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Abstract

This study aims to understand how instructional coaching supports novice teachers by examining how to build teacher competence effectively. Using self-determination theory (Deci & Ryan, 2002) as the conceptual framework, this improvement science study conducted an initial field test of a derived coaching approach known as the Competence-Supportive Coaching Model developed for this study; the highly directive, practice-based coaching approach was tested during a six-week summer training for beginning teachers. Using a pre- and post- survey method, teachers reported on their level of competence in four areas: student engagement, content planning, instructional strategies, and classroom management. Seventy-nine teachers completed the surveys and were the basis of the analysis.

The results indicate that when instructional coaches used the Competence-Supportive Coaching Model consistently, the resulting sense of efficacy was higher than those who did not receive the coaching model consistently in all four areas, although these results are not statistically significant. This study also found that the Competence-Supportive Coaching Model was more effective with certain teachers; the results were based upon the developmental level of the teacher, the teacher's personal learning style, and the teacher-coach relationship.

Chapter 1: Introduction

Instructional coaching is a practice that many school districts have adopted as a way to raise teacher quality, improve instruction, and build human capital. The role of the instructional coach became more popular as policies like No Child Left Behind of 2001 and the Race to the Top Initiative placed increasing pressure on schools to improve achievement and close achievement gaps by elevating teaching quality (Eisenhart & Towne, 2003). Reform pressure paved the way for researchers and district leaders to focus on teacher learning and support, leading to sweeping reforms to professional development structures that have failed to deliver measurable outcomes for students and schools (Walpole, McKenna, Uribe-Zarain, & Lamitina, 2010; Garet, Porter, Desimone, Birman, & Yoon, 2001). Anemic professional development, coupled with evidence on instructional improvement and adult learning theory, have ignited the rapid spread of instructional coaching (Knight, 2009; Darling-Hammond, Wei, Richardson, & Orphanos, 2009; Deussen, Coskie, Robinson, & Autio, 2007).

The literature on instructional coaching grew out of evidence linking the actions of principals to the professional growth and development of teachers. Overtime, the practice of instructional coaching, and the line of inquiry on its use, has expanded to other factors that may directly affect teaching and learning. This evolution has occurred because of time pressures and demands placed on principals. Principals are expected to not only be the instructional leader, but to also manage general operations, handle daily issues that arise, work with district leaders, and respond to community needs (Burnham, 1976; Blase & Blase, 2000). As a result, many schools have started to add instructional coaches within school sites because myriad responsibilities pull principals away from

instructional improvement (Tyagi, 2010). Thus, the instructional coach as a new professional role within schools was born.

Literature suggests that coaching can be effective in changing teacher practice, and ultimately, student outcomes (e.g., Neumerski, 2013; Knight, 2009; Cornett & Knight, 2009; Evertson & Smithey, 2000). Indeed, Sailors and Shanklin state, "while coaching may be new, it is no longer unproven" (2010, p. 5). Although some evidence suggests that instructional coaching is beneficial to teaching quality, many coaching initiatives have failed to produce desired changes to teaching practices (Knight, 2009). One reason for disappointing outcomes is related to the lack of clarity about how instructional coaches work with teachers to build the competence that underlies continued professional growth (Callucci, DeVoogt Van Lar, Yoon, & Boatright, 2010; Bryk, et al., 2015).

Gaps in existing evidence call for more research on coaching practices targeted toward building competence of novice teachers. This study relied on self-determination theory and evidence on coaching practices to design and test a model of competence supporting coaching for teachers new to the profession. Instructional coaches tested the coaching model in a summer institute for beginning teachers.

Problem of Practice and Research Problem

Schools and districts are not well informed about the critical elements of an effective instructional coaching framework (Bryk, et al., 2015). In fact, as Bean, Draper, Hall, Vandermolen and Zigmond (2010) argue, little is known about the "content, purpose, and focus of the coach" (p. 90). As a result, coaches have come to describe

many traditional roles like new teacher mentors, literacy or math coaches, site or district-based instructional coaches, and many more (Aguilar, 2013; Knight, 2009). It appears that a coach has become the solution to many perceived problems. If reform has not progressed the way it was intended, get a reform coach. If instruction is stale and uninspiring, add an instructional coach. If leadership is a problem, hire a leadership coach. The rapid growth in coaching has not kept pace with strong empirical evidence on specific strategies used by coaches to improve the capacity of the individuals they coach (Bryk, et al., 2015).

As it stands, theoretical and empirical evidence is insufficient for the effective use and expansion of the coaching role. Districts have adopted many theoretical frameworks that practicing coaches have developed and published (Bryk, et al., 2015). These practicing coaches describe positive experiences working directly with teachers and package these experiences in books that lack empirical evidence (Teemant, 2014; Aguilar, 2013). Although educators can glean positive themes from these practiced coaches, districts must be cautious about developing coaching programs that lack theoretical or empirical evidence.

This study aimed to address the gap in research and practice by designing and testing an instructional coaching framework that districts and schools can use with novice teachers to build their competence in the classroom. Toward this end, this paper reviews literature on instructional coaching to understand how the role of instructional coach has evolved, to take stock of processes used by instructional coaches as they work with teachers, and to examine evidence on any coaching effects. Literature on self-determination theory was also reviewed in order to explain how social conditions interact

with psychological needs to ignite the drive and determination of teachers to function at a high level. Together, evidence on instructional coaching and self-determination theory suggest a set of specific practices aimed at building competence in novice teachers. The empirical part of the study will seek to test the effect of these coaching practices on teacher competence and motivation.

Research Questions

The following research questions were developed to organization and analyze specific evidence in an initial empirical test of a derived coaching model for the purposes of this research study, based upon research and evidence:

Question I: How are instructional coaches using the Competence-Supportive Coaching Model during the summer training of beginning teachers, used as an initial empirical test?

Question II: Is the need for competence support satisfied in first year teachers when coaches use the developed Competence-Supportive Coaching Model, a highly directive approach?

Question III: For which teachers was the model most effective?

Definition of Terms

The following are key terms utilized throughout this study:

Competence: Competence describes the feeling of effectiveness. A person feels competent when a person feels as though he/she can "exercise and express one's

capacities" (Deci & Ryan, 2002, p. 7). Competence does not refer to the skills that a person possesses but a feeling of confidence to express those skills.

Instructional Coach: An instructional coach is a full-time professional that is dedicated to improving teacher practice through a number of processes and practices. These practices may include observations, regular meetings and planning sessions, and other forms of coaching (Knight, 2009; Joyce & Showers, 1996).

Novice or Beginning Teacher: A novice or beginning teacher is a teacher who is initially entering a full-time classroom. The teacher may have had previous experience with student teacher, substituting, or working with children in another capacity.

Competence-Supportive Coaching Model: A created and tested coaching approach for the purpose of this dissertation using the conceptual framework, self-determination theory. This highly directive coaching approach has an emphasis on instructional modeling, practice, and feedback.

Clinical Supervision: Processes and practices implemented by an instructional leader for the purpose of teacher continual improvement. There are two major practiced forms of clinical supervision: evaluative (or supervisory) and formative (or coaching) (Sergiovanni & Starrat, 1983).

- Evaluative Supervision: In this form of clinical supervision, the primary function of classroom observations and feedback is to develop a summative evaluation of a teacher's performance.

- Formative Supervision: In this form of clinical supervision, the primary function of classroom observations and feedback is to improve instructional practice on an ongoing basis.

Overview of the Dissertation

Empirical evidence and previous research support ways of building the psychological need for competence in beginning teachers, which in turn, developed the creation of a new coaching model and this research. The initial chapters of this dissertation document previous research on instructional supervision and instructional coaching and describes the conceptual framework of self-determination theory that drove the creation of the Competence-Supportive Coaching Model. The following chapter describes the methodology. Survey data collected through a summer training with beginning teachers provided findings in response to three research questions. The remaining chapters present and analyze these data, organized around these three research questions. Then, this paper describes key implications for practice and revisions to the Competence-Supportive Coaching Model for future testing and study.

Chapter 2: Review of Literature

This review of literature sets out to trace the evolution of instructional coaching, to establish a definition and description of instructional coaching processes, and to sort out the effects of coaching on teaching and learning. The literature describes a role that has become almost ubiquitous in schools yet a practice that remains amorphous. In fact, the lack of consistent frameworks and limited empirical evidence establishes the jumping off place for development of an instructional coaching framework based on self-determination theory.

Evolution of the Instructional Coach

Instructional coaching evolved from research on and the practice of instructional leaders and teacher supervision (Knight, 2009; Neumerski, 2013). Although the idea of an instructional coach is under the umbrella of instructional leadership, instructional coaches and principals who are instructional leaders have some distinctions. Coaches, for the most part, do not have formal authority to evaluate teachers. The coach role is much more consistent with supervisory and improvement functions, not formal evaluation. Given that, much of the mid-century or later literature on supervision and instructional leadership resonates with instructional coaching.

Edmonds (1979) introduced the concept of instructional leadership over thirty years ago in his descriptive research on effective schools (Edmonds, 1979; Neumerski, 2013). Since then, there have been a number of studies on what instructional leadership looks like in a variety of contexts (See: Blase & Blase, 2000; Bryk, et al., 2015; Hallinger, 2005). Early research was limited to key personality characteristics of

principals who functioned as instructional leaders (Elmore, 2000; Heck, Larsen, Marcoulides & 1990). These works suggested, as argued by Neumerski (2013), that "a principal was successful because of certain personal qualities rather than because he or she had mastered a body of professional knowledge or proven himself or herself competent" (p. 312). Initially, instructional leaders were thought to be charismatic and authentic (Elmore, 2000; Heck, et al., & 1990; Neumerski, 2013).

As instructional leadership studies progressed, a set of supervisory actions emerged, including but not limited to teacher observation, monitoring student progress, and deep involvement in curriculum development (Neumerski, 2013; Tyack & Hansot, 1982). A turning point occurred in the 1980s when Hallinger conceptualized instructional leadership practices and developed the Principal Instructional Management Rating Scale (PIMRS) to measure principal behaviors directed toward enhancing teaching and learning (Hallinger, 1982, 1990). Research using PIMRS found that there are three core dimensions of effective principal leadership: school mission, instructional program, and school climate (Hallinger, 1982, 1990; DiPaola & Hoy, 2014). Additional models for instructional leadership followed, continuing to clarify what makes an effective principal in supporting instruction (i.e.: Murphy, 1990; Weber, 1996; Alig-Mielcarek, & Hoy, 2005). Although Hallinger and the researchers who followed advanced the knowledge on practices and processes of instructional leadership, an additional segment of research on instructional supervision established critical characteristics and practices that would come to define the work of instructional coaches.

Research on instructional supervision began to illuminate processes and practices for instructional leaders to use when working directly with teachers. Supervision, at a

basic level, centers on improving teaching by working side-by-side with teachers to study specific aspects of teaching practice (Waite, 1992). Supervision is a distinct process and has a different purpose than the formal, summative evaluation. The purpose of supervision is to ensure that high-quality instruction happens in every classroom, ultimately leading to more reflective teachers and higher student performance (Panigrahi, 2012, Fullan, 2006; Dewitt, 1977). An instructional supervisor is more than a helper; the supervisor is a person who encourages teachers to elevate continuously their performance in the classroom through a number of processes designed to develop technical and practical knowledge needed to facilitate high levels of student learning (Dewitt, 1977; Alig-Mielcarek, & Hoy, 2005; DiPaola, & Hoy, 2014). Instructional supervision has evolved into what Tyagi (2010) refers to as a continual cycle of "assessment, guidance and support given to teachers for their professional development and improvement in the teaching-learning process" (p. 112).

There are different supervisory processes and models, but the most common process is clinical supervision (Panigrahi, 2013; Acheson & Gall, 1977; Gall, & Acheson, 2011). Supervision alone is based in inspection and evaluation, clinical supervision includes coaching and structured supervision. Sergiovanni and Starrat (1983) describes clinical supervision as involving both supervising and coaching teachers. Clinical supervision offers "an in-class support system designed…to bring about changes in classroom operation and teacher behavior" (Sergiovanni & Starrat, 1983, p. 299). In turn, there are two major forms of clinical supervision discussed here: evaluative supervision and formative supervision. Both forms involve similar processes and practices, involving

a pre-conference, a classroom observation, analysis of classroom evidence, a post-observation conference, and post-conference analysis (Panigrahi, 2013).

Teachers benefit from good instructional leadership and supervision; however, the problem has been, and continues to be, prioritizing these processes and practices, given the ongoing demands of formal evaluation procedures. Allen and Ryan (1969) describe:

> To most teachers, supervision is an unpleasant word. One reason is that people tend to confuse supervision with evaluation. Even when supervision is disentangled from evaluation, it is rarely performed well. As currently practiced, supervision tends to be generalized in its approach to the teacher's performance, infrequent, and negative in tone. (p. 7)

Evaluative supervision performed by the principal can prevent teachers from making continual growth. With the many demands placed on principals, school leaders and researchers began asking questions about additional leadership roles within the school that may directly affect teaching and learning (Panigrahi, 2013). These questions drew attention to processes such as peer coaching and instructional coaching (Sullivan & Glanz, 2000). The instructional coach, as distinct role separated from evaluative functions, carries out the traditional work of instructional clinical supervision. The primary functional mechanism of clinical supervision and instructional coaching is the same and includes cycles of observation for improved teacher practices (Knight, 2009). As schools and districts began investing in instructional coach roles, it became even more important to understand how coaches work with teachers to facilitate better teaching and learning (Knight, 2009).

Formative clinical supervision is based on several assumptions about adult learning and the processes used to enhance teaching quality. First, it is assumed that

teachers, as professionals, want to get better; they have an inner drive to improve. This assumption shapes the nature of the relationship between the supervisor and teacher (DiPaola, & Hoy, 2014; Tschannen-Morgan, 2004). Formative instructional supervision relies on a non-hierarchical relationship; supervisors and teachers are equal partners, working cooperatively to understand instructional issues and their effects on students (Tschannen-Morgan, 2004; Tschannen-Morgan, & Tschannen-Morgan, 2010). Second, teachers learn through a continuous inquiry cycle of problem identification, planning, doing, studying, and acting on new knowledge (Gall, & Acheson, 2011). Supervisors are facilitators and thought partners in this process; they ask probing questions, collect and examine data and evidence with the teacher, suggest ideas, and provide resources (DiPaola, & Hoy, 2014). Third, instructional improvement is ongoing. Novice and expert teachers alike benefit from effective supervisory processes (DiPaola, & Hoy, 2014).

Although the practices described in this paper focus on the role of the instructional coach, these same practices apply in a variety of roles within the context of schools. Thus, an individual with formal authority such as a principal can conduct the processes outlined here.

Instructional Coaching: A Definition and Description

After many years of experimentation, Knight (2008), a major contributor to the knowledge base on instructional coaching, established the Instructional Coaching Project as part of the Center for Research on Learning at the University of Kansas. For over thirty years, Knight and his team have experimented with and refined instructional

coaching processes and other types of professional learning. According to Knight (2009), instructional coaches are responsible for teaching educators how to use instructional methods to improve learning. Similar to a principal, an instructional coach must be skilled at navigating multiple roles, contexts, and political climates. Different from principals, instructional coaches do not often have formal authority. Their influence primarily occurs through information relational dynamics that establish the coach as a trusted colleague with relevant expertise (Knight, 2009).

There are many types of coaches working in schools and districts, and coaching processes are conceptualized in a number of ways (Knight, 2009; Aguilar, 2013). A central definition of coaching is critical to research and improving practice. Teemant (2014) states, "By definition, coaching provides teachers with individualized, continuous, and extended support from a knowledgeable other" (p. 581). Extending this general definition, Knight (2009) defines instructional coaches as full-time professionals dedicated to improving teacher practice through repeated observations and interactions with teachers around instructional practices and student learning (Joyce & Showers, 1996). Instructional coaches are characterized by their ability to identify teachers' goals, their communication skills, their facilitation skills, and their knowledge base (Knight, 2009). Gallwey (2000) states, "Coaching is the art of creating an environment, through conversation and a way of being, that facilitates the process by which a person can move toward desired goals in a fulfilling manner" (p. 177). Since coaches do not have formal control or power over teachers, they must use their skills and experience to influence others to act (Callucci, et al., 2010). For the purpose of this study, an instructional coach is a non-evaluative instructional leader whose role is to support instruction and teacher

development through continual cycles of observation and professional growth experiences (Knight, 2009; Aguilar, 2013).

According to literature, coaches and teachers engage in a continuous cycle of reflection and improvement, mirroring the research on supervision (Tyagi, 2010). The first step in a coaching relationship is referred to as enrollment and it varies by coach, school, and district (Aguilar, 2013; Knight, 2009). The enrollment process is when a coach and teacher begin a coaching relationship. "A coaching cycle cannot start without a beginning, and that beginning varies with the coach/teacher/school" (Stepp, 2014, p.82). Coaches may use instructional rounds, voluntary sign ups, or principal recommendations to enroll teachers in a coaching cycle (Aguilar, 2013; Knight, 2009; Steep, 2014). This step has similarities with the pre-conference in supervision because the enrollment process involves the teacher and coach gaining clarity of the teacher's specific goals and establishing a trusting relationship (Panigrahi, 2013).

The next process involves selecting the right starting point with the teacher (Knight, 2009). Knight (2009) identified coaching targets or foci by developing a specific set of teaching practices that are critical, including student engagement, classroom management, content planning, and instructional methods (Knight, 2009; Devine, Housseman, & Meyers, 2013; Wang, 2001; Teemant, 2014; Vogt & Rogalla, 2008). Details about these four components are in Appendix C. Similarly, in the supervision process, principals and teachers establish targets during the pre-conference, examining the evaluation tool to focus the goals of the observation (Panigrahi, 2013). These evaluation tools often have several bigger categories similar to Knight's (2009) areas of focus in instructional coaching.

After the coach and teacher select a starting point, the coaching cycle can begin. The cycle involves gathering classroom-based evidence through observation and then conducting coaching sessions to analyze and react to these data (Knight, 2009; Aguilar, 2013). Response to the data may look different depending on the needs of the teacher and can include explicit instruction to the teacher, peer observation, and coach modeling in the classroom (Aguilar, 2013; Knight, 2009). With instructional supervision, the supervisor largely acts as an observer and rely heavily on checklists and rubrics (Panigrahi, 2013). Coaches often take a more active role in classroom observation, gathering specific evidence through student interviews, analysis of student work, data collection of specific behaviors as outlined in the enrollment process, or in-the-moment coaching (Aguilar, 2013; Knight, 2009; Panigrahi, 2013).

