in the classroom. This happened because the coach asked the teacher open-ended questions to scaffold them through the reflection process. This reflection process impacted future instruction by motivating teachers to try new teaching strategies.

The process of rethinking impacted fu-

ture teaching strategies by creating teachers who self-reflected on their own, establishing life learners, and igniting educational conversations throughout a building. Self-reflection was established through coach and teacher reflective discussion resulting in a personal perspective on teaching. By self-reflecting, teachers long to learn new strategies to form the best teaching practices they can for their students. Besides self-reflecting and being life learners, rethinking increased motivational educational experiences with teachers. The educational conversations changed the language used between the coach and teacher and teams of teachers. Instructional coaching is a process that includes several aspects, but when used effectively can have a significant impact on teaching.

Summary of Findings

Study 1: Pre-service Teachers

After action review was utilized with pre-service special education teachers to develop a disposition of collaboration and continuous improvement early, to reflect upon teaching experiences, and to understand why interim objectives were or were not accomplished (Baird, Holland, & Deacon, 1999; Britton & Anderson, 2010). Data collected from after-action review included conversation related to how to better incorporate opportunities to respond into their teaching. Data was coded using NVivo qualitative analysis software to investigate word frequency and for common themes among participants. 22% of coded data revealed that participants were focusing on specific things to change during their subsequent TeachLivE™ sessions, specific to

individualized student needs and teaching practices. 4% of participant responses discussed how they felt specifically in regards to things they wanted to do differently in regards to self-awareness as a teacher or in regards to teaching practices during their sessions (see Table 3).

Table 3
Pre-service Participant Responses Post- After-Action Review

Participant reflections on specific things to change:	<p><i>“Really started to see what each student was doing while we were discussing and I noticed things that they would do when I was speaking to them specifically”</i></p> <p><i>“I can see and feel the progress I am making in my responses to the students”</i></p>
Participant comments in regards to self-awareness:	<p><i>“I still have a feeling of missing something during the delivery of my lecture”</i></p> <p><i>“I was afraid if students asked questions that I could not answer I wouldn’t know what to do”</i></p>

This qualitative data suggests that participants were deliberate in thinking about how to discuss and change their teaching practices in regards to delivery, content and classroom management practices. This also gleans light into the effectiveness of after-action review as participants continued to gain confidence, delivery of teaching the lesson, and their connection to each student over the course of the study.

SPSS quantitative analyses of pre- and post- *Teacher Sense of Self-Efficacy Scale* data were deemed inconclusive due to the small sample size (.08%) however, through triangulation of all data collectively (see Figure 4), major themes appeared in regards to the effectiveness of after-action review. 100% of participants (N=8) rated themselves more efficacious in their teaching practices between pre- and post- scales. 50% of participants (N=4) made an overall increase in providing original types of opportunities to respond between the first and last virtual teaching session combined with after-action review. Coded qualitative data found that 17.43% of self-reflections stated positive words and phrases that were specific to teaching change and individualized student characteristics, while 21.81% coded specific teaching practices to change over the course of the virtual teaching sessions.

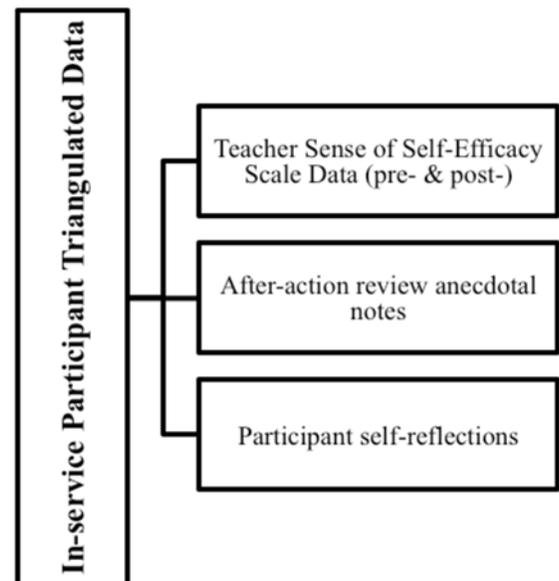


Figure 4. Pre-service participants triangulated data for analysis

This triangulation of data suggests

that all participants began to become mindful throughout each virtual teaching classroom session and really identify individual student characteristics, delineate self-teaching practices, and listen to feedback provided during each after-action review session. Through this data triangulation, it is expected that participants would continue to grow in terms of pedagogical teaching practices and self-efficacy should the continuation or replication of this study occur (see Figure 4).