With Knight's (2009) coaching targets, coaches, working alongside teachers, were able to identify specific pedagogical content of coaching sessions. Targets, however, do not explain the process by which coaches work with teachers to facilitate changes in teacher knowledge, skills, and mindsets. Teemant (2014) cites the importance of the coaching session stating, "the collaborative coaching conversations promote growth by inviting ongoing cycles and reflection and action – or praxis (Freire, 1994) - about how to implement effectively new practices in the classroom (e.g., Knight, 2009)" (p. 581). Similarly, Wang (2001) and Feiman-Nemser (2001) found that new teacher mentors used strategies such as "co-thinking," rather than imposing ideas as an expert, which was critical for establishing a strong coaching relationship. Thus, coaching sessions have become one of the most critical processes of instructional coaches (Knight, 2009; Wang, 2001; Feiman-Nemser, 2001). The question is not the content of these coaching sessions,

but rather how these sessions are structured and how they can promote particular outcomes for the teacher. How, then, do coaching sessions promote and facilitate new teacher learning?

Coaches must be skilled in using a variety of communication techniques, including the ability to be direct. Strong and Baron (2004) found that novice teachers often request direct advice, yet in their study of sixty-four conversations between 16 mentor teachers and beginning teachers they found that only 5% of all suggestions were direct. Mentors relied on indirect suggestions such as giving possibilities, asking questions, providing anecdotes, or reformulating a technique described by the teacher previously. Novice teachers put only one third of mentor teacher suggestions into action.

In summary, the role of the instructional coach evolved as the need for instructional leadership and supervision grew alongside of the demands of the principal role. For many principals, the daily tasks of running a school conflicted with the need to work regularly and directly with teachers in the continuous improvement of their practice. The instruction coach introduced a new role that in theory could carry out the important work of providing regular and consistent instructional leadership and supervision (cite). In practice, instructional coaching varies quite significantly across coaches, teachers, schools, and context, making it important to design specific, yet open frameworks that can inform the work

Evidence on Instructional Coaching

Research on coaching varies greatly because there are many different types of coaches and coaching practices vary widely (Teemant, 2014). There are coaches who

focus on particular subjects, technical coaches, and collegial coaches who lead teachers in reflections (Aguilar, 2013; Knight, 2009). This variety makes it difficult to synthesize effectively all of the coaching literature, especially since the coaching role is "inherently multifaceted and ambiguous" (Gallucci, DeVoogt Van Lare, Yoon, and Boatright, 2010, p. 922). That stated, three sets of general findings emerge from the literature that have implications for the coaching model developed in this study that fall into these categories: general effects on teacher development; useful practices for novice teachers, and the importance of training for coaches.

There are several general findings related to instructional coaching. Research has found some cases where instructional coaching has a positive effect on teacher development, teacher retention, and student achievement (i.e. Bryk et al., 2015; Ingersoll & Smith, 2004; Walpole, et al., 2010). Coaching has been linked to building professional growth in all teachers. One study conducted in 2010 analyzed coach and instructional factors using structural equation modeling (Walpole, et al., 2010). In this study, researchers reported that one of three coaching factors, including collaboration with teachers, coaching for differentiation, and leadership support in coaching predicted at least one of the teaching outcomes in kindergarten through third grade classrooms in high-poverty schools. Some literature has made the claim that coaches are most effective when coaching is focused on teacher skill development, frequent, direct, and targeted (i.e. Knight, 2009; Ingersoll & Smith, 2004; Cornett & Knight, 2009). Teachers are able to focus on a specific skill and observe the direct effect that developing this skill has on students (Cornett & Knight, 2009).

There are also several key findings on how instructional coaching affects novice teachers. Literature has demonstrated that coaching and mentoring can have a positive effect on new teacher retention (i.e. Ingersoll & Smith, 2004; Cornett & Knight, 2009). Ingersoll and Smith (2004) found that beginning teachers are more likely stay in the profession if they participate in new programs that support their competence. The analysis of a national pool of teachers from the 1999-2000 Schools and Staffing Survey indicated that novice teachers who were given opportunities to collaborate, build skill, and receive supportive communication were more likely to remain at their school as compared to those who did not receive any of these opportunities. These practices are often included in coaching programs provided to beginning teachers, suggesting that coaching may have a positive effect on reducing teacher turnover.

Some research evidence seems to suggest the importance of training for coaches, especially developed their skills in teacher capacity building (Holloway, 2001; Strong & Baron, 2004). Evertson and Smithey (2000) noted that in a study on new teacher mentoring, "the mere presence of a mentor is not enough; the mentor's knowledge of how to support a new teacher and skill at providing guidance are also crucial" (p. 303). New teachers who were supported by mentor teachers with training had stronger classroom management, student engagement, and classroom routines (Evertson & Smithey, 2000). These researchers trained and supported groups of mentor teachers who were coaching beginning teachers. The treatment group of mentors received more consistent and targeted training focused on conferencing skills to support lesson plan improvement. Mentors were also taught how to help teachers use prior knowledge even if teachers did not have their own reflections about the issues in the classroom. The trained

mentors were able to give more specific strategies to teachers rather than simply being an emotional support. The comparison group mentors provided emotional support but did not always resolve problems that new teachers were having in the classroom. This study demonstrates the importance of skilled and trained coaches to develop teachers.

An additional study conducted to determine the effects of the Literacy Collaborative program concluded that experienced and skilled coaches had a positive effect on student achievement, reinforcing the importance of skilled coaches (Bryk et al., 2015). This study also illuminated the complexity of coaching because results varied greatly by grade level, school, coach, and even teacher (Bryk et al., 2015). For example, Bryk et al. (2015) explain the variability in results due to the frequency and intensity of coaching. Teachers who received little coaching showed little or no change in student learning, while "others more than doubled their student learning gains" (p. 43). Those who received more coaching saw greater results.

Since coaching is a recent phenomenon, a lot of the research is limited to situations, examples, and narratives from practitioners. Although these examples are helpful in illuminating some of the behaviors and processes of coaching, these examples do not provide sufficient evidence that these behaviors and processes can be generalized to additional contexts or teachers. Even the leading researchers in instructional coaching relied heavily on resources outside of peer reviewed journals, including Literacy Coaching Clearinghouse, Center for Cognitive Coaching, University of Kansas Center for Research on Learning, and more (Cornett & Knight, 2009).

Unfortunately, it is difficult to establish direct link between coaching and student achievement. One randomized control trial study conducted by the Institute for Education Services (IES) examined coaches working in one grade level for one year (Bryk et al., 2015). In this study, the classrooms with an instructional coach saw no measurable effects on student learning (Bryk et al., 2015). Bryk and his colleagues concluded that the attitude and engagement of teachers determines the overall effectiveness of the coaching efforts, which will be explored further later.

However, research has established that high quality teaching practices lead to increases in student achievement (e.g. Wenglinsky, 2000; Sanders & Rivers, 1996). In addition, Wenglinsky (2000) found that students achieved at higher levels in math when they had teachers who engaged in ongoing professional development (Cornett, & Knight, 2009). Thus, one can conclude that if coaches are successful in building new teacher practices that student achievement will also increase but this link is difficult to make considering the many other variables that would affect student learning.

The above research indicates mixed evidence about the effect of instructional coaching. This fact is largely due to the wide variety of coaching practices and processes, experimental design, and inconsistent measurement. Some of the studies focused on a specific type of coaching, such as literacy-based coaching, while others do not outline the specific actions or behaviors of instructional coaches at all. Coaching practices, skills, and training vary widely and, thus, show various degrees of results. Although there is mixed evidence about the effect of coaching on teachers and student achievement, research has indicated that coaching can be effective with effective coach training (Holloway, 2001; Strong & Baron, 2004). Questions still remain about "what coaching

content, for what duration and intensity are most effective for which teachers, in what setting, and for what purposes" makes coaching effective (Teemant, 2003, p. 581). This study seeks to clarify the coaching session by highlighting the specific coach behaviors that support teacher development.

Chapter 3: Theoretical Framework and Coaching Model

The absence of a consistent framework to structure interactions between coaches and teachers presents an opportunity. This study makes the argument that an appropriate design a model would target the social and psychological drivers of growth initiating behaviors. This section lays out the design and argument for a coaching model, deriving from two sources: 1) the basic psychological needs component of self-determination theory, and 2) evidence on the use of modeling and practice as effective means to building competence in professional practice.

Self-Determination Theory

Self-determination theory (SDT) explains the social and psychological sources of motivation and human behavior (Deci & Ryan, 2002). SDT offers an empirically based explanation for autonomous motivation and high quality functioning (Deci & Ryan, 2002). At the core of SDT is the assumption that all individuals are driven to excel by adapting to their environment in ways that maximize their potential (Deci & Ryan, 2002). In addition, humans actively seek opportunities to learn and grow in ways that allow for a relative unity of both knowledge and personality to shape their sense of self (Deci & Ryan, 2002). Often, what determines optimal performance is whether individuals are living in a psychologically healthy state where their innate potential can flourish (Cho, Wehmeyer, & Kingston, 2012). The difference between harnessing our innate potential and letting it lie dormant revolves around basic psychological needs.

Within self-determination theory, the sub theory of Basic Psychological Needs explains how social and psychological factors interact to affect personality, motivation, and behavior (Deci & Ryan, 2002). Performance and well-being vary based on whether the social environment supports a person's psychological needs of autonomy, competence, and relatedness. If the environment does not meet psychological needs, diminished motivation leads individuals to function at levels below their potential (Adams, Ware, Miskell, & Forsyth, 2016).

It is reasoned that coaching practices targeted at teacher psychological needs are likely to be more effective in supporting professional learning and growth. Before describing practices that align with teacher psychological needs, it is important to understand the nature of need and need support. Need, as defined by Ryan and Deci (2002), is an internal, biological force that supplies the energy to sustain purposeful and goal directed action. Need-support is the social dimension of motivation; it represents aspects of school and classroom like that can draw out or suppress innate tendencies toward growth (Assor, Kaplan, & Roth, 2002; Jang, Reeve, & Deci, 2010; Soenens & Vansteenkiste, 2005). Environments that satisfy psychological needs are more likely to produce self-regulated adults (Reeve, Ryan, Deci, & Jang, 2009; Adams, et al., 2016). The needs of autonomy and relatedness are described next with more attention devoted to competence in a separate section.

Autonomy is the "perceived origin or source of one's own behavior" and is about an individual's need for agency and self-expression (Deci & Ryan, 2002, p. 8). Studies focusing primarily on teachers' need for autonomy have found there are a set of actions that can provide autonomy-support. Eyal and Roth (2011) note, "a large body of research

has identified several autonomy-supportive behaviors such as provision of rationale, provision of choice, allowing criticism, encouraging critical thinking, and demonstrating intrinsic value of a behavior" (p. 259). These same actions are promoted in the literature on instructional leadership because it is argued that humans tend to self-develop under autonomy supportive conditions (Landry, Whipple, Mageau, Joussemet, Koestner, & Didio, 2008). In contrast, strict external forms of control undermine performance because they do not allow for teachers to feel like they are in control of themselves (Deci & Ryan, 1985; Reeve, et al., 2009).

Instructional coaches typically also use autonomy-supportive practices. Zeus and Skiffington (2000) recognized that, "coaching involves helping individuals access what they know. They may never have asked themselves the question, but they have the answers. A coach assists, supports, and encourages individuals to find these answers" (p. 3). In other words, rather than coaches teaching directly, researchers believe it is critical for coaches to maintain a teacher's autonomy.

The basic psychology of relatedness refers to "feeling connected to others" and "having a sense of belongingness both with other individuals and with one's community" (Deci & Ryan, 2002, p. 7). School leaders can create a relational supportive environment by encouraging teachers to get to know their students, colleagues, and leaders (Connell & Wellborn, 1991; Skinner & Belmont, 1993; Furrer & Skinner, 2003; Hughes & Chen, 2011). In addition, school leaders must be willing to provide emotional support (Connell & Wellborn, 1991). Relational support is characterized by trust, which can be fostered when teachers perceive their leaders as open, honest, reliable, competent, and benevolent (Forsyth, Adams, & Hoy, 2011).

There is no doubt that the teacher and coach relationship is critical (Bryk & Schneider, 2002; Tschannen-Morgan, & Tschannen-Morgan, 2010; Tschannen-Morgan, 2004). Aguilar (2013) cites "without trust, there can be no coaching" (p. 75). This trust will determine whether teachers will even seek the support of a coach (La Guardia, Ryan, Couchman, & Deci, 2000). In fact, the relationship between coaches and teachers can serve as critical information for the teachers to apply in their own classroom (Jordan, 2004). Coaches must "suspend the desire to be right and to demonstrate [his or her] expertise" but must instead focus on how to maintain a strong relationship with the teacher (Tschannen-Morgan & Tschannen-Morgan, 2010, p. 15). Bryk and his colleagues even concluded that coaching was only effective if teachers were engaged, indicating the importance of relational support in a coaching relationship (Bryk et al., 2015).

Competence and Competence Support

The psychological need for competence, the focus of this study, "refers to feeling effective in one's ongoing interactions with the social environment and experiencing opportunities to exercise and express one's capacities" (Deci & Ryan, 2002, p. 7). It is not whether someone is capable, or having a set of tangible skills, but rather the feeling that one is able to master their environment. The idea of competence first stemmed from White's paper on the concept of effectance motivation (White, 1959; Elliot, et al., 2002; Deci & Ryan, 2002). White's definition of competence is "the individual's actual skill and ability to interact effectively with the environment" (White, 1959. p. 318). He also proposed the idea of sense of competence, which is an individual's perceived skill or confidence in interacting with his or her environment. More specifically, research has identified a type of competence motivation based on the principle that "all individuals

possess [this] innate, appetitive form" of motivation arising from the psychological need for competence (Deci & Ryan, 2002, p. 366).

There are three components of the need for competence: 1) task-referential, 2) past-referential, and 3) other-referential (Elliot, et al., 2002; Deci & Ryan, 2002). All three of these play an important role in a coaching relationship with teachers. The term referential stems from the origin of a person's feeling of competence, whether that comes from their perceived mastery of the task itself, their performance relative to their past performance, or their performance relative to another person (Elliot, et al., 2002; Deci & Ryan, 2002).

Task-referential competence is the most studied form of competence motivation, including research with children and adults. Elliot et al. (2002) define task-referential competence as "an absolute sense by the requirements of the task itself, and the individual's (experiential) aim is simply to accomplish what the task demands" (p. 366). Teachers and coaches may engage with each other to master a subset of skills that will enable teachers to feel like they have a sense of mastery over this skill. For this form of competence, timely, in-the-moment feedback is critical so that teachers can learn directly from what they are doing (Elliot, et al., 2002, p. 366; Deci & Ryan, 2002). Instructional coaches have the primary responsibility of providing process-oriented feedback to teachers.

Past-referential competence motivation occurs when teacher's present performance has increased "relative to their past performance" (Elliot, et al., 2002, p. 366). In coaching, past-referential competence is addressed when coaches use classroom-

based evidence to promote what teachers already know or are able to do in the classroom. Tschannen-Morgan and Tschannen-Morgan claim (2010) that coaches must "discover, recognize, and celebrate the competence teachers already have" (p. 14). There is little research on past-referential competence motivation. However, it is remains critical to our understanding of how coaches can improve the need for competence.

In the other-referential form of competence motivation, individuals are motivated based upon what others are able to do (Elliot, et al., 2002, p. 366; Deci & Ryan, 2002). Although it is unlikely that instructional leaders would compare teachers in order to motivate them to improve their teaching practices, other-referential motivation may take place when teachers compare their performance to the performance of the coach through instructional practice modeling ((Tschannen-Morgan & Tschannen-Morgan, 2010; Knight, 2009; Aguilar, 2013; Rush, 2003).

Competence was selected for the central focus of this study because of the implications for teacher retention, instructional practices, and the absence of inquiry related to it. Teachers with a higher sense of efficacy, a signal of competence, exhibit greater enthusiasm for teaching (Allinder, 1994; Hall, Burley, Villeme, & Brockmeier, 1992), have greater commitment to teaching (Coladarci, 2007; Evans, & Tribble, 1986) and are more likely to stay in teaching (Glickman & Tamashiro, 1982; Tschannen-Moran, & Hoy, 2001). In fact, "the link between efficacy, effort, and performance is perhaps one of the best established relationships in the behavioral and organizational sciences" (Kurt, et al., 2012, p. 74; Walumbwa, Wang, Lawler, & Shi, 2004). Teachers with a strong sense of efficacy have been found to be more willing to take risks and employ new strategies because of a reduced fear of failure, less criticism of student behavioral issues, and

increased work with academically struggling students (Kurt, et al., 2012, p. 74; Gibson & Dembo, 1984; Ross & Gray, 2006).

The need for competence is even more critical with new teachers (Gavish & Friedman, 2010). Unfortunately, many schools do not have an opportunity to build competence in new teachers because of low retention in this group. A number of studies have found as many as 50% of new teachers leave within the first five years of entry into the occupation, with approximately 14% leaving the profession after just one year of teaching (e.g., Huling-Austin, 1990; Ingersoll & Smith, 2004; Murnane, Singer, Willett, Kemple, & Olsen, 1991; Ingersoll & Smith, 2004). School districts must consider how to catalyze new teacher development to ensure that teachers stay in teaching since there is "strong evidence [that] suggests that teacher effectiveness spikes sharply after the first few years in the profession, and research shows that many teachers exit prior to attaining this level of expertise" (Fantilli & McDougall, 2009, p.814).

As with any new job, it takes a while for a person to feel like they have mastered their environment (Deci & Ryan, 2002; Morrison & Brantner, 1992; Schein, 1985). There is research examining how individuals enter a new profession. In general, learning a new job is difficult and requires a set of skills and characteristics to integrate past, current, and future self, which is often challenging to do alone (Morrison & Brantner, 1992) Skill transfer through problem solving complex and new situations is, by its nature, the development of professional competence (Tschannen-Morgan and Tschannen-Morgan (2010, p. 15). This concept is critical for understanding the need for competence in new teachers.

Competence-Supportive Coaching Model

The coaching model developed for this study draws on the themes that emerged from research on coaching and general evidence from self-determination theory (e.g. Knight, 2009; Aguilar, 2013; Tschannen-Morgan & Tschannen-Morgan, 2010, etc.). In Competence-Supportive Coaching, coaches model an instructional strategy and require the teacher to practice within the session to receive feedback. The process is similar to microteaching. Microteaching is a practice that instructional coaches and other professional development professionals have been practicing since the 1960s in which the goal was to reduce the complexity of teaching to focus on specific teaching practices (Allen & Ryan, 1969). The original versions of microteaching involved teachers practicing a portion of their lessons with a small group of students to receive increased feedback (Foley, 1974). More contemporary versions of microteaching continue to reduce the complexity of the teaching environment but may be conducted through video protocols, group rehearsals, and one-on-one practice of teaching strategies through "a setting for controlled practice" (Allen & Ryan, 1969, p. xiii). The goal of microteaching is to have regular opportunities to "learn about oneself and others; to build confidence; to increase awareness of student learning; to practice how to receive positive and negative feedback; and to develop collegiality" (Race, 2011, p. 336).

Figure 1 lays out the theory of action behind the Competence-Supportive Coaching. As seen in the model, the goal of mastery is a function of teacher efficacy and motivation to improve practice (Deci & Ryan, 2002). Components of the coaching model seek to activate efficacy and motivation through modeling and practice-based feedback. These actions enable teachers to see, learn, and apply instructional practices in

a safe, supportive environment where vicarious experiences and feedback are used to support increased competence for instructional tasks.

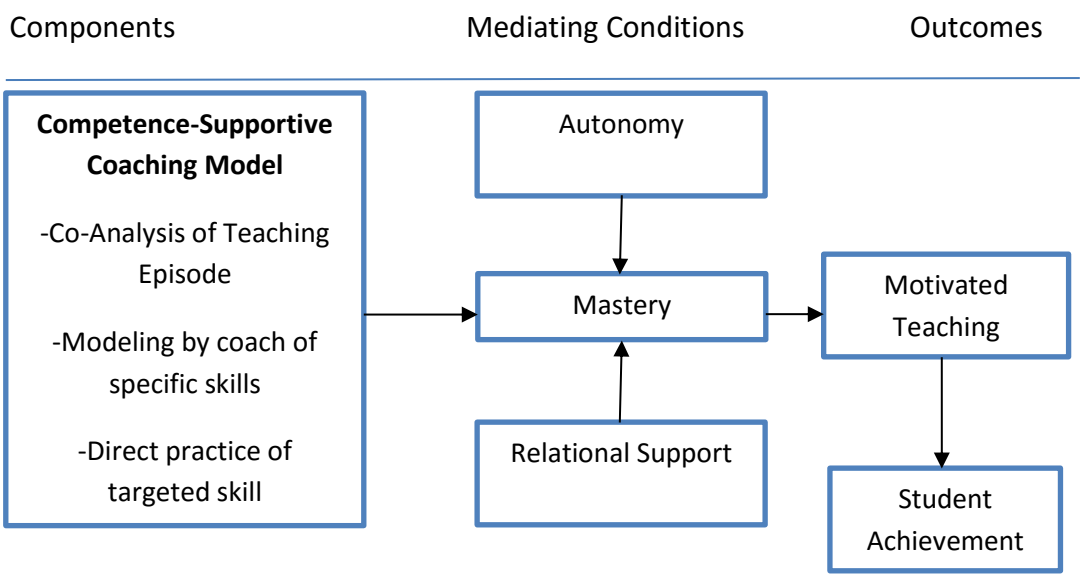

Figure 1. Competence-Supportive Coaching Model

Instructional Feedback

Instructional feedback for competence-support follows a purpose and process similar to that developed in instructional supervision. Coaches examine classroom evidence with teachers and provide them with concrete feedback on specific actions. Feedback is not presented in an evaluative manner; instead it provides information that is needed to make sense of students' engagement in learning activities (Niemiec & Ryan, 2009)). Instructional feedback supports an individuals' need for competence because the feedback point to areas of effective practice and specific places where students may not have responded to instructional tasks in the manner expected (Rush, Shelden, & Hanft,

2003, Niemiec & Ryan, 2009). The goal is to provide feedback that enables teachers to understand student engagement with instruction and to master critical aspects of good teaching (Niemiec & Ryan, 2009, p. 139).

Feedback is connected to the task-referential form of competence (Elliot, et al., 2002). The co-analysis of information allows for teachers and coaches to better understand the task and the current performance within that task. In addition, the analysis process allows for teachers to connect to their past performance because coaches can highlight the growth that a teacher has made since their last coaching session (Elliot, et al., 2002). Collectively analyzing teaching information also addresses past-referential competence by reflecting on specific events and transactions of classroom activities.

Instructional feedback also includes conversations in which the teacher and coach identify a priority area. For coaches, this means establishing the appropriate focus for the coaching session that would be appropriate for the teacher to master. Narrowing the focus of the coaching session brings clarity to the teacher about what skills they are to master through the coaching and in so doing it structures conversations so that teachers can build competence from their experiences

Instructional Modeling

The modeling portion of the coaching session is linked to task-referential and other-referential competence (Elliot, et al., 2002). First, when a coach models an instructional practice, teachers develop an understanding of what "best practice" exists based upon the topic. Teachers then "reflect on the demonstration" (Aguilar, 2013, p. 304). Thus, modeling is linked to task-referential competence because the modeling

clarifies the components of the task or instructional practice (Elliot, et al., 2002; Knight, 2009). In addition, modeling is connected to other-referential because "it necessitates an interpersonal evaluative process" (Elliot, et al., 2002, p. 368). A teacher observing a coach modeling involves self-evaluation and comparative processes that encourage the teacher to improve his or her own performance relative to the coach's performance.

Coaches promote task-referential and past-referential competence motivation by integrating practice into coaching sessions. Rush (2003) presented a number of key characteristics for a coaching session, including joint planning, observation, action and practice, reflection, and feedback (Rush, Shelden, & Hanft, 2003). The action and practice portion of a coaching session "provides opportunities for the learner to use the information discussed with the coach or to practice newly learned skills either during or between coaching sessions" (Rush & Shelden, 2006, p. 2). Although the Rush and Shelden (2006) study applied to coaching parents around a particular strategy, the same principles apply to coaching teachers. Practicing a skill allows for the teacher to gain more clarity about the task or practice, thus, promoting task-referential competence motivation. Part of the practice portion involves giving feedback and having the teacher practice again (Rush & Shelden, 2006). This process promotes past-referential competence because it allows for the teacher to increase their performance based upon previous experience (Elliot, et al., 2002).

The practice, or microteaching, portion of the coaching model is critical. In a traditional microteaching session, teachers are asked to perform a specific task or lesson component while reducing some of the complexities of the classroom such as class size or time (Allen & Ryan, 1969). In this modified version of microteaching, many of the

complexities are cut out altogether, removing the teacher from the classroom and asking the teacher to practice in a one-on-one setting with his or her instructional coach. The components that make up microteaching remain the same because teachers are asked to "plan, teach, observe, re-plan, re-teach and re-observe" (Remesh, 2013, p. 158).

The final part of the coaching session is the identification of future needs and next steps, which is again linked to task-referential motivation (Elliot, et al., 2002). The teacher recalls the key actions that he or she will take in the classroom after the coaching session, clarifying the task and what the task demands (Elliot, et al., 2002). Identifying next steps is also critical for setting up past-referential competence motivation for the next coaching session by providing clarity about what should be revisited when examining classroom evidence in the future.

Chapter 4: Methodology

This chapter will outline the research design and process used to empirically test the Competence-Supportive Coaching Model. It begins with the research questions then describes the study context and participants, procedures, measures and analysis. Finally, this section outlines additional considerations for validity and ethics.

Research Design

The following questions were used to guide the initial test of the Competence-Supportive Coaching Model:

> Question I: How are instructional coaches using the Competence-Supportive Coaching Model in the initial empirical test?
>
> Question II: Is the need for competence support satisfied in first year teachers when coaches Competence-Supportive Coaching Model, which includes explicit modeling and practice?
>
> Question III: For which teachers was the model most effective?

Improvement science was selected as the framework for the empirical test. Improvement science research is a form of action research, in which researchers conduct "rapid tests" of an approach and measures the results (Bryk, et al., 2015, p. 7-8). Rather than "going fast and learning slow," improvement science studies are designed to allow for researchers to learn fast to see an initiative succeed (Bryk, et al., 2015, p. 6). Improvement science was selected for this study because this type of research allows for

individuals to closely examine the “specific tasks people do” and leverage “rapid tests” to determine whether these tasks yield outcomes (Bryk, et al., 2015, p. 7-8).

Improvement science was also selected for the method of study because of the learning nature of organizations. In contrast, experimental science requires a more controlled trial where drawing conclusions and making causal inferences are more common than learning from practice (Lewis, 2015). A primary difference between experimental and improvement science approaches relates to the treatment of variation. Lewis (2015) states, “improvement science treats variation in implementation and setting as important sources of information and provides tools to grasp and learn from variation in both positive and negative directions in order to redesign both the intervention and the system” (p.55). In turn, the Competence-Supporting Coaching Model and the variations that were implemented through the initial test provides critical information about what works and what does not when working with beginning teachers. These variations must be analyzed as part of the data from the study.

One test of the Competence-Supportive Coaching Model was completed and addition suggestions for future study are presented. Data presented in this study are useful for understanding how the Competence-Supportive Coaching Model was experienced by coaches and novice teachers. The one cycle of the test involved a focused cycle of planning, executing, and studying where important conclusions about the nature of teacher development can be drawn.

This study draws on both qualitative and quantitative evidence collected through the use of surveys. Perceptions of competence is a complex phenomenon to study. Thus,

having multiple points of evidence about a teacher's level of competence or the effectiveness of the Competence-Supportive Coaching Model was critical to gather. Having both qualitative evidence and quantitative evidence helps to draw more logical and important conclusions that could directly affect how instructional coaches approach his or her work with teachers. Miles and Huberman (1994) explain, "Qualitative data with their emphasis on people's lived experience are fundamentally well suited for locating the meanings people place on events [and] processes, and…for connecting these meanings to the social world around them" (p. 10). Because of the nature of coaching and the complexity of social interaction, qualitative evidence was necessary.

Study Context and Participants

The initial empirical test took place at the summer training of beginning teachers in Teach For America. Teach For America was selected as the target group because they have a large group of beginning or novice teachers who learn the structures of teaching during a summer institute. During the intensive summer training, new teachers learn through a variety of structures. Teachers are placed in regular classes, or sessions, that introduce specific ideas and practices associated with classroom performance such as classroom management, building student investment, introducing new content, or facilitating student practice. Teachers then apply these lessons by teaching a summer school class of student for part of the day, receiving direct feedback from a mentor teacher always in the classroom and receiving regular coaching from the instructional coach that the teacher has been assigned. In addition, the teachers have regular planning sessions, opportunities to reflect with peers, and discussions about race, equity, poverty,

and inclusion that help to shape the mindsets and beliefs necessary to teach in a high poverty classroom.

The majority of Teach For America teachers are beginning teachers with limited experience in the classroom and limited teacher preparation coursework. A total of 79 teachers completed both the pre and post intervention survey to be able to do comparative analysis. At the beginning of the summer before teaching started, 93 teachers completed the pre-intervention survey on efficacy. In contrast, 142 teachers completed the survey post-intervention to report on their efficacy, with some teachers completing the survey more than once. Data come from the 79 participants that has both pre and post intervention data to do an accurate comparative analysis.

The teaching placement evidence was gathered to analyze trends and determine if the coaching model was most effective with specific grade levels or content areas. Of the 79 teachers with pre and post institute efficacy scores, 45% were teaching summer school at the elementary level, 24% within early childhood education (incoming kindergarten students), 19% at the middle school level, and 12% were teaching at the high school level. Additionally, 65% of the teachers taught both reading and math, 19% of teachers taught math only, 11% of teachers taught English only, and 5% of teachers taught science only.

Finally, teachers reported the level of experience that they had prior to the training course. Although the majority of Teach For America teachers have never taught in the classroom, there were several who have had some level of experience. The level of experience was coded and is listed in table 1.

Table 1: Level of experience of teachers who had pre and post-efficacy surveys

Code	Description	Number of Teachers
None	Have had no experience in the classroom or working with students or teaching methodology	45
Limited	Have had experiences such as camp counselor, after school programs, paraprofessional, high education graduate assistant or teaching assistant that gave the teacher some exposure to working with students or teaching methodology	18
Student Teaching	Have had some traditional training in teaching through a university	8
Moderate	Have had some teaching experience in a high income school or for a short period of time	4
High	Have had some teaching experience in a low income school or for a short period of time	4

Teachers also reported on their personal learning style. Results indicate, 50.6% of participants said that they learn best by doing or practicing something, 41.6% said they learn best by seeing in done, 5.6% said they learn by hearing about it, and 2.2% said they learn by reading about it. This question was asked to gather additional descriptive data on

the teachers to determine whether the coaching model helped build efficacy with teachers of specific learning styles, given the emphasis on modeling, practice, and feedback.

Study Procedures

The initial empirical test took place throughout the spring and summer of 2015. It began with lead Teach For America coaches training approximately twenty-five coaches on the coaching framework outlined in Appendix A. This framework enabled coaches to incorporate key components of a coaching session, including the use of practice, without eliminating other key components of a coaching session such as relationship building and reflective questioning (Evertson, & Smithey, 2000; Rush & Shelden, 2006; Knight, 2009). Using this framework allowed the researcher to control other variables such as relational factors that may have an effect on the results.

For coaches, 24 completed at least one out of four weeks of the weekly coach reflections in which the coaches reported on the extent of the practice and feedback in their coaching sessions and reflected on the effectiveness of their coaching sessions that week. Of these 24 coaches, 11 had at least 3 data points and only 3 coaches had all 4 weeks of reported data.

Coaches also reported on the levels and subjects they supported during the summer: 33% supported elementary only, 25% supported middle school only, 16.7% supported high school only, and 12.5% supported early childhood only. The remaining 12.5% of coaches split their time between various levels. Content areas were also split. Some coaches were supporting only elementary and early childhood, which meant that they were supporting both English and math. However, some also had teachers who were

only teaching a specific subject. 33.4% of coaches were able to specialize in a specific content area: 4.1% in science, 16.7% in English, and 12.5% in math.

When the teachers arrived at the training in Oklahoma City, they were asked to complete the pre-training survey. The survey completion was monitored to gather as many respondents as possible before the teacher's first day of teaching students in Oklahoma City, a week after they arrived. All surveys were completed electronically and were maintained securely to protect anonymity. The initial week of training involved sessions that gave teachers an overview of Teach For America, the context of the region and the training, and some initial practices in the classroom. The teachers examined their first lesson plans that were given to them to internalize and rehearse. The teachers also received a training session on classroom management. The intention of this initial training was to give teachers some basic understanding of the classroom and their roles within in. No instructional coaching sessions occurred during the first week of training because the teachers were not yet in the classroom.

The second week of training was the first week in the classroom with students. Coaches observed the teachers during this week but there were just a couple of days to get the initial assessments done with students so that the teachers could adjust to their specific needs throughout the rest of the summer school experience.

The third week of training, the second week in the classroom, is when the instructional coaching began. Teachers were executing lessons with students and thus, coaches were able to observe, gather evidence, and implement the Competence-Supportive Coaching Model. At the end of this week, coaches were asked to report how

successful the coaching sessions were during the week and their opinion on what practices work best with which teachers. This survey was completed at the end of the week meeting with all coaches. Weeks four through six followed the same pattern as week three. Teachers executed lessons and received coaching. Coaches reported on the successes and challenges of the coaching sessions. Week six of training was the last week with students.

During week seven of training in mid-July, teachers completed the post-training survey to report on their level of efficacy, their experiences with coaching through the training, and their overall reactions to their development. The week of training consisted of sessions that asked teachers to reflect on the summer experience and begin preparing for their teaching placement in the fall within the context of Tulsa Public Schools, Oklahoma City Public Schools, Muskogee Public Schools, or Lawton Public Schools, all high-poverty schools mirroring the teachers' summer training.

Measures

Several key conceptual definitions are critical for measuring the variables in this study: In particular, what is meant by competence and practice. Competence "refers to feeling effective in one's ongoing interactions with the social environment and experiencing opportunities to exercise and express one's capacities" (Deci & Ryan, 2002, p. 7; Harter, 1983). Researchers measure competence using the Perceived Competence Scale (PCS) used in Self-Determination Theory studies (Deci & Ryan, 1999). This scale measures whether a person feels as though he/she is able to accomplish the task being asked and the degree of confidence for successfully carrying out the task.

In the past, this scale measured how competent individuals felt with respect to controlling their health, including making positive choices such as controlling diabetes (Williams, Freedman, & Deci, 1998). The scale's validity and reliability have been established in numerous studies (Williams, et al., 1998; Williams, & Deci, 1996). The alpha measure of internal consistency for the perceived competence items was above 0.80 (Williams, et al., 1998; Williams, & Deci, 1996). This study will use the Perceived Competence Scale because the scale assesses the psychological conditions of teachers given a specific set of actions that they must demonstrate.

This study used items from Tschannen-Moran and Woolfolk Hoy's (2001) measure of efficacy. Efficacy is linked closely to competence and can show changes in results based on specific instructional practices. Kurt, Duyar, and Çalik (2014) define self-efficacy as "the sense of individuals' capabilities regarding how well they can perform actions in order to handle probable situations" (p. 74). Teaching self-efficacy takes the concept of self-efficacy an additional step by focusing on reaching desired outcomes with students (Tschannen-Moran, & Woolfolk Hoy, 2001). The efficacy measure is found in Appendix B. These two tools have been adapted to create a more holistic measure of teacher competence. This would allow for teachers to report on a measure that has a reliable history.

A coaching session that leverages practice "provides opportunities for the learner to use the information discussed with the coach or to practice newly learned skills either during or between coaching sessions" (Rush & Shelden, 2006, p. 2). There are several

levels of practice that could occur in a coach session. Practice is an ordinal variable, meaning the higher the level identified by the teacher and coach, the more practice they engaged in during the coaching session. Teachers and coaches self-reported on the levels of practice using the Coaching Practices Rating Scale outlined in table 2.

Table 2: Coaching Practices Rating Scale (adapted from Rush & Shelden, 2006)

	Coach Indicator	Teacher Indicator
Level 0	Did not engage the teacher in practice or observation of a skill	None: I did not engage in observation or practice during the coaching session.
Level 1	Created opportunities for the learner to observe the coach and/or others model the target skill(s) or practice(s)	Observation: I observed the coach demonstrate a skill for me.
Level 2	Observed the learner demonstrate knowledge and understanding of targeted skill(s) or practice(s) Observed the learner's use of the targeted skill(s) or practice(s)	Feedback of Skill: I practiced the skill and received feedback from the coach.
Level 3	Promoted the use of multiple opportunities for the learner to practice implementation of the targeted skill(s) and practice(s) (e.g. role plays, in context)	Both: I observed the coach demonstrate a skill for me, practiced, and received feedback.