Study 2- In-Service Professional Development (teachers and instructional coaches)

The participants involved in the five coaching relationships of this multi-case study were instructional coaches and teachers who came from two educational settings implementing coaching as an on-site professional development model. The two educational settings consisted of one public school district and one Head Start agency. The theoretical proposition method was used in data analysis, including specific practices of pattern matching, explanation building, and cross-case synthesis to analyze the study evidence. Upon analysis of the data for each research question, patterns emerged which led to over-arching techniques/themes. Four data sources (interviews, reflection journals, observed coaching cycles, and teacher surveys) were collected. The interviews, journal prompts, observed coaching cycles, and the teacher surveys were triangulated between each research question (See Tables 3 & 4 for triangulated coaching analysis between the techniques/themes).

Instructional coaches used specific techniques to meet the objective of this professional development model. The coaches defined their

techniques as flexible, but purposeful. They set up their coaching relationships as partnerships, because collaboration between the coach and team are key elements to having successful coaching sessions. Before a coach can begin to initiate a process of change, the coach has to establish a relationship with the faculty. They do this by gaining respect through active coaching cycles in which everyone has a role in the process. The active coaching cycles consist of observations, demonstration, and co-teaching lessons that lead to reflective conversations.

Although the coach's goal is to establish healthy professional relationships, they face challenges in the process. The identified challenges for these coaches were time, coaching objective, non-responsive teachers, and inconsistent roles. Time played a role in how much time the coach got to spend in follow-up conversations, when they would be able to set up a coaching cycle, and how the active coaching cycle would be carried out. Time is valuable to both parties, and coaches had to work to stay focused on coaching objectives. Staying focused on an objective became a challenge for coaches when they had to redirect conversations or follow the lead of the teacher instead of staying on course. Not only did coaches face challenges with time and coaching objectives, but with non-responsive teachers as well.

Table 3. *Triangulated Coaching Analysis; In-service Participants*

Research Question/ Technique- Theme		<i>Interviews</i>	<i>Observations</i>	<i>Reflective Coaching Journal</i>	<i>Teacher Survey</i>
<i>What coaching techniques do coaches use in various educational settings and why?</i>					
	Collaboration	X			
	Relationship Building	X	X	X	X
	Instructional Rounds	X	X	X	
	Active Coaching Cycles	X	X	X	
	Digital Technologies	X	X	X	
	Reflective Questioning	X	X	X	
<i>What challenges do coaches face?</i>					
	Time	X	X	X	
	Distractions	X	X	X	
	Non-responsive Teachers	X		X	
	Inconsistent Role	X		X	
<i>How do coaches address the identified challenges?</i>					
	Support	X		X	
	Critical Conversation	X	X	X	
	Progress Monitoring Data	X	X	X	
<i>What opportunities do coaches give teachers in order to rethink their teaching experience?</i>					
	Reflection Time	X	X	X	X
	Open-ended Questions	X	X	X	
<i>How does rethinking impact future teaching experiences?</i>					
	Self-Reflective	X	X	X	X
	Life Learner	X		X	
	Educational Conversation	X	X		X