Data Reduction and Analysis

Data were collected and analyzed using quantitative and qualitative procedures. Qualitative evidence can be difficult to reduce, interpret, and draw appropriate conclusions (Miles & Huberman, 1984). The process of reducing and analyzes these data is important to explain in order to explain why the evidence and explanation is plausible. In order to ensure that the qualitative evidence is presented in a balanced way rather than pulling out evidence to support the hypothesis of this study, there must be "assumptions, criteria, decision rules, and operations for working with data to decide when a given finding is established and meaningful" (Miles & Huberman, 1984, p. 22). Qualitative evidence, by nature, is often unstructured and requires the presentation of the data to be selective (Miles & Huberman, 1994). The selection process means that there is some evidence that was collected that is not presented in the data.

The data reduction technique selected for this study came from the research guidance of Yin (2009) and Miles and Huberman (1994) 2002). Yin (2009) suggests using broad questions to analyze qualitative evidence and draw conclusions. The process of qualitative reduction involved examining the open ended responses and identifying major themes based upon the research questions. Themes in the qualitative evidence emerged when examining each of the research questions. Notes and comments about the key features of the Competence-Supportive Coaching Model were noted in the comments in the surveys. These vignettes and comments were used to focus the analysis and determine future adjustments to the coaching model. The research questions were frequently revisited to determine whether the evidence, both quantitative and qualitative, support or refute hypotheses outlined in the research question. Examining the open ended

responses helped to conclude the consistency and effectiveness of the implementation of the Competence-Supportive Coaching Model. By comparing the responses of teachers and coaches, a clearer picture of the coaching interactions emerged.

The quantitative evidence was also analyzed using the central research questions to guide the univariate analyses and mean changes in teacher efficacy. First, to determine whether there was a difference in teacher efficacy in the four areas, the data were limited to the 71 beginning teachers who completed a pre and post survey. These individuals were identified based upon the teacher's report as to their previous experience. Descriptive graphs were used to show changes in efficacy scores for each dimension of efficacy: [list these]. Repeated measures ANOVA was also conducted to test the difference of pre and post institute efficacy scores. Two-way ANOVAs were also tested to examine differences in post institute efficacy scores by different teacher characteristics: [list the characteristics used in the analysis]. These data were run through the SPSS program to determine the mean scores for teacher efficacy.

Limitations and Threats to Validity

There were several limitations to this study. First, this study, and other improvement science designs, has weak external validity (Vogt, 2007, p. 109). Coaches and teachers are limited to those working in a particular context. The district where the teachers were trained, Oklahoma City Public Schools, is a large urban district with a high poverty rate. All Teach For America teachers are placed within schools that have a free and reduced lunch rate of at least 85%. This fact means that the teachers are working with students that are considered "higher need," and makes it difficult to generalize to other

contexts. Since the teachers do not have a lot of background in education, the study does not control for those teachers who may have some additional knowledge or skills they may have acquired in an undergraduate program.

Using Teach For America teachers as an experimental group may result in an addition threat to external validity. Teach For America teachers undergo a rigorous selection process. Part of the selection criteria includes competencies such as perseverance and grit. This could affect how these teachers view their efficacy and growth. As a result, there could be history and maturation effects, particularly for the longitudinal measure of efficacy (Vogt, 2007). Maturation will occur throughout the summer and could skew the results in a particular direction because of the lack of experience in the classroom. Teach For America teachers often have little or no experience in the classroom as opposed to a traditionally trained teacher which requires some practice in the classroom. As a result, Teach For America teachers often come with an idealist view of the classroom which can make them overly confident. The assumptions and perceptions of the classroom can clash the reality. These teachers were commonly successful students so they feel they are able to be successful in the classroom in the same ways.

There are additional threats to internal validity because of the many other variables that can affect teacher competence (Vogt, 2007). There are other things that may help a person feel more competent besides the coaching sessions, including classroom reflections and professional development sessions. Practice will occur in other ways beyond coaching sessions throughout the summer, including whole group "execution clinics." In these sessions, teachers practice a portion of their lesson and get

immediate feedback from coaches and colleagues. In order for conclusions to be drawn about instructional coaching practices specifically, an additional question was added to the post-survey. Teachers will be forced to select one structure that they felt helped them feel the most competent, including their professional development sessions, sessions with practice, specific feedback from a coach, doing practice with a coach, independent time to reflect, and none of these. There will be space for teachers to write in another answer which can be analyzed post-hoc.

Finally, there is an additional threat to construct validity (Vogt, 2007). In particular, the categorical variable of "practice" has never been used in any other study. As a result, there is not a lot of evidence about this measure. Teachers and coaches may perceive the coaching session differently and, as a result, not truly measure the concept of interest. Thus, the researcher will observe coaching sessions and use qualitative evidence to ensure validity of this construct. There needs to be additional research on this construct to ensure construct validity.

Chapter 5: Presentation of Findings

The initial test of the Competence-Supportive Coaching Model produced evidence from teachers and coaches related to the research questions:

> Question I: How are instructional coaches using the Competence-Supportive Coaching Model in the initial empirical test?
>
> Question II: Is the need for competence support satisfied in first year teachers when coaches use the Competence-Supportive Coaching Model, which includes explicit modeling and practice?
>
> Question III: For which teachers was the model most effective?

Results in this chapter are organized by the research questions. Some commentary is provided when reporting findings but the general intent was simply to present the evidence related to the performance of the Competence-Supportive Coaching Model. Discussion of the evidence follows in the next chapter.

Research Question I: Coaching Model Use

This section will answer the question about the Competence-Supportive Coaching Model used in the initial empirical test by presenting evidence from open-ended and descriptive accounts from teachers and coaches. Two findings emerged from the descriptive evidence on model use: 1) the use of model varied by instructional coach and situation, and 2) small adaptations to the model to accommodate the needs of teachers and coaches.

Finding One: Uneven Exposure of the Coaching Model

Some consistent implementation of the Competence-Supportive Coaching Model was critical to be able to draw strong conclusions as to the extent of how the Competence-Supportive Coaching Model affects efficacy in beginning teachers. Evidence indicates that there were different levels of exposure in use. Teachers were able to experience the full but there was uneven exposure. This claim is reinforced by data from teachers and the coaches.

The level of exposure to the coaching model is presented in table 3, which indicates that 12.2% of teachers received a low level of exposure to the coaching model, 55.7% received a moderate level of exposure, and 34.1% received a high level of exposure. If teachers had a low level of exposure to the Competence-Supportive Coaching Model, the coaching model was attempted a few times but coaches expressed some concern about the approach. The majority of the teachers had a moderate level of exposure because coaches identified that there were certain coaching situations that were not conducive to the more directive approach, which will be explained further later. Finally, several coaches were extremely consistent with the approach and did not stray from the approach often.

Table 3: Level of exposure to the coaching model

Code	Description	Percent of Teachers
Low (0)	Coaching model was only attempted a few times; coach expressed concern about the coaching model or did not feel comfortable asking teachers to practice new skills	12.2% (N= 10)
Moderate (1)	Coaching model was attempted several times; coach did not feel the model was appropriate for some specific instructional skills or strategies or did not attempt the model with certain teachers	55.7% (N= 44)
High (2)	Coaching model was consistently used with teachers, regardless of instructional skill or type of teacher	34.1% (N= 28)

The coaches reported on the various types of coaching sessions that occurred throughout each week during weeks three through six of the summer training when coaching sessions occurred. According to these accounts, 71.2% of the coaching sessions contained modeling, feedback, and practice, aligning directly to the Competence-Supportive Coaching Model, 16.9% of coaching sessions contained feedback only, 8.5% of coaching sessions contained modeling only, and 3.4% of coaching sessions did not contain any modeling, practice, or feedback. These data are presented in table 4.

Table 4: Coaching Sessions Containing Coaching Model Components

Coaching Session Components	Description	Percent of Coaching Sessions
Modeling, Feedback, and Practice	Coach modeled a target skill or strategy and teacher practiced the skill and received feedback from the coach.	71.2%
Feedback Only	Coach provided feedback to the teacher on a target skill or strategy.	16.9%
Modeling Only	Teacher observed the coach model a target skill or strategy.	8.5%
Did Not Contain Modeling, Practice, or Feedback	Coach and teacher discussed challenges happening in the classroom more generally and did not identify a target skill or strategy.	3.4%

Qualitative evidence leads to two primary reasons for differences in level of exposure: 1) the coaching approach was not appropriate for every coaching situation, and 2) time constraints that limited the capacity of instructional coaches. Beginning with appropriateness, evidence indicates that there were certain coaching situations that were more conducive to the model than others. The coaching model was largely used when teachers were appropriately managing themselves and deadlines, when they did not need to troubleshoot major issues in the classroom, or when the teacher had to practice specific

skills. Certain portions of the coaching model were emphasized based upon the teachers' development.

Coaches stated several times that the coaching model was not effective with those who feel "*like they are drowning and are incredibly overwhelmed, practice seems less effective.*" Coaches agreed that teachers must be *"invested in their own growth*," meaning that teachers who understand that the coaching process enables them to grow as a professional experience the most benefit. If a teacher indicated that he or she is not invested in the coaching session, the coach was able to adjust their coaching approach. One coach said, "*Unfortunately, I've been focusing on managing teachers missing deadlines, teachers being gone due to illness, and teachers needing a lot of support with lessons. This has left me struggling to find the time and brain space to reflect deeply on what I am seeing in the classroom and strategize in response (even when I try to put that space and time in my action plan, it pretty routinely gets eaten up by fires that need to be put out).*" Coaches, like other instructional leaders, often have to manage teachers in addition to coaching them instructionally. The multiple demands placed upon the teacher and the coach resulted in a "putting out fires" approach, such as managing deadlines, rather than the implementation of the coaching model.

The coaching model was also not used consistently when the teacher needed to troubleshoot major issues in the classroom. Teachers and coaches expressed needing time to simply talk things out, rather than practicing a specific skill or strategy. One teacher said, "*We didn't really [practice] because it wasn't helpful for us. It was more helpful to talk it through and talk to our [teaching partner] about what they did and how that worked for them. Getting strategies from other teachers and what they are doing in their*

classrooms was more beneficial than practicing with fake students and ridiculous scenarios that would never happen in an actual classroom setting." The coach in this situation was able to determine that this teacher would not benefit from practicing and allowed her to do something different to meet her perceived need. The trend of certain teachers not wanting the practice-based approach will be explored further in the third research question.

Coaches also described the importance of giving teachers time to debrief the classroom experience. One coach stated, "*In all but one conversation I think the teachers felt more confident simply because they felt more prepared/like they had a solution to the problems they had in the classroom. If the strategy didn't work or it wasn't actually executed some teachers felt more deflated.*" Even in the first week of training, coaches identified that the coaching model may not be appropriate in all situations with all teachers. One coach stated in his first coaching reflection, *"Most of my [teachers] were just craving feedback and not in the headspace for practice. I'm definitely moving in that direction next week."* Coaches had to read the situation to determine the approach coaching approach.

Coaches and teachers also described that the Competence-Supportive Coaching Model was more conducive when the content of the coaching session was specifically focused on execution skills. According to the coaches, practice within coaching sessions allows for teachers to *"focus on specific skills"* that could be executed in the classroom, such as classroom management, questioning skills, or modeling. Some of the other skills, such as content planning, were not specifically identified as skills to use within the Competence-Supportive Coaching Model. Another coach said that the coaching model

worked best with *"teachers who need to grow in execution (as opposed to teacher who are still struggling with the fundamentals lesson planning)."* Coaches adjusted their coaching approach with skills related to content planning, which may be more difficult to see what to practice. One coach noted that the Competence-Supportive Coaching Model works with all teachers *"but that is when they lack knowledge or skill. When teacher mindsets are the underlying issues there needs to be a structure conversation to support [teachers] in developing a consciousness/awareness of their blind spots."* Thus, the coaching model seemed to be more conducive in building technical teaching practices rather than long-term adaptive changes.

In fact, one coach specifically identified how the Competence-Supportive Coaching Model is not effective in building specific mindsets:

> *"I think practice is effective with new teachers or when teachers are learning a new strategy. I have also noticed practice is best when it is a quick fix such as procedures, directions, position in classroom, or small ways to make lessons efficient. For mindsets, there has to be a deeper conversation or model then practice can happen."*

The coaching approach had to look different for individuals who may have long-term mindsets that need to be addressed, such as the teacher's belief in his or her students to achieve. One coach said that practice is only effective with those who *"have a mindset that their kids can achieve."*

Teachers also described that the coaching model was most effective with specific skill development, such the execution of lessons, procedures, or classroom management

strategies. A teacher said, "*It gave me an idea of what words I wanted to use to describe the procedure or activity."* The coaching allowed for teachers to build muscle memory with the language that they chose to use in the classroom. Another teacher said, "*This helped me feel more prepared to execute what we talked about in my classroom. If I could say it to [my coach], I could say it to my students."* Similar to the coaching, teachers also described the coaching model has an effective approach when focusing on specific technical skills.

In addition to the coaching model being more conducive with specific skills, certain portions of the coaching model were emphasized depending on where teachers were in their development. At the beginning of the training experience, the emphasis was more on instructional modeling. Without the modeling portion, teachers were left feeling frustrated, overwhelmed, or confused, especially in the beginning. *"Practice helped, but it helped more if I could see it modeled first, then practice, then receive feedback,"* said one teacher. Coaches modeling for teachers allowed for teachers to understand what was expected of them. Another teacher noted, "*By watching one of the [instructional staff] model something, I was able to emulate it, and that made it easier for me to internalize and later implement in my classroom.*" For this teacher, modeling was a critical portion of the model that allowed him to see then do.

One coach described the role of modeling over two weeks. During his week three reflection, or first week of coaching, he said, "*It was tricky because this week I feel like [teachers] really didn't have an understanding of what a skill should look like so I spent too much time modeling. I definitely need to improve the pacing within my debriefs next week so that I allow enough time for practice and feedback."* The teachers required more

modeling because they are still learning the basic knowledge and skills for teaching. During his week four reflection, or second week of coaching, one coach said, *"Modeling definitely has helped [teachers] make moves that they wouldn't have made otherwise. For example, I confidently see [teachers] using call and response oriented phrases because I modeled and they practiced in our debrief."* He continues, "*I feel like I made progress and budgeted more time for some practice, though I think [teachers] need more framing behind why I'm making them practice."* Between week three and four, this coach, and other coaches, were able to focus less on modeling and spend more time on practicing. As the teachers develop more knowledge and skills, coaches made adjustments in the coaching model or emphasized certain portions of the coaching model.

As the summer training continued, coaches emphasized the practice portion of the coaching model more. Practice was a critical component of the coaching model according to participants. One coach wrote in her first weekly coach survey:

> *"In my first coaching session, I did not incorporate a space for practice. A coaching lead observed me during this coaching session and put it on my radar. I then did so with the rest of my conversations. In reflection, I feel guilty for not giving my first teacher the space to watch a model, practice, etc. He did receive a boost in skill set which in turn boosted his confidence however, I cannot imagine how much more comfortable he would feel if he would have been able to practice the new skills we had talked about before trying them with students. The other 7 teachers that got the practice experienced a huge boost in confidence which was evident immediately in the classroom. This confidence then helped teachers meet the needs of their learners because they trusted their skill set more."*

There are several teacher reflections that indicate that practice in coaching sessions allowed for them to see a direct result in the classroom. For example, one teacher said, *"I was able to perform the lesson better for the students and it ran with more ease. There was more explanation, clarity, and the students responded at higher levels when I took the time to practice."* Another teacher said, *"Practicing was awkward, but led to improvement in the classroom."* At times teachers reported feeling *"put on the spot."* Another teacher reflected, *"Along with the nervousness, came an adrenaline that boosted me to do better and grow in strength."* Finally, another teacher said, *"The coaching sessions really allowed me to see what areas I needed the most help. I made sure I was constantly practicing all the time during summer school. It truly made a difference in my teaching."*

Teachers and coaches described the importance of repeated practice, which happened most consistently near the end of the summer training when the coaches became more efficient with their coaching sessions. One teacher said, *"Feedback and redoing the practice helped."* One secondary teacher said that repeated practice in coaching sessions *"helped [him] try things a couple of times so I could get it right."* One coach said that her *"teachers found the model, debrief on what they saw, practice, immediate feedback, and practicing again to be the most helpful for their internalization of next steps."*

During the final week of institute, coaches described an additional shift in their emphasis during coaching sessions. In many cases, the coaching session content would not immediately be implemented in the classroom. As a result, coaches made a choice to focus more on a reflective process for their overall experience at the training. One coach

described this shift in emphasis, saying, *"During the final week, I continued providing [teachers] with feedback around their teaching and management. However, my debriefs with corps members this week were more casual as I gave them time to reflect on their institute experience thus far followed by conversations around strengths and areas of improvement."* Another coach described his last week of coaching sessions:

> *"This week was all about closing out the summer with a growth mindset, so practicing specific teacher moves was not the focus. Instead, I required my teachers to complete pre-work prior to our final debrief. Teachers provided feedback on their vision and assessed areas of strength and growth, and also came in with their own theory about where they stood on our rubrics for 'Engagement with Rigorous Content' and 'Culture of Achievement.' Then we discussed their analysis and compared. So in a sense I was proving feedback on their skill (accurately assessing one's own classroom) but it felt different than previous debriefs. Overall, I think this process was helpful and had teachers leaving the summer with a clear understanding of how they performed and what they need to improve upon in the future."*

This coach described the importance of having a shared understanding of the evidence as part of the coaching sessions during the last week.

During the initial weeks of training, coaches focused more heavily on modeling for teachers to help them understand the instructional practices. As the training continued, coaches focused more heavily on practice so that the teachers were able to implement the instructional practices themselves and begin to develop muscle memory. In the final

week, it was critical to give teachers an opportunity to reflect on their overall experience, so modeling and practice was less emphasized.

Time constraints also contributed to uneven exposure to the model. Coaches worked with between 8 to 12 teachers throughout the summer and were expected to complete at least one coaching session with each teacher each week. Some teachers required more coaching because of their instructional or personal needs. In fact, the coaches reported how many coaching sessions they completed each week. These data were collected to determine whether the sheer volume of coaching sessions affected the outcomes associated with the sessions and the type of coaching that occurred. For the coaches, 57.6% reported having conducted 6 to 10 coaching sessions in a week, 35.6% had 11 to 15 coaching sessions in a week, 5.1% had 0 to 5 coaching sessions in a week, and 1.7% had 16 or more coaching sessions in a week. In addition, coaches reported how many teachers they had coaching sessions with. Results indicate that 50.8% of coaches coached 6 to 8 teachers in a given week, 35.6% said more than 8 teachers in a week, 8.5% said 3 to 5 teachers in a week, and 5.1% said 0 to 2 teachers in a week.

The sheer capacity of coaches also contributed to the consistency of use of the coaching model. Given the time constraints, coaching sessions were limited to between 20 to 40 minutes. One coach said, *"I think it certainly helped confidence and allowed [teachers] to conceptualize what good teaching needs to look like in their room. Unfortunately, my pacing didn't allow me to facilitate much [teacher] practice."* Since the coaching model was new to coaches and did not have a lot of practice themselves before the summer training began, many coaches struggled to implement the

Competence-Supportive Coaching Model in its entirety in the time that they had with their teacher.

Another coach described time constraints by saying, *"The coaching sessions in which I had more time (25-30 minutes) were more effective than when we only had 10-15 minutes because it allowed us to discuss positive aspects of their teaching before jumping into the more difficult areas of growth and practice. This more time was more effective because it allowed us to continue to build relationships before more difficult learning."* To be able to implement the Competence-Supportive Coaching Model, coaches felt that they would need to sacrifice important time to build positive relationships with the teachers.

Several teachers experienced issues with how time was managed as well, although not as consistently as the coaches described. One teacher said, *"So much in so little time."* Teachers felt that there was a lot to be introduced to, to practice, and to master in a very short period of time. Given that the model was being executed in the short cycle of the summer training, this concern was expected. The context of the implementation of the Competence-Supportive Coaching Model in the field should be considered for future research and analysis.

To summarize the evidence on model use, there was uneven exposure to the Competence-Supportive Coaching Model due to the following factors:

- The Competence-Supportive Coaching Model was not appropriate for every coaching situation.

- The Competence-Supportive Coaching Model was used most often when the teacher required specific skill development, rather than developing key mindsets or problem solving issues in the classroom.
- Certain portions of the Competence-Supportive Coaching Model were emphasized more based upon the week of training the teachers and coaches were in.
- Time constraints made it difficult for coaches to effectively implement the Competence-Supportive Coaching Model consistently.

Finding Two: Coaching Model Adaptations

Coaches made several key adaptations both throughout a coaching cycle and within a coaching session to the Competence-Supportive Coaching Model. Common adjustments included real-time coaching, the use of video, and having teachers do their own reflections to build reflective skills. These adaptations align with the general purpose and process of competence-supportive coaching.

The Competence-Supportive Coaching Model included two important interaction times for teachers and coaches: classroom observation and post-observation coaching sessions. During classroom observations, teachers and coaches made adjustments based on need and circumstance. The Competence-Supportive Coaching Model emphasizes the importance of practice and feedback within a coaching session. However, to some teachers, this type of practice felt *"inauthentic"* to the classroom experience. One teacher said that her coaching sessions were not very helpful because it did not feel realistic or authentic to the classroom experience stating, *"I didn't find [practice] very helpful*

because I had trouble feeling that it was realistic." In an attempt to be responsive to this concern from teachers, many coaches attempted coaching in the moment, or real-time coaching, within the classroom context, rather than waiting until after the classroom experience. Another teacher reported that her coach "*helped me most by helping me adapt and by coaching me in the moment. Coaching cues while I was being observed internalized it more."* Therefore, the feedback of the participants included in-the-moment or real-time feedback during classroom observations.

During the post-observation coaching session, participants described the use of video as the evidence to analyze. A coach said, "*Reflecting on videos of the teacher in action has been very effective. We were able to get deeper in the conversation since they discovered the areas of needs themselves."* According to coach accounts, teachers became more invested in making changes in the classroom because they were able to identify the need rather than that responsibility being placed on the coach. Another coach said that it was important to have video evidence in her coaching sessions because the teacher and the coach could use the same evidence to prioritize the specific teaching practice to model, practice, and feedback. In fact, one early childhood coach said that teachers were able to make changes in the classroom without an explicit coaching session because of the use of video. She said, *"Having [teachers] look for specifics in the video and then reflect really helped them see where the disparity in clear directions was. I saw an immediate change before I even had debriefs with them."* Although not consistently throughout their responses, teachers also described the effect of video in their coaching sessions. One teacher said, *"It was helpful to watch a video of myself and talk about what to do with [my coach]."*

The last adaptation described in the coach reflections was about ways in which they build reflective skills with teachers. In addition to the use of video, the coaches were able to find small ways for teachers to reflect on their own performance. One coach reported, *"After observation the teacher received feedback. In order to ensure they adjusted the teaching action I modeled they provided me feedback and then they modeled and provided themselves with feedback (this is part of my reflective process). Afterwards we set 1-2 action steps and I provided the teacher with a follow up date. In my follow up observation of 10 teachers, 8 integrated the action step."* In this example, the coach did not provide the feedback on the practice. Rather, the teacher practiced and gave themselves the feedback before practicing again.

An additional adaptation or addition to the coaching model included reflective opportunities through the use of pre-work prior to their coaching sessions so teachers could reflect upon the evidence provided by the coach. For example, one coach described the importance of having teachers reflect prior to a coaching session, saying, *"The practice is most effective with teachers who are feeling some sort of success and have done reflection before coming to the debrief--they are more receptive to what we practice being 'the thing.'"* Another coach said, *"Building in time to ask teachers what their priorities for the week is an important component that will build teacher reflection process and also create a space in which they part of a collaborative coaching cycle."* Having teachers reflect prior to a coaching session was an adaptation made to the Competence-Supportive Coaching Model as a means to build effective partnership with the teacher, build investment in the practice, and to supportive reflective practices.

Coaches made adjustments during classroom observations and post-observation coaching sessions based on teacher needs and circumstances. The primary adjustments were real-time coaching, the use of video, and reflective questioning. The following points summarize the evidence on coaching model use and adaptations:

- Coaches adapted the use of the model based upon the needs of teacher.
- The complexity of the summer training context led to the model not being used in all coaching situations.
- The instructional focus of each week and the developmental stages of teachers led to certain aspects of the model being emphasized.

Research Question II: Satisfaction of Teacher Competence

Evidence for the second research question comes from the 79 teachers who completed the pre and post-invention survey. However, to truly examine the question of first year teachers, 8 of the 79 respondents were removed from the statistical analysis because these teachers had prior experience. Although the coaches made consistent adaptations for the Competence-Supportive Coaching Model, the evidence provided here helps to determine the relationship between the coaching approach used and the change in efficacy for beginning teachers. This section also reports qualitative evidence on the coaching model and teacher competence.

Main Effects on Teacher Competence

Descriptive graphs and within-subject repeated measures ANOVA were used to examine differences in teacher efficacy prior to the summer institute and at the conclusion of the institute. For descriptive graphs, teachers were divided into 1) beginning teachers who did not have consistent coaching aligned to the Competence-Supportive Coaching Model, indicated with a 0 (N = 39), and 2) beginning teachers who had consistent coaching aligned with the Competence-Supportive Coaching Model, indicated with a 1 (N = 32). Taken together, the evidence indicates that teachers experienced an overall increase in sense of efficacy in all areas except for a slight decrease in efficacy for student engagement for teachers with less exposure to Competence-Supportive Coaching. Graphs for each type of efficacy are presented next.

For student engagement, teachers who received the Competence-Supportive Coaching Model achieved an increase in teacher efficacy in student engagement from a mean of 4.58 prior to training to a 4.8 after training. In contrast, teachers who did not have consistent exposure to the Competence-Supportive Coaching Model experienced a slight decrease in this area of efficacy from a mean of 4.74 to 4.72. The eta-squared is 0.01, indicating a small proportion of the total variance attributed to the Competence-Supportive Coaching Model.

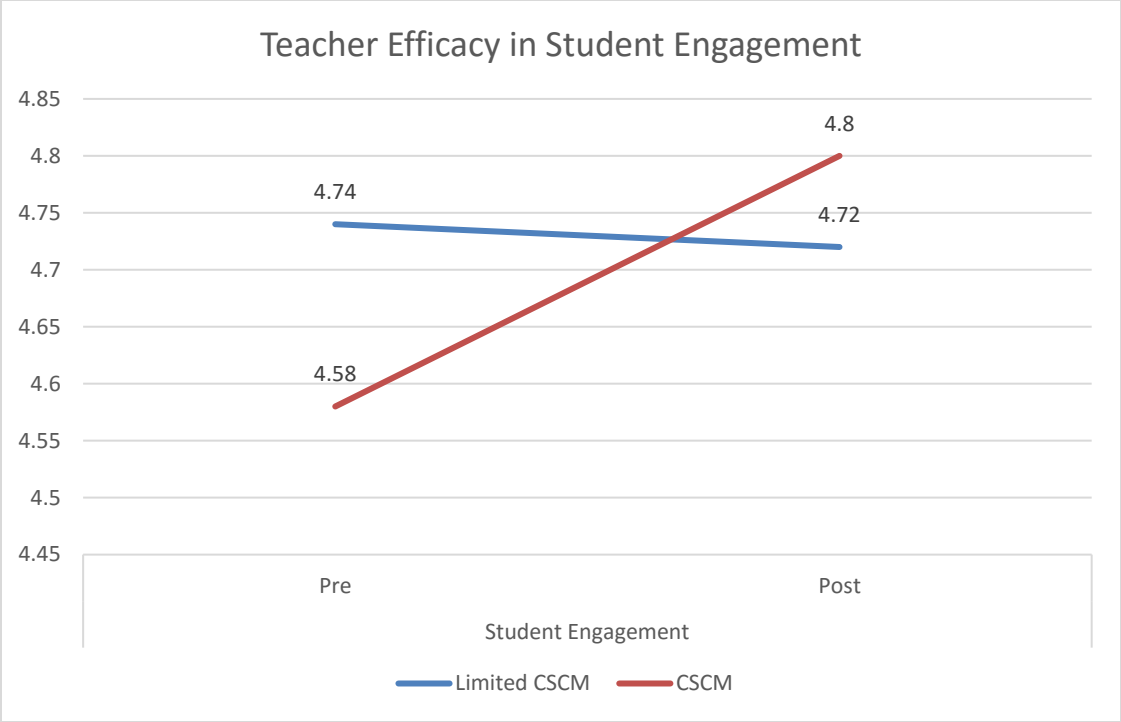

Figure 2.1: Change in Teacher Efficacy in Student Engagement using the Competence-Supportive Coaching Model. Limited CSCM = teachers who did not consistently receive the Competence-Supportive Coaching Model (N=39). CSCM = teachers who received the Competence-Supportive Coaching Model (N=32).

For content planning, teachers in both groups experienced an increase, with beginning teachers who consistently received the Competence-Supportive Coaching Model having a larger gain. These teachers began the training with an average efficacy score of 4.48 and ended with a mean of 4.83. Individuals who did not receive the coaching model consistently started the summer with a mean score of 4.6 in content planning and ended at 4.81. The eta-squared is 0.08, showing a medium effect.

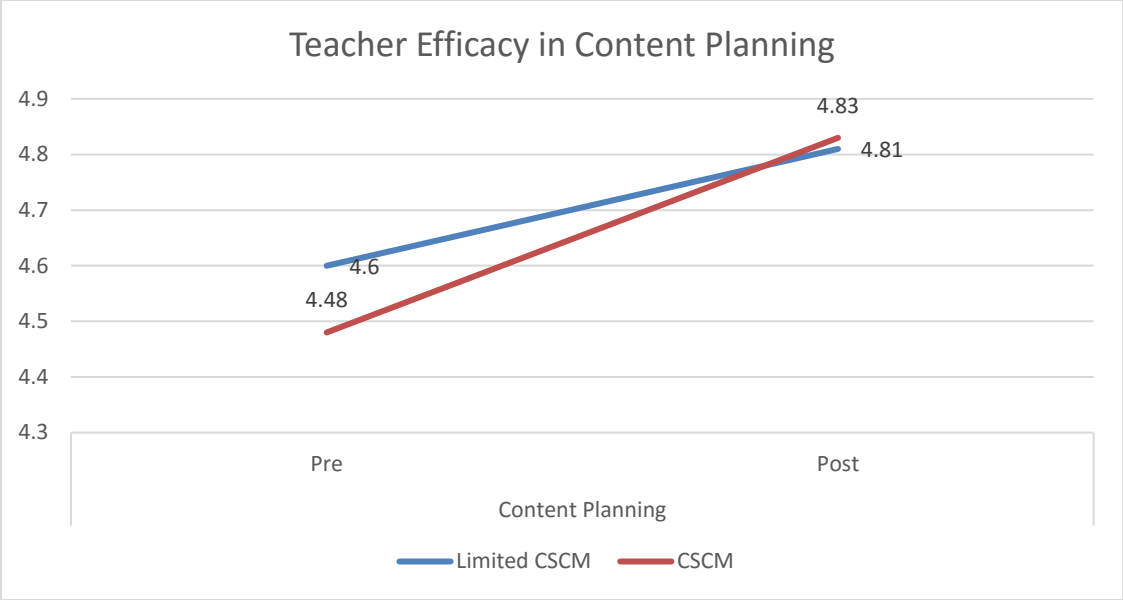

Figure 2.2: Change in Teacher Efficacy in Content Planning using the Competence-Supportive Coaching Model. Limited CSCM = teachers who did not consistently receive the Competence-Supportive Coaching Model (N=39). CSCM = teachers who received the Competence-Supportive Coaching Model (N=32).

Efficacy gains in instructional strategies were greater for teachers exposed to more of the Competence-Supportive Coaching Model. Individuals who received the coaching model consistently had a mean pre-intervention score of 4.51 and a post-intervention score of 4.86. Teachers with less exposure had a mean pre-intervention efficacy score of 4.76 and a post-intervention score of 4.86. The measure of the proportion of total variance on efficacy in instructional strategies is 0.03, showing a small eta-squared.

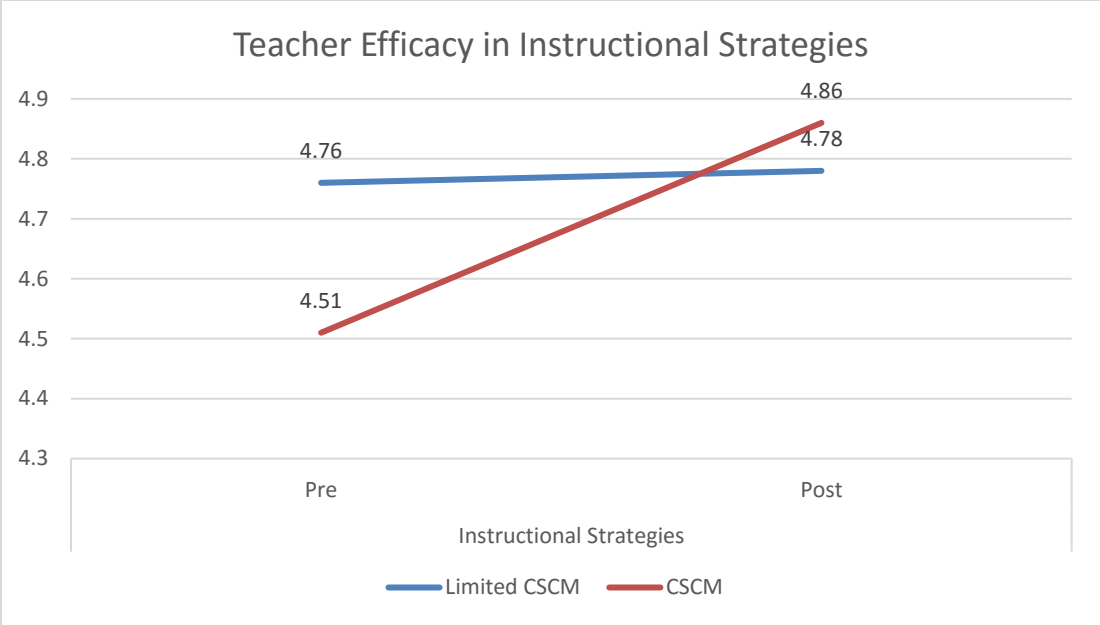

Figure 2.3: Change in Teacher Efficacy in Instructional Strategies using the Competence-Supportive Coaching Model. Limited CSCM = teachers who did not consistently receive the Competence-Supportive Coaching Model (N=39). CSCM = teachers who received the Competence-Supportive Coaching Model (N=32).

Changes in efficacy for classroom management increased for high and low exposure groups. Teachers who received the Competence-Supportive Coaching Model most frequently had a mean pre-intervention score of 4.43 and ended with an average of 4.8. Teachers with limited exposure to the Competence-Supportive Coaching Model had a mean pre-intervention score of 4.59 and a post-intervention score of 4.8. The eta-squared for classroom management is medium, at 0.07.

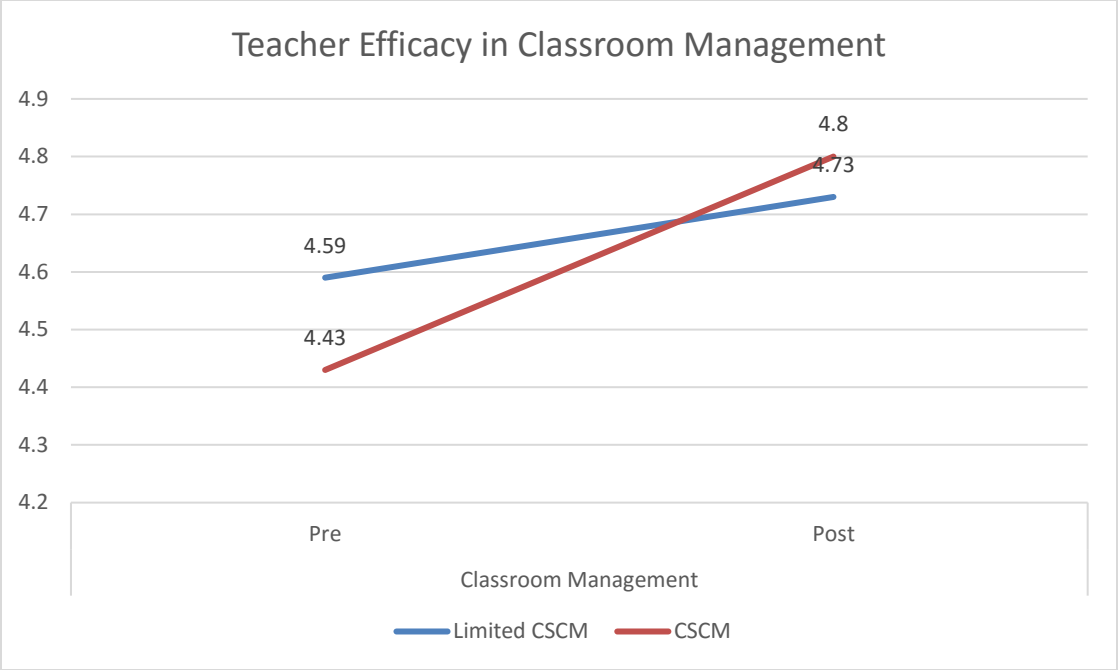

Figure 2.4: Change in Teacher Efficacy in Classroom Management using the Competence-Supportive Coaching Model. Limited CSCM = teachers who did not consistently receive the Competence-Supportive Coaching Model (N=39). CSCM = teachers who received the Competence-Supportive Coaching Model (N=32).