Table 4. *Themes Noted Between Participants*

Research Question	Techniques/Theme
<i>What coaching techniques do coaches use in various education settings and why?</i>	<ul style="list-style-type: none"> ● Collaboration ● Relationship Building ● Instructional Rounds ● Active Coaching Cycles ● Digital Technologies ● Reflective Questioning
<i>What challenges do coaches face and why?</i>	<ul style="list-style-type: none"> ● Time ● Distractions ● Non Responsive Teachers ● Inconsistent Role
<i>How do coaches address the identified challenges?</i>	<ul style="list-style-type: none"> ● Support ● Critical Conversation ● Progress Monitoring Data
<i>What opportunities do coaches give teachers in order to rethink their teaching experience?</i>	<ul style="list-style-type: none"> ● Reflection Time ● Open-Ended Questions
<i>How does rethinking impact future teaching experiences?</i>	<ul style="list-style-type: none"> ● Self-Reflective ● Life Learner ● Educational Conversation

Non-responsive teachers were identified as resistant teachers who pushed against the instructional process. These teachers were consistently described as saying they do not need help, or they understood the new strategy they are being asked to use. They may have participated in team meetings, but not in one-on-one coaching cycles, which created a challenge for the coach in order to meet the teacher’s goals. Non-responsive teachers are often the ones that need the most help, and the coach has to take any opportunity to build a relationship with the teacher. In conjunction with the other three challenges coach’s deal with is the challenge of inconsistent roles between the coaches and the agency or district. Because building administration has some authority over the instructional coaches, it is difficult to always fulfill the obligations set

by the agency/district and building administration.

Each challenge faced by the coach was addressed by either support from administration or colleagues, critical conversations, and/or progress monitoring data. The coaches used their resources to address and conquer challenges. They indicated that by having support from their administration and colleagues they were able to have critical conversations to address concerns and issues with teachers. One way the coaches were able to address challenges was through discussion of data. Progress monitoring data were used as confirming and disconfirming information for instruction. Challenges emerged on a regular basis, but with options for addressing them the coaches felt they could face each challenge more effectively.

Through coaching techniques, the coach was able to provide teachers with the opportunity to rethink their teaching practices. The way coaches allowed teachers to do this was through reflection time and open-ended questions. Reflection time came from coaches allowing teachers to truly self-reflect on what and how teaching was occurring in the classroom. This happened because the coach asked the teacher open-ended questions to scaffold them through the reflection process. This reflection process impacted future instruction by motivating teachers to try new teaching strategies.

The process of rethinking impacted future teaching strategies by creating teachers who self-reflect on their own, establishing life learners, and igniting educational conversations throughout a building. Self-reflection was established through coach and teacher reflective discussion resulting in a personal perspective on teaching. By self-reflecting, teachers long to learn new strategies to form the best teaching practices they can for their students. Besides self-reflecting and being life learners, rethinking increased motivational educational experiences with teachers. The educational conversations changed the language used between the coach and teacher and teams of teachers. Instructional coaching is a process that includes several aspects, but when used effectively can have a significant impact on teaching.

Discussion

Pre-service special education teachers can benefit from coaching support during the process of improving teaching practices and after-action review can supplement what they are learning in pedagogy classes in a mean-

ingful way. As pre-service special education teachers are challenged to view how their actions influence student outcomes, teacher preparation programs need to afford pre-service special education teachers ample opportunities to practice skills and understand the consequences of their actions through reflection, conversations, and consideration of multiple viewpoints (Brent, Wheatly, & Thomson, 1996; I'Anson, Rodrigues, & Wilson, 2003; Miller, 2009). For after-action review to be the most effective, goals need to be clarified to ensure understanding and to minimize the gap between where pre-service special education teachers start and the ending goal (Hattie, 2012). Therefore, it is important for a pre-service teacher to be cognizant of what he or she already knows in order to articulate what he or she wants to learn. The effectiveness of the coaching program or after-action review is modulated by the clarity of the shared vision, the way individuals in the program experience change, and the quality of communication within the coaching relationship (Reinke, Sprick, & Knight, 2009).

Coaching by the way of providing after-action review is indeed an effective tool that allows for increased reflection beyond current thinking processes and knowledge bases and allows for deliberation of varying pedagogical practices within a classroom. By providing individualized experiences and working on specific learning strategies that will enhance and promote effective teaching practices in a classroom such as specific teaching practices or classroom management strategies, educators are preparing teachers

who will be able to more effectively serve students in special education.