Descriptive graphs describe changes in efficacy but such evidence should not be used to make claims about the effects of the Competence-Supportive Coaching Model. Within-subject repeated measures, ANOVAs were used to estimate the statistical significance of the mean differences. Results in table 5 show that statistically significant differences in pre-institute and post-institute efficacy scores were found for classroom management ($F = 4.91$, $p < .05$) and content planning ($F = 5.64$, $p < .05$). No statistically significant differences were found with student engagement and instructional strategies. For the statistically significant findings, eta-squared estimates show that approximately 7

percent of the pre and post classroom management and 8 percent of the pre and post content planning are likely to be attributed to competence-supportive coaching.

Table 5. Within-subject Repeated Measures ANOVA Results

Efficacy Dimension	**Mean Difference**	**F-Ratio**	**Alpha**	**Eta-Squared**
Student Engagement	.09	.67	.42	.01
Instructional Strategies	.17	2.03	.16	.03
Classroom Management	.25	4.91	.03	.07
Content Planning	.82	5.64	.02	.08

Note. N=71

The following points summarize the main effects.

- Teachers who consistently received the Competence-Supportive Coaching Model saw a greater increase in efficacy in all areas.
- The greatest increase in efficacy occurred in the area of classroom management and content planning.
- The only statistically significant differences were for classroom management and content planning.

Qualitative Evidence in Support of the Competence-Supportive Coaching Model

In addition to the quantitative evidence, qualitative data lend support for the Competence-Supportive Coaching Model. The concept of confidence came up consistently in the survey responses from both teachers and coaches. Several coaches described the affect that the Competence-Supportive Coaching Model had on teachers

and their confidence. One coach also identified that the coaching approach allows for teachers to take away transferable skills that will last beyond a single day, week, or summer. She said, *"I think it greatly improved teacher's confidence, particularly when they left with a deliverable that connected to their practice (they practiced the behavior management cycle, and now have a poster or they practiced conversations with parents and now have a 'script')."* Teachers were able to implement the practices identified in the coaching session to apply them outside of the context of the coaching relationship.

Other coaches were able to describe the effect that the Competence-Supportive Coaching Model had on teacher confidence. One coach said in her week three reflection, "*The model, practice and feedback during coaching sessions immensely increased my [teachers'] confidence. It allowed my [teachers] to think through the changes they wanted to make in their classrooms."* Another coach also cited the importance of practice in building teacher confidence, saying, *"Practice was a key component of improving teachers' confidence because they were able to see themselves implementing the focus skill in their classroom with their students in mind. Practice helps teachers feel prepared and capable."*

Two components of the Competence-Supportive Coaching Model were outlined as the major contributing factors that directly affected teacher confidence: 1) instructional modeling and 2) practice within coaching sessions.

Modeling was listed on a specific attribute of the coaching cycle that was effective in building confidence. Several teachers attributed their confidence in the classroom directly to the expectations set out by their coaching. One teacher said, *"My*

coach was amazing! She modeled skills for us multiple times and then observed us and gave us very helpful feedback. She made me feel more than confident in the classroom during the summer." Teachers were able to see strong examples of teaching practices within their coaches' models and their own practice within coaching sessions to help build their confidence.

More often, teachers described the affect that doing practice in coaching sessions had on their overall confidence in the classroom. One teacher said, *"Practice helped a lot. I felt more confident when I entered the classroom."* Another teacher said, *"It was helpful to see an example of how I can improve. Practicing made me more confident in performing the particular skill in the classroom."* Teachers were able to make connections between their coaching sessions, the changes they implemented in the classroom and the overall effect on students. One early childhood teacher said,

> *"I saw significant improvement in having the ability to teach my students. And teach and run my classroom effectively and with confidence. [My coach] is truly the best coach! [She] set high expectations at the beginning for her cohort and it helped us in the long run. We all came out on top and feel confident to have our own classrooms in the fall. Practice in coaching sessions helped me to have more confidence in my teaching. I feel that I will be overall capable of leading an effective Pre-K classroom in the fall."*

Coaching using the Competence-Supportive Coaching Model led this teacher and others to feel like the skills are transferable beyond the summer training context.

Another coach reiterates the importance of practice in coaching sessions for building teacher confidence:

> *"I think level of practice teachers engaged in improved their confidence considerably. Understanding that many [teachers] lacked experience in the classroom, I modeled and explained various pedagogical strategies that they were able to implement immediately. Naturally, [teachers] expressed satisfaction with some teaching strategies and that others did not feel natural to them or were ineffective in specific situations. Though not all strategies were successful, having an increased number of instructional or behavior management strategies increased [teachers'] confidence."*

This coach describes how difficult it was to work with individuals with a variety of needs and experiences. However, he does indicate the importance of repeated practice in building teacher confidence, regardless of the developmental level or the skill being practiced.

Coaches also described the importance of using practice to help boost confidence with teachers who lack confidence. One early childhood coach explained the importance of repeated, contextual, and sustained practice with these individuals, saying, *"I have done practice with most of the teachers I worked with this summer but a few benefitted more from in-the-moment coaching and those were the teachers who tended to lack the confidence and teacher voice in their classroom."* Another coach said, *"[Teachers] that lack confidence when first demonstrating a skill seem to benefit most from practice. When they enter the classroom, after practicing the skill, it is not the first time they have*

demonstrated the skill." For teachers who lack confidence, practice must occur regularly and in various contexts.

To answer the research question, does the Competence-Supportive Coaching Model lead to a greater sense of efficacy in beginning teacher? The following conclusions can be drawn:

- The more directive coaching approach involving clear modeling and practice leads to a greater sense of efficacy with this specific sample and test.
- Instructional modeling and practice were key components of the model to help boost teacher competence.

Research Question III: For Which Teachers was the Model Most Effective?

Several interesting findings emerged when analyzing data to determine who seemed to benefit the most and least from the Competence-Supportive Coaching Model. Although several coaches said that *all teachers* benefit, some common themes emerged from the coach response to the question, "What teachers do you think practice is most effective with? Why?" Additional quantitative evidence provided by the teachers support statements by the coaches. Five findings emerged from the evidence: 1) teachers who like their coach and are challenged by them have a greater resulting efficacy, 2) teachers who were more likely to accept feedback had higher efficacy, 3) teachers with better abilities to identify problems had higher efficacy, 4) teachers with a more active learning style had higher efficacy, and 5) teachers with a growth mindset had a better experience.

Finding One: Liking Coaching and Relationships with Coaches

Teachers reported on the structures that they felt contributed most to their development over the summer. Of the 79 participants, 55% of the participants reported that their coach's specific feedback contributed to their sense of efficacy the most, 13.5% said their sessions with content leaders, 11.2% said their time for reflections, 10.1% said doing practice with their coach, and 10.1% said none of these structures. Those who said none of these structures cited other things such as professional readings, working with their master teacher in the classroom, or informally meeting with other teachers. Thus, approximately 65% of teachers said that their coach directly contributed to their ability to feel confident in the classroom, indicating the approximate percentage of those who felt they had a strong relationship with their coach and felt as though the coaching relationship supported the teacher's development.

The above data were turned into a categorical variable as a way to measure the connection between the structures that the teachers identified as the most helpful in their development and teacher efficacy. If the teacher identified anything coach related, either the feedback and they received from their coach or doing practice with their coach, these teachers were coded as a 1, indicating that they liked the coaching that they received. If the teacher identified anything other than coaching, such as their professional development sessions, their personal time to reflect, or other structure, they were coded with a 0, indicating that they did not like coaching as much as other structures. Again, an analysis of variance test (ANOVA) was conducted to determine the interaction effects between the teacher liking coaching and whether they received the Competence-

Supportive Coaching Model most often and the effect that these variables had on teacher efficacy.

Teachers who received the Competence-Supportive Coaching Model and attributed their level of confidence to their coach had a greater sense of efficacy overall, except for content planning which saw no difference. For student engagement, teachers who liked their coach had a post-intervention score of 4.81 and 4.79 if they did not like their coach. There were no differences in scores between the two groups in content planning at 4.833. The post-intervention score for instructional strategies was 4.87 if the teacher liked coaching and 4.84 if the teacher did not like coaching. Finally, in the area of classroom management, teachers who liked coaching had a score of 4.81 and a 4.77 if they did not like coaching. In general, teachers who had consistent exposure and liked their coach saw a greater result. These data indicate the importance of having strong teacher-coach relationships so teachers are able to accept feedback.

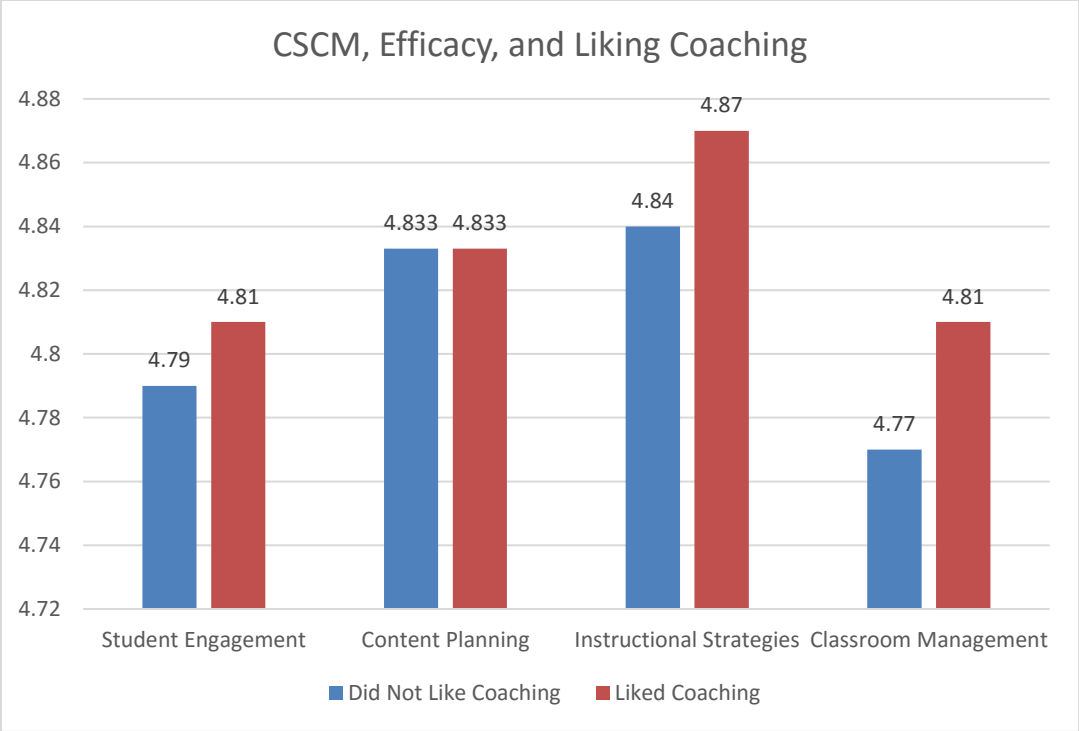

Figure 3.1: Interaction Effects of Liking Coaching and Efficacy when Exposed Consistently to the Competence-Supportive Coaching Model. CSCM = teachers who received the Competence-Supportive Coaching Model (N=32).

For comparison, data was analyzed for teachers who had limited exposure to the Competence-Supportive Coaching Model. The interaction effects did not show has clear trends compared to the group with consistent exposure. In fact, the results indicated an opposite trend in almost every area. Teachers who expressed not liking coaching had an overall greater result than those who liked coaching, showing that relationships between teachers and coaches may have led to teachers not willing to accept feedback. In the area of student engagement, teachers who liked coaching had a score of 4.71 and teachers who did not like coaching had a score of 4.74. For content planning, teachers who liked coaching resulted in a post-intervention score of 4.801 where teachers who did not like

coaching had a score of 4.815. Instructional strategies showed a similar trend where teachers who liked coaching had a result of 4.72 and teachers who did not had a result of 4.85. However, classroom management had a different result. Teachers who liked coaching had a greater score at 4.76 compared to those who did not like coaching at only 4.69. Since this group had uneven exposure to the Competence-Supportive Coaching Model, one could conclude that the relationship between teachers and coaches may have interfered in a coach's ability to challenge teachers or push them to practice targeted skills.

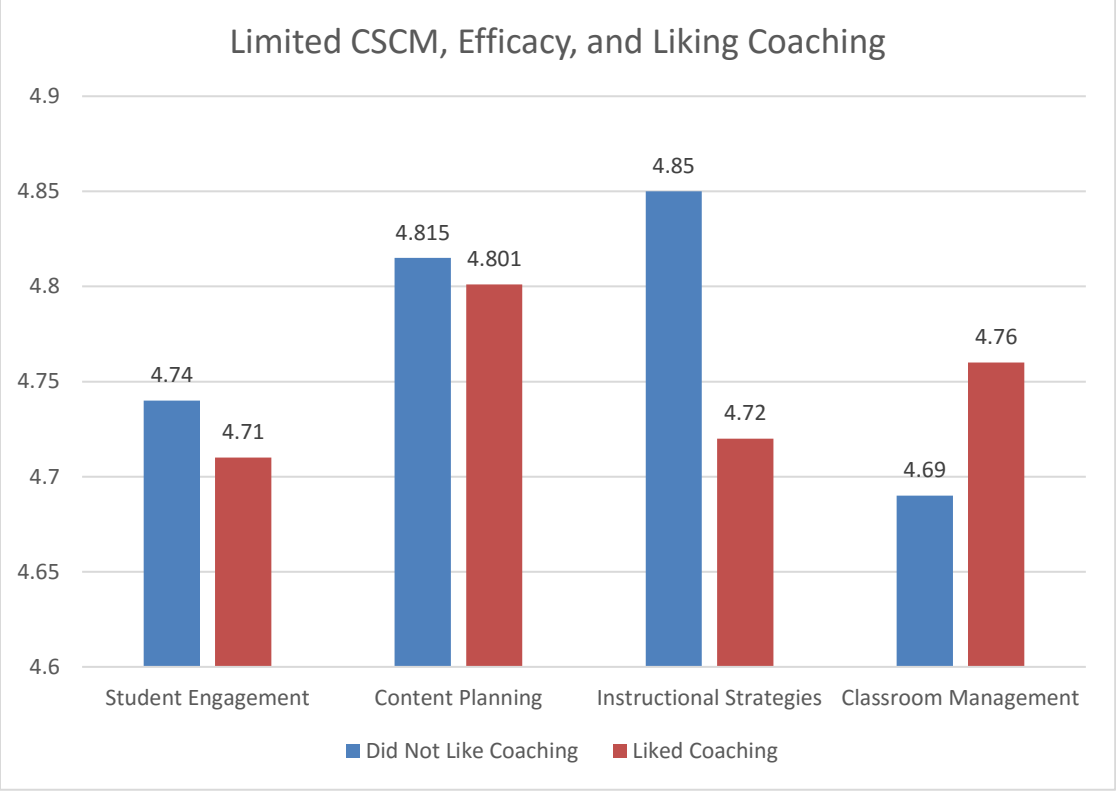

Figure 3.2: Interaction Effects of Liking Coaching and Efficacy when Limitedly Exposed to the Competence-Supportive Coaching Model. Limited CSCM = teachers who did not consistently receive the Competence-Supportive Coaching Model (N=39).

Those who liked coaching more, regardless of whether they received the Competence-Supportive Coaching Model or not, had an overall greater sense of efficacy in all areas. Whether the teacher liked coaching or not, teachers had a greater sense of efficacy if the teacher received the Competence-Supportive Coaching Model. If the teacher liked coaching but did not received the Competence-Supportive Coaching Model often (N=21), the teacher had a lower overall sense of efficacy in all areas. Thus, the teacher may have liked the coaching approach that the coach was using with them but may not have led to the teacher feeling more confident. Interestingly enough, teachers who did not like coaching still resulted in a greater sense of efficacy if the teacher received the coaching model (N=8). In addition, if they did not like coaching and did not receive the Competence-Supportive Coaching Model most often (N=18), the teachers still had a greater sense of efficacy. This may, in part, because the coach used an approach that seemed to work for this specific teacher. Overall, the group with the highest sense of efficacy is those who received the coaching model and liked it (N = 24).

The following points summarize the conclusions drawn about teacher and coach relationship dynamics and the resulting sense of efficacy:

- Although some teachers may have liked their coach and the coaching they received, it may not have resulted in a greater sense of efficacy, unless the Competence-Supportive Coaching Model was used and the teacher liked it, with the exception of classroom management.
- The results do not indicate statistical significance at the 0.05 mark and can be found in appendix E.

Finding Two: Accepting Feedback

Another major finding that emerged in the coaches' responses is whether the teacher was willing to accept feedback or the developmental level of the teacher. Accepting feedback manifested itself in several ways with coaches and teachers. Coaches identified whether the teacher was willingness to accept feedback, which may be correlated to the experience level of the teacher and the relationship dynamics between the coach and the teacher which was discussed earlier briefly and will be explored further.

Many of the coaches were previously trained in a theory related to developmental levels known at "situational leadership" by Hersey and Blanchard created in the 1960s (Hersey, H., Blanchard, K., & Johnson, D., 1996). In this theory, individuals can be divided into four categories based upon their skill and their will to learn. These development (D) levels are categorized: low skill/high will (D1), low skill/low will (D2), high skill/low will (D3), and high skill/high will (D4).

In surveys, coaches described the teachers that they Competence-Supportive Coaching Model was most effective with. Six of the twenty-five coaches described *"low skill, high will,"* or D1, teachers as the target group for the coaching model. In contrast, three coaches identified veteran teachers as individuals who may require changes to the coaching model. One coach described the relationship between level of experience and accepting feedback by saying, *"I believe teachers with open mindsets are the ones who benefit most from practice. Although this could be seen as newer teachers, I believe any teacher open to changing their technique would find practice effective."* Since more

veteran teachers or more experienced individuals have a higher level of skill coming into the summer training, the Competence-Supportive Coaching Model is too much of a directive approach to skill development. One coach said, "*I think new teachers are most likely to be the most receptive to practice. I believe veteran teachers might feel it is 'babying' them."* D4 teachers already have a level of skill that makes the approach less appropriate for them.

Some teachers also described the more directive approach to skill development as challenging. One traditionally trained teacher said, *"Honestly, I hated practicing. As a traditionally trained teacher this practice was different for me and I feel it is not realistic."* Another traditionally trained teacher said, *"Practice was not very effective for me. I am a traditionally trained teacher with two years of prior teaching experience so I have had a lot of practice in the past. But I did enjoy watching other peoples teaching styles to see the different ideas they had."* According to Situational Leadership Theory, the appropriate approach for those individuals with higher skills include supporting or delegating, depending upon their commitment (Hersey, et al., 1996). These teachers wanted a more supportive coaching approach that took more of their voice and perspective into account.

The question of "will" came up consistently in the coaches' comments about the teachers that practice is most effective with. One elementary coach described the affect that "will" had on practice in coaching sessions, saying, *"I think that new teachers with high will find this practice model the most appropriate. I feel it is hard to engage teachers in meaningful practice without the "will" piece being present. For example, tired, cranky, and hungry [teachers] only half-heartedly participate in practice."* The

emotional and physical state of a teacher can make coaching sessions less effective in building teaching practices.

In addition, the relationship dynamics also affected the teachers' willingness to accept feedback. One coach described the importance of relationships in his ability to encourage teachers to practice an identified skill by saying that practice was most effective with *"those with whom there is a trusting relationship."* The coaches were able to connect the relationship dynamics, the level and type of practice that occurred in the coaching session, and the level of confidence experienced by the teacher. Early childhood coach said, *"The more teachers were comfortable with me as their coach the more effective their practice became. When they saw their practice work in the classroom, their confidence increased."* She continued by reflecting on how the relationship dynamics affected her coaching approach, *"Depending on my relationship with the teacher I would try multiple methods to ensure they hone a skill."* Secondary coach said that coaching with practice was most effective with *"teachers who respect my opinion."* The relationship between the teacher and the coach caused the coach to make different decisions about the coaching method.

Teachers also described the importance of having a trusting relationship with his or her coach. The majority of the teachers had positive experiences. One teacher said, *"Just to say that my coach has been an awesome coach. He knows how to relate to his cohort in ways that work best for them as individuals. For me, that was direct feedback with concrete new ideas to implement."* This teacher described the importance of the coach understanding teachers as individuals and adjusting the approach based upon the needs of the teachers.

Although teachers were often not very explicit about the relationship challenges that they had with their coaches, some teachers eluded to many of these concerns by describing how they got support throughout the summer from other sources, such as their peers, content leaders, or teachers in the classroom with them over the summer, or master teacher. Only one teacher mentioned interpersonal issues with their coach directly. One teacher said, *"Coaching meetings were okay. I did not connect with my coach so I dreaded meeting with my coach."* This teacher ended up resigning from her teaching placement after the first semester of teaching.

In conclusion, the alignment between the willingness to accept feedback and appropriate coaching approach is critical to analyze:

- Generally, teachers must be willing to accept the coaching approach to result in an overall greater sense of efficacy and is directly linked to the relationship between the teacher and coach.
- Individuals who identified needing a more supportive or autonomous approach described the Competence-Supportive Coaching Model as too directive, which contributed to the teachers' willingness to accept feedback.

Finding Three: Identifying Classroom Problems

Another aspect for which teachers the Competence-Supportive Coaching Model was most effective was the teachers' ability to identify classroom-level problems. Analyzing classroom-level data is commonly part of a coaching cycle (Knight, 2009; Aguilar, 2013) but was not explicitly emphasized in the coaching model in this study. Although the training that the coaches received on the coaching model discussed

gathering data in the classroom to be used in coaching sessions, this idea was not consistently followed up on or discussed throughout the trial. At times, coaches and teachers did not agree on the most important change in the classroom, which left teachers and coaches scrabbling to norm on classroom-based evidence during a large portion of the coaching session. One coach said, *"I think they would have been more effective if I had briefly reached out to teachers before our debrief. There were a couple instances where I had my idea of 'the thing' and it didn't align to their*s, *so I was less prepared with ideas for practice."*

Coaches identified that teachers did not implement teaching strategies that the coach and teacher practiced in coaching sessions if the teacher could not *"see the need for change"*. At times, teachers would *"go along"* with the coach during the coaching session but would not implement the change in the classroom. One coach said, *"Teachers who are sometimes don't see opportunities for growth in their practice will practice, but not implement the practice in their classroom because they don't see the problem."* She continued in another reflection that practice in coaching session is most effective with *"teachers who recognize there is room for improvement (or a specific problem)."* As described in research question I, if teachers were unable to identify the problems in the classroom through reflection or analysis of evidence with a coach, coaches resorted to video.

In addition, coaches described the coaching process where teachers began to identify the need for change by implementing the feedback in an initial coaching cycle. In these cases, teachers may not have seen a need for change in the initial coaching session but implemented the feedback. Once they saw the affect that implementing the feedback

had on the classroom, they were more invested in subsequent coaching cycles. One coach said, "*Practice has been the most effective with teachers who have already integrated feedback and seen the benefits on following through with an aligned action plan."* In this case, this coach saw that the subsequent coaching sessions were more effective because the teacher could see how the practice in the coaching session directly affected their results in the classroom. Another coach saw similar results, saying that practice was most effective with *"teachers who are able to clearly understand the why and the process steps were most successful at integrating the steps and feeling positive about their classroom outcomes in data and classroom management."* Teachers were most successful with the coaching model if they were able to identify the need in the classroom based upon student-level evidence, including student achievement data or student behaviors in the classroom.

Finding Four: Learning Style

Teachers reported on their personal learning style in both the pre and post survey. Although there were some teachers who indicated a change in their learning style after the summer training, most teachers stayed consistent with their reported learning style. To conduct quantitative analysis with the learning style data, individuals who indicated that they learn best by doing and practicing were coded as a 1, indicating that their reported learning style aligned with the Competence-Supportive Coaching Model (N = 41). All others were coded as a 0, indicating that their reported learning style is not aligned directly with the coaching approach (N = 30). These individuals said that they learned best by seeing it done, reading about it, or hearing about it. Not surprisingly, individuals who reported having an aligned learning style to the coaching approach had

an overall higher sense of efficacy in all areas, especially if the teacher received the Competence-Supportive Coaching Model most often.

For individuals who had consistent exposure to the Competence-Supportive Coaching Model, teachers who reported an aligned learning style had a greater sense of efficacy than those who did not in all areas of efficacy. In student engagement, teachers with an aligned learning style had a mean post-intervention score of 5.0 and those who did not had a mean score of 4.58. For content planning, teachers with an aligned learning style had a mean score of 5.04 and those who did not had a score of 4.6. Aligned learning style teachers showed an average of 5.03 in instructional strategies and non-aligned teachers had an average of 4.68. Finally, in the area of classroom management, teachers with an aligned learning style had a result of 4.98 versus 4.59 if they did not have an aligned learning style.

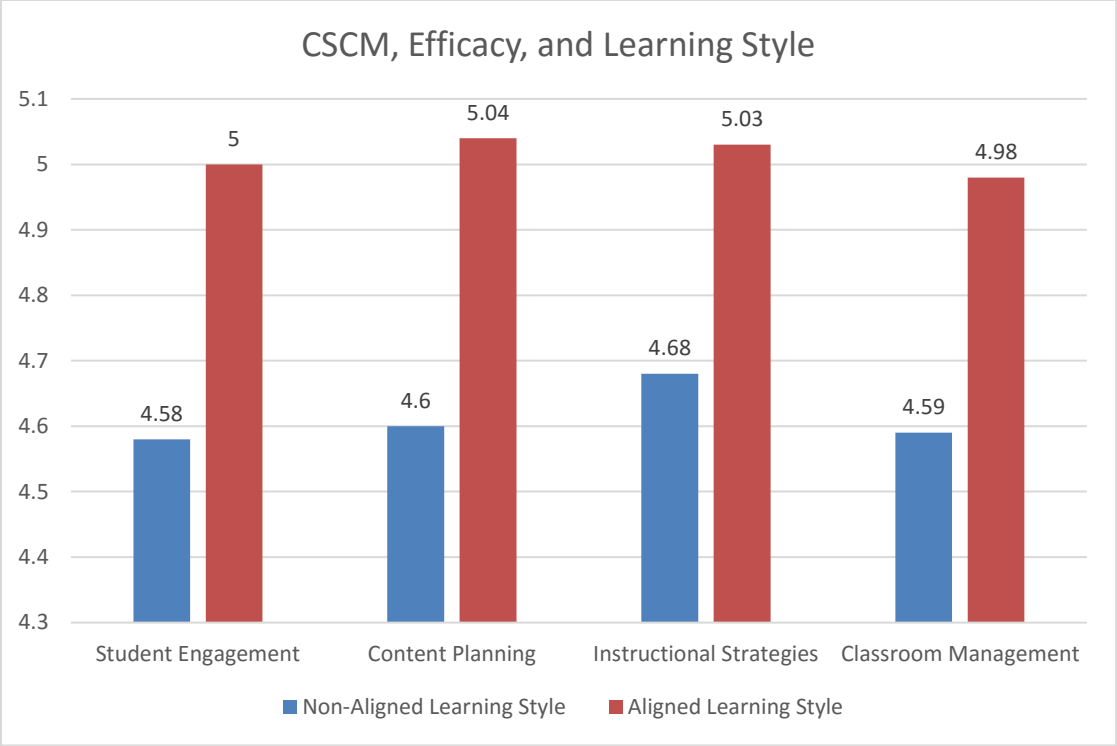

Figure 4.1: Interaction Effects of Learning Style Alignment and Efficacy when Exposed Consistently to the Competence-Supportive Coaching Model. CSCM = teachers who received the Competence-Supportive Coaching Model (N=32). Aligned learning style is described as practicing/doing.

For comparison, teachers who had uneven exposure to the Competence-Supportive Coaching Model also had greater efficacy in all areas if the teacher had an aligned learning style. In student engagement, aligned learning style teachers had a score of 4.81, which is lower than teachers with consistent exposure to the Competence-Supportive Coaching Model, and those who did not have an aligned learning style had a score of 4.59. For content planning, teachers with an aligned learning style had a post-intervention score of 4.94 and those who did not had a score of 4.6. Aligned learning style teachers showed an average of 4.94 in instructional strategies and non-aligned

teachers had an average of 4.52. In the area of classroom management, teachers with an aligned learning style had a result of 4.79 versus 4.64 if they did not have an aligned learning style.

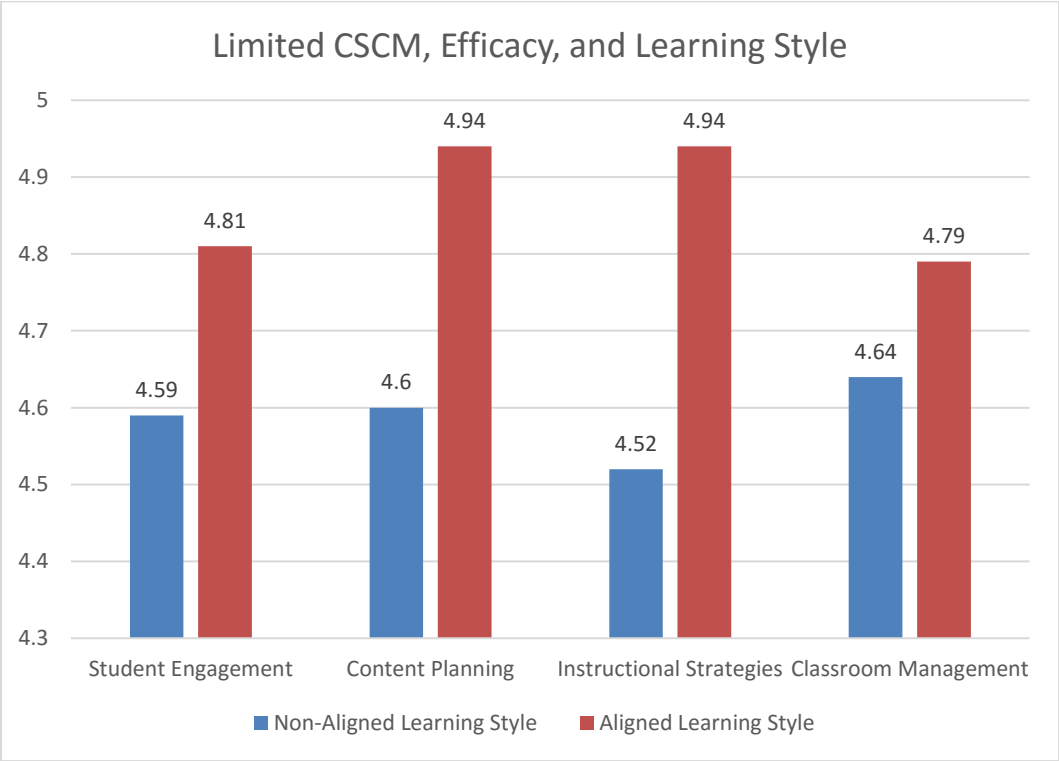

Figure 4.2: Interaction Effects of Learning Style Alignment and Efficacy when Limitedly Exposed to the Competence-Supportive Coaching Model. Limited CSCM = teachers who did not consistently receive the Competence-Supportive Coaching Model (N=39). Aligned learning style is described as practicing/doing.

In all areas but classroom management, teachers who had an aligned learning style and received consistent exposure to the Competence-Supportive Coaching Model had the greatest sense of efficacy. In the area of classroom management, teachers who did not have an aligned learning style had a lower sense of efficacy if the coaching model

was consistently used. If the coaching model was used consistently, the average sense of efficacy was 4.59 versus 4.64 if it was not used. Thus, the learning style of the teacher is really important in determining the coaching approach for classroom management. Teachers who have an aligned learning styles would benefit from the Competence-Supportive Coaching Model where those who do not have an aligned learning style would benefit from a different approach.

Classroom management and student engagement were two areas of efficacy that showed an interesting trend for individuals who received the coaching model but did not have an aligned learning style. Classroom management and student engagement are areas that rely heavily on execution skills in the classroom. Teachers are expected to command the classroom, ask tough questions, build relationships, and present material that encourages students to learn. The Competence-Supportive Coaching Model mirrors the stress and complexity of the classroom by asking teachers to practice these skills outside of the context of the classroom to receive feedback and gain muscle memory. These data indicate that the Competence-Supportive Coaching Model may not be the best approach for classroom management and student engagement if the teacher has a difference in reported learning style. Although these differences in efficacy are not significant, it is an important finding to determine the approach coaching approach for individual teachers and individual skills.

Qualitative evidence also supports the learning style findings. According to coaches, the learning style of the teacher also determined whether the coaching model would be effective. Several coaches cited that the coaching model was most effective with kinesthetic or visual learners. One teacher reported at the beginning of the summer

that she learned by seeing things done. By the end of the summer, she described that she learned best by doing and practicing something. She said, "*Coaching sessions in which we practice, got feedback and then practiced again were the most effective for me because I could immediately understand how it would look to implement changes."* As she participated in coaching sessions involving practice over the summer, she saw the effect that these coaching sessions had on her skill development as a teacher and reflected a change in her learning style as a result.

Some teachers were more resistant to the coaching model based upon their reported learning style. One teacher described how coaching sessions affected her by saying, "*They were helpful but I prefer to watch someone and learn from that rather than role play."* She described that the most influential structure to build her confidence was her personal time to reflect. Another teacher said, *"Practice didn't work as well for me as just discussing strategies with my coach. Listening and seeing her strategies helped me think of ideas of my own. I felt like practicing skills wasn't as helpful because when I got up to teach I either didn't remember how I had practiced or things just tended to flow out own their own. Having specific ideas on how to teach content helped me a lot more."*

Coaches attempted to be responsive to the needs of teachers throughout the summer by adjusting the coaching approach to the needs expressed by these teachers. For example, one teacher described:

> *"I loved my coaching sessions with [my coach]. I have sought out tons of feedback from her and she has been willing to work with my specific learning style and personality. She has made me such a better teacher through her*

coaching sessions. I am so grateful for her coaching this summer, it was transformative."

The coach was able to adjust to various approaches in coaching to meet her specific needs. An experienced teacher said, "*Not everyone enjoys role playing so I think it is important for coaches (like mine) to give options for other ways to 'practice' teaching strategies."* Thus, the learning style of the teacher determines whether the Competence-Supportive Coaching Model is effective.

Another interesting finding can help researchers draw conclusions about learning style and sense of efficacy with more research and practice. Regardless of the area of efficacy, those who reported having an active learning style aligned with the coaching approach resulted in a greater sense of efficacy regardless of whether they received the Competence-Supportive Coaching Model most often. One could conclude that more active learner may have a greater sense of efficacy or confidence than those who learn through other sources.

In summary:

- Teachers who had an aligned learning style, whether or not they were consistently exposed to the Competence-Supportive Coaching Model, resulted in a greater overall sense of efficacy than those without an aligned learning style.
- The data does not indicate statistical significance at the 0.05 threshold and can be found in appendix F.

Finding Five: Growth Mindset

According to coaches, the coaching model was also most effective with teachers who had a growth mindset about students and themselves. Many of the coaches had been trained in theories related to growth mindset, namely Dr. Carol Dweck's work (Dweck, 2006). According to Dweck's theory, there are two types of mindsets: growth and fixed. A person with a growth mindset views intelligence as something that can be developed, which leads to a desire to learn. Therefore, these individuals have a tendency to embrace challenges, persist in challenges, and learn from criticism. In contrast, individuals who possess a fixed mindset views intelligence as static. Thus, they are motivated to look smart, resulting in the avoidance of challenges, and will often ignore useful negative feedback (Dweck, 2006).

The concept of a growth mindset is consistently reflected in the coaches' reflections. According to these coaches, the teacher must believe that the students have the ability to learn. One coach compared two teachers and how they have responded to coaching while reflecting on mindsets:

> *"I have used a cognitive approach for two [teachers]: one is very open when reflecting on students' abilities and does not bring up their personal lives when they are not meeting expectations, the other makes excuses for the students and lowers her expectations, for herself and the students."*

When teachers believe that their students are able to learn, despite challenging circumstances, they are more likely to be invested in the coaching approach. The teacher will understand that they are able to affect the outcomes for students. Related to this,

according to coaches, teacher must also be able to connect teacher actions and student actions. Another coach said that practice was most effective with *"teachers who understand that teacher actions feed right into student actions."* In turn, the teacher believes that by growing in the way identified in the coaching session that their students will change their actions or learning outcomes.

In order for the coaching model to be effective, the teacher must have a growth mindset about their students, *"and themselves,"* reflected one coach. A different coach said, *"Practice is most effective with teachers operating with a growth mindset. Teachers that see themselves as learners are more apt to see practice as the opportunity to learn."* Teachers who viewed themselves as learners were more receptive to the coaching approach.