Pre-service teachers should develop a foundation for reflective teaching prior to becoming an in-service teacher. On going professional development models are means to this process. The models are called to change teacher practice and increase teacher knowledge with the hopes of increasing student outcomes. Joyce and Showers (1981) described the potential of coaching as a vehicle to transfer knowledge and skills learned by teachers in professional development into classroom practice. It is through a metacognitive process that coaches can initiate change in teacher practice through new knowledge.

Flavell (1979) defines metacognition as knowledge concerning one's own cognitive processes and products or anything related to them, e.g., the learning-relevant properties of information or data. Flavell (1979) continues to define metacognition as the active monitoring and consequent regulation and orchestration of process in relation to the cognitive objects or units they bear, usually in the service of some concrete goal or objective. Therefore, metacognition is using self-regulatory monitoring during the cognitive state of constructing knowledge. As knowledge is constructed we (if given the skills/strategies) self-regulate to problem solve, to comprehend, and to communicate with one another.

The instructional coach provides teachers with opportunities to construct new knowledge by planning for reflection time and asking open-ended questions. Cognitive coaching identified by Matsumura et. al. (2009) supports the professional development of teachers

through a process of reflection. Instructional coaching, in this form, intends to create the types of sustained, instructionally focused collaborative interactions in schools that research and theory suggest are most effective for improving instructional quality.

It was through the reflection time that coaches guided teachers in self-regulating to problem solve or refine current teaching practices. During the reflection time, coaches used open-ended questioning to ignite an active monitoring of the teachers' own cognitive process as to why teaching strategies were used and how they impacted student outcomes. The open-ended questions also allowed the teachers to think through their own teaching practice, and how they would refine that practice to increase student outcomes. Coaches used specific questions to ignite this process. The questions coaches used were

- *Tell me what your expectations were for this coaching lesson?*
- *How do you feel/think the lesson went?*
- *What would you do differently?*
- *How can you apply this to your teaching?*
- *How are you feeling about the assessment data?*
- *What would you like help with as we move forward?*

According to Neuman and Wright (2009), the role of the coach is to be balanced and should sustain and facilitate a reflective teaching process. Reflection time embedded with open-ended questions was the foundation for the refining of teacher practice. It was

the reflection process that allowed the teachers to grow on an individual level, because coaching is an active process that creates learning opportunities for the teacher. As the teachers gained new knowledge about new teaching strategies, they expressed the desire to implement the strategies without hesitation. Implementing new teaching strategies impacted the way teachers approached new teaching experiences. Reflection gave the teachers the time to think about how they would use the new strategies to teach content skills and what would be needed to meet the needs of their students. Without reflection time and guided questions from an instructional coach, teachers may miss out on the opportunity to self-regulate teaching strategies used in their classrooms and provide best teaching practices for their students.

There is a proposed link between metacognition and instructional coaching, with instructional coaching being a link to sustain reflective teaching, and the implementation of new teaching strategies that meet the needs of students. Beyond being simply a link, the data in this study identified instructional coaching as the link that ignites metacognition in teacher practice.

The identified coaching techniques in this study describe an action-related process from both the coach and teacher. It is through this process that the coach begins to guide teachers through reflections to refine their teaching practices, which can address individualized learning differences in the classroom. One of the many learning differences teachers address are multilingual students. Multilingual students are unique and require specific instruction, which requires teachers having a strong toolbox in

which to teach from. It is through such coaching techniques that teachers can identify specific differences and continually refine teaching practices to meet the needs of the students they serve. Therefore, as a teacher begins to refine a teaching practice by self-regulating instruction, he/she displays motivation to change current practice by differentiation in instruction. By igniting a metacognitive process through coaching, both pre-service and in-service teachers have the ability to be agents of change in the classroom to address challenges they will incur in the classroom.

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