Chapter 6: Discussion of Results

Improvement science research can unearth evidence that challenges notions, assumptions, and practices associated with designed interventions or strategies (Lewis, 2015). The goal of this research was to test a coaching approach that focused on enhancing the professional competence of beginning teachers. The directive, technical coaching approach was meant to support the psychological need for competence by building technical skills that allowed teachers to see immediate wins in the classroom. The totality of the evidence has utility for improving instructional coaching in general and practices specifically targeted to the competence of beginning teachers. Specifically, this discussion addresses the important functions learned about the use of a directive coaching approach with beginning teachers and how these lessons contribute to an adjusted Competence-Supportive Coaching Model for future testing.

Instructional coaching involves complex relationships between teachers and coaches, teachers and classrooms of students, and teachers and instructional tasks (Knight, 2009; Aguilar, 2013). The ways in which the coach choose to enter this complex reality is dependent upon the needs of the teacher and, more importantly, the students. Teachers need to feel a level of competence to be successful in the classroom. The processes and actions that coaches use to build competence is based upon these major factors: 1) the developmental level of the teacher, 2) the balance between technical and adaptive change, and 3) the relationship dynamics of the coach and teacher.

Developmental Level

The term developmental level has been coined by researchers when examining an appropriate leadership approach based upon the "readiness" of an employee (Hersey, et al., 1996). The adaptations made in the initial field test was based upon the developmental level, or "readiness" of the teacher (Hersey, et al., 1996).

This research examined whether a more directive coaching approach could improve teacher competence at a higher level. The Competence-Supportive Coaching Model relied on the coach to do a lot of the work for and with the teacher. Coach and teacher identified a need based upon classroom evidence, the coach modeled the instructional strategy, and teacher practiced the instructional strategy in the coaching session. In contrast, a more supportive, or cognitive, approach to coaching involves using classroom-based evidence as the basis for feedback and reflective questioning. In this approach, the coach asked the teacher questions about how they could improve the future based upon student and classroom evidence and provided additional feedback in the coaching session. Teacher implemented the feedback in the classroom. These two approaches were utilized throughout the first empirical test as described by both coaches and teachers. However, the Competence-Supportive Coaching Model was much more directive because of the emphasis on teacher practice.

The findings of the initial empirical test reveal the following about developmental level:

- The Competence-Supportive Coaching model was most effective with teachers who were identified as high will and low skill.

- Individuals who preferred a hands-off approach found the Competence-Supportive Coaching Model ineffective.
- The teacher must be willing to accept feedback in order for the Competence-Supportive Coaching Model to be effective.

All three findings listed above are supported by similar evidence. Recall from the qualitative data in question III, that willingness to accept feedback was important for efficacy. Coaches described the Competence-Supportive Coaching Model as effective with teachers who were open to new ideas and instructional practices. Teachers who reported a higher level of skill and were not as open to feedback expressed more dissatisfaction with the coaching approach. These teachers also preferred a hands-off approach to coaching. Teachers who represented lower will were described by coaches as tired and cranky, which led to ineffective coaching practices.

Quantitative evidence about the interaction effects between liking coaching and efficacy indicated that teachers must be willing to work with their coach in order to see a higher result in efficacy. Teachers who received the Competence-Supportive Coaching Model and attributed their level of confidence to their coach had a greater sense of efficacy overall, except for content planning which saw no difference. However, teachers who expressed liking their coach but had uneven exposure to the Competence-Supportive Coaching Model had an overall lower sense of efficacy, indicating that stronger relationships between the coach and teacher are only effective if the coach is willing to challenge the teacher.

The evidence leads to an important question: Why was the practice-based/directive approach more useful for beginning teachers who had high will and low skill? A plausible explanation comes from self-determination theory. Recall that self-determination theory assumes that all individuals are driven to excel and that potential is maximized when the environment is supportive (Deci & Ryan, 2002). As with all individuals, beginning professionals can grow in their craft when competence, relatedness, and autonomy are supported (Deci & Ryan, 2002). High will/low skill teachers are disposed to lower competence than those with higher skill. Thus, coaches provided concrete examples of instructional approaches to use in the classroom with more directive coaching.

This phenomenon can be explained by considering the need for autonomy versus competence. This research asserts that when beginning a new job, the need for competence outweighs the need to autonomy. In large part, this assertion can be explained by examining those teachers who have previous experience. Although the sample size was small (N=8), overall the experienced teachers preferred a more supportive approach to coaching, or an approach that supported autonomy over competence. In contrast, beginning teachers (N=79) experienced an overall increase in efficacy but especially when they were consistently exposed to the Competence-Supportive Coaching Model, a highly directive approach (N=32).

Another key finding is that individuals who preferred a hands-off approach found the Competence-Supportive Coaching Model ineffective. Again, self-determination theory can offer an explanation for this finding. Teachers who did not have an aligned learning style to the Competence-Supportive Coaching Model did not have a greater

sense of efficacy. These teachers preferred to learn by reading, seeing it done, or hearing something rather than practicing or doing. One could argue that these individuals had a personal orientation for autonomy. The Competence-Supportive Coaching Model and the coaching approach did little to support autonomy, which is why these individuals found the approach ineffective.

The last key finding related to developmental level is that the teacher must be willing to accept feedback in order for the Competence-Supportive Coaching Model to be effective. Again, the teacher must have higher will. The level of experience of the teacher was also related with whether they were willing to accept feedback. The practice and feedback practice seemed to be most effective for those who lacked experience. This phenomenon has been studied in the past by looking at microteaching for pre-service teacher as opposed to in-service teachers. Pre-service settings often involve formative feedback structures, similar to the coaching approach done in the empirical test, that lead teachers to self-improvement and cycles of reflection (Brookfield, 1995; Lyons, 2006). In this initial empirical test of the Competence-Supportive Coaching Model, practice is conducted with both beginning and experienced teachers and often the coaching approach did not change. More research must be done to determine a Competence-Supportive Coaching Model for experienced teachers and why these differences exist in various social contexts, given the sample size of experienced teachers was so small for this research study.

Technical vs. Adaptive Skill Development

Another important point of analysis involves looking closely at the four types of efficacy and the examination of adaptive development, or "mindset work" as coaches described. Change theorists Heifetz, Grashow, and Linsky (2009) describe two types of changes: technical and adaptive. They describe a technical change as one that can be solved with expert knowledge. Technical changes are concrete skills and instructional practices that were practiced in the instructional coaching sessions. In contrast, adaptive change requires new learning and may require many individuals to solve identified problems. Adaptive changes involve developing key mindsets in teachers to help them to be effective with the students.

The Competence-Supportive Coaching Model emphasized technical skill development. Teachers were asked to practice and execute concrete instructional practices in coaching sessions. The assumption of this research suggested that the Competence-Supportive Coaching Model would develop key mindsets in teachers by developing competence. However, the results indicate some different conclusions:

- Execution skills practiced in coaching sessions had the greatest increase in teacher competence when the Competence-Supportive Coaching Model was used consistently.
- The Competence-Supportive Coaching Model was not effective at building or shaping teacher mindsets.

The first key finding is that execution skills practiced in coaching sessions had the greatest increase in teacher competence when the Competence-Supportive Coaching

Model was used consistently. In research question I, qualitative evidence was presented about how coaches emphasized various portions of the coaching model depending on where the teachers were in their development. In the early parts of the training, teachers needed more modeling of specific skills and pushed them to practice and reflect when they better understood these instructional practices. In addition, coaches described the importance of focusing on specific skills using the Competence-Supportive Coaching Model. Recall in research question II about the main effects of the Competence-Supportive Coaching Model, efficacy in classroom management had the greatest change when the teacher had specific exposure to the coaching model. Classroom management requires a lot of technical skills such as giving clear directions, narrating behavior, and giving fair consequences. In addition, in research question III, finding three, all areas of efficacy showed a greater result if the teacher had an aligned, active learning style, indicating that active or technical skills align directly to the coaching approach. These results indicate that the Competence-Supportive Coaching Model, although effective in all areas, seem to have a greater effect on skills that require the teacher to execute, or very technical skills, especially if the teacher has an aligned learning style.

This phenomenon can be explained by examining the connection between the practice and feedback in the coaching session and previous research. As described above, studies have linked microteaching to self-improvement (Benton-Kupper, 2001; Jerich, 1989; Wilkinson, 1996). Although several teachers reported that the experience of practice in coaching sessions felt inauthentic because there were no student participants involved, part of the goal of the coaching model sought to reduce the complexities of a traditional classroom setting, mirroring some of the early iterations of microteaching.

"The process provided, teachers with a practice setting for instruction in which the normal complexities of the classroom [were] reduced and in which the teacher received a great deal of feedback" Allen and Ryan (1969) described about the significance of microteaching (p. 2). By allowing teachers to practice in front of a coach, teachers were able to self-reflect and see rapid improvements.

One of the major determining factors in the effectiveness of the technical skill development was the type and quality of the feedback provided by the coach. The coaching model and the original training did not emphasize the various types of feedback that could be provided to the teacher. The specificity of the feedback can determine whether teachers felt they had the skills to demonstrate a specific instructional practice. Feedback must be both constructive and supportive (Benton-Kupper, 2001). More substantive feedback includes content planning and delivery and instructional practices (Gess-Newsome & Lederman, 1993). Studies on microteaching has indicated that feedback is often centered on minor actions such as teacher presence and language, which may be why the data indicates a larger increase in efficacy centered on classroom management (Amobi, 2005; Brent & Thomson, 1996; Wilkinson, 1996). Surface-level feedback is another reason for some of the teacher comments about it feeling inauthentic and not as helpful to improving performance overall.

The second key finding related to technical and adaptive change is the development or lack of development of key mindsets. As described in research question I, coaches expressed concern that the coaching model was not effective at building mindsets but was effective at building specific sets of skills. Coaches made several adaptations to the Competence-Supportive Coaching Model that represented the

processes and outcomes of the coaching approach, including the use of reflective questioning to build mindsets. According to the qualitative evidence described in research question III, the Competence-Supportive Coaching Model did not support the development of a growth mindset if the teacher had a fixed mindset about their students and themselves. Although some coaches effectively built teacher mindsets through their adaptations of the model, mindset building was not specifically addressed with the coaching model.

One explanation for this is linked to sense-making. Coaches and other instructional leaders often have the onus of sense-making for their teachers. The coaching model mirrored this phenomenon despite the intention to shift that responsibility to the teachers by facilitating inquiry in practice and feedback. Weick (1995) described the process of sense-making in organization as the ongoing process of "action, selection and interpretations" (Weick, 1995, as cited in Dougherty & Drumheller, 2006, p. 217). Coaches describe teacher strengths and weaknesses but did not allow for teachers to truly make sense of this to affect future sense-making (Weick, 1995). The process of sense-making leads to self-regulation and thus, self-efficacy, directly linking the acts of practice and feedback to efficacy because it allowed for teachers to have a "workable level of understanding that guides action" (Leedom, 2001, p. 10).

Identifying the connection between teacher and student actions is the basis for teacher reflective practices and, thus, self-efficacy. Self-reflection is important to continued improvement in a job (Grant, Franklin, & Langford, 2002; Ingham & Greer, 1992). Studies have linked self-reflection to improved performance, job satisfaction, and a "clarity of understanding of one's thoughts, feelings, and behaviors" (Grant et al., 2002,

p. 821). "Reflection is an important human activity in which people recapture their experience, think about it, mull it over, and evaluate it" Boud, Keogh, and Walker (1985) state (p. 19). Although the coaching model was effective in building teacher competence, coaches and teachers described something that was missing. The emphasis on practice and feedback did not allow for teachers to truly reflect on the performance in the classroom.

Teacher-Coach Relationship Dynamics

The final point of analysis is related to the teacher and coach relationship dynamics. The Competence-Supportive Coaching Model required a lot of trust between the teacher and the coach. Both individuals were required to be vulnerable because coaches modeled instructional strategies and teachers practiced these same strategies to receive feedback. Although the framework enabled coaches to incorporate key components of a coaching session such as relationship building, there were issues in execution. Coaches and teachers reported feeling rushed and not having the time to build relationships and execute the Competence-Supportive Coaching Model.

Regarding relationship dynamics, the following key findings are important to analyze:

- If the teacher and coach had a trusting relationship, the teacher was more willing to accept feedback and practice.
- Relationship dynamics also hindered competence because coaches did not always hold teachers to a high standard or push them to practice to spare the relationship.

The first key finding when analyzing teacher-coach relationship dynamics is that a trusting relationship had to exist so teachers were willing to accept feedback and practice. Recall in question III, teachers who liked their coach and received consistent exposure to the Competence-Supportive Coaching Model had the highest overall sense of efficacy in all areas, indicating the that coaching approach is most effective when the teacher has a strong relationship with their coach. Qualitative evidence also supported this claim. Coaches described the importance of having a trusting relationship with a teacher so they felt comfortable challenging them to practice in coaching sessions. Similarly, teachers also described positive experiences with how the coaches adjusted based upon the needs of the teacher.

According to self-determination theory, environments must support competence, autonomy, and relatedness (Deci & Ryan, 2002). If a teacher does not have trust and a relationship with his or her coach, it is difficult to see a change in teacher competence (Deci & Ryan, 2002). Teachers who trust their direct supervisor will be more likely to implement the feedback (Knight, 2009). Although trust is a subjective condition, trust directly influences an organization's effectiveness (Forsyth, 2008). Coaches can work to develop trust similar to how principals have developed trust with teachers. Researchers have found a set of enabling structures such as collaboration, transparent communication, and supportive leadership (Adams & Forsyth, 2009). Coaches must be perceived as benevolent, reliable, competence, honest and open (Forsyth et al., 2011) by showing personal regard, competence, respect, and integrity (Bryk & Schneider, 2002). Although this study is not directly related to trust, the relationship between the coach and the

teacher directly affected the results. In order for the Competence-Supportive Coaching Model, or any coaching model, to be effective, the teacher must trust his or her coach.

On the other hand, relationships dynamics may have hindered competence. Evidence suggests that the use of the Competence-Supportive Coaching Model directly affected teacher competence in all areas. However, not all coaches consistently used the Competence-Support Coaching Model. The results suggest a number of reasons why coaches made the choice to use various coaching approaches such as the timing of the coaching in the training experience, the teacher's mental state, and many other factors. One additional factor is that the coach did not want to hurt the relationship with the teacher to push them to practice. This data point was revealed in analyzing the information about the teacher liking the coaching and resulting sense of efficacy. Teachers reported whether or not they liked coaching. Overall, teachers who liked coaching and received the Competence-Supportive Coaching Model had a greater sense of efficacy. However, if the teacher liked the coaching, the resulting sense of efficacy was even lower than if they did not like coaching. Thus, teachers liked the coaching they received but were not pushed to practice. The relationship was strong but the resulting sense of efficacy was lower.

Again, this phenomenon can be explained through self-determination theory. As one of the three psychology needs outlined in the basic psychological needs, relatedness is described as being cared for by others and having a sense of belonging (Deci, & Ryan, 2002). Coaches felt it was critical to ensure that teachers felt cared for throughout the challenging training experience. Teachers reported a large amount of stress and some struggled with the workload associated with the training. Thus, coaches made choices to

ensure that the teachers felt secure. Deci and Ryan (2002) describe that relatedness is "not concerned with the attainment of a certain outcome or formal status, but instead concerns the psychological sense of being with others in secure or unity" (p. 7). Coaches had specific outcomes that they were attempting to make with teachers, which resulted in coaches choosing relatedness over competence.

Revisions to the Competence-Supportive Coaching Model

Evidence from the initial test of the Competence-Supportive Coaching Model points to model revisions that can enhance the utility of the approach. The initial design included components that emphasized modeling and teacher practice to build skill in a variety of areas in figure 5. Instructional modeling and instructional feedback were not always effective for all beginning teachers. Strongest post-intervention efficacy occurred for teachers consistently exposed to the Competence-Supportive Coaching Model and were able to practice specific, concrete skills, particularly in the dimension of classroom management, which showed the greatest growth throughout the intervention.

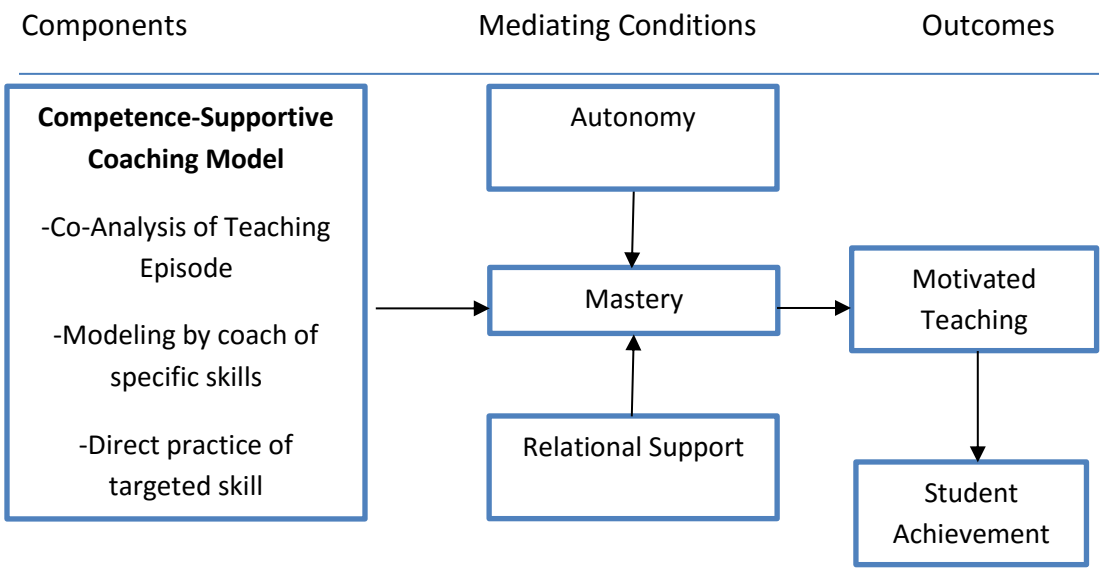

Figure 5. The Tested Competence-Supportive Coaching Model

The proposed changes to the coaching model is focused on the pre, during, and post-classroom teaching and allows for more opportunities for authentic practice and feedback, and additional opportunities to build reflective practices. The modified approach would also allow for more opportunities to build mindsets that support student learning, or adaptive changes, rather than focusing heavily on technical skill development. The adjusted Competence-Supportive Coaching Model is outlined in figure 6 where the instructional modeling and instructional feedback are unpacked to identify new features that can satisfy new teacher competence. Given the mixed and unexpected results, it is necessary to think about revisions to the model that can improve the teacher experience.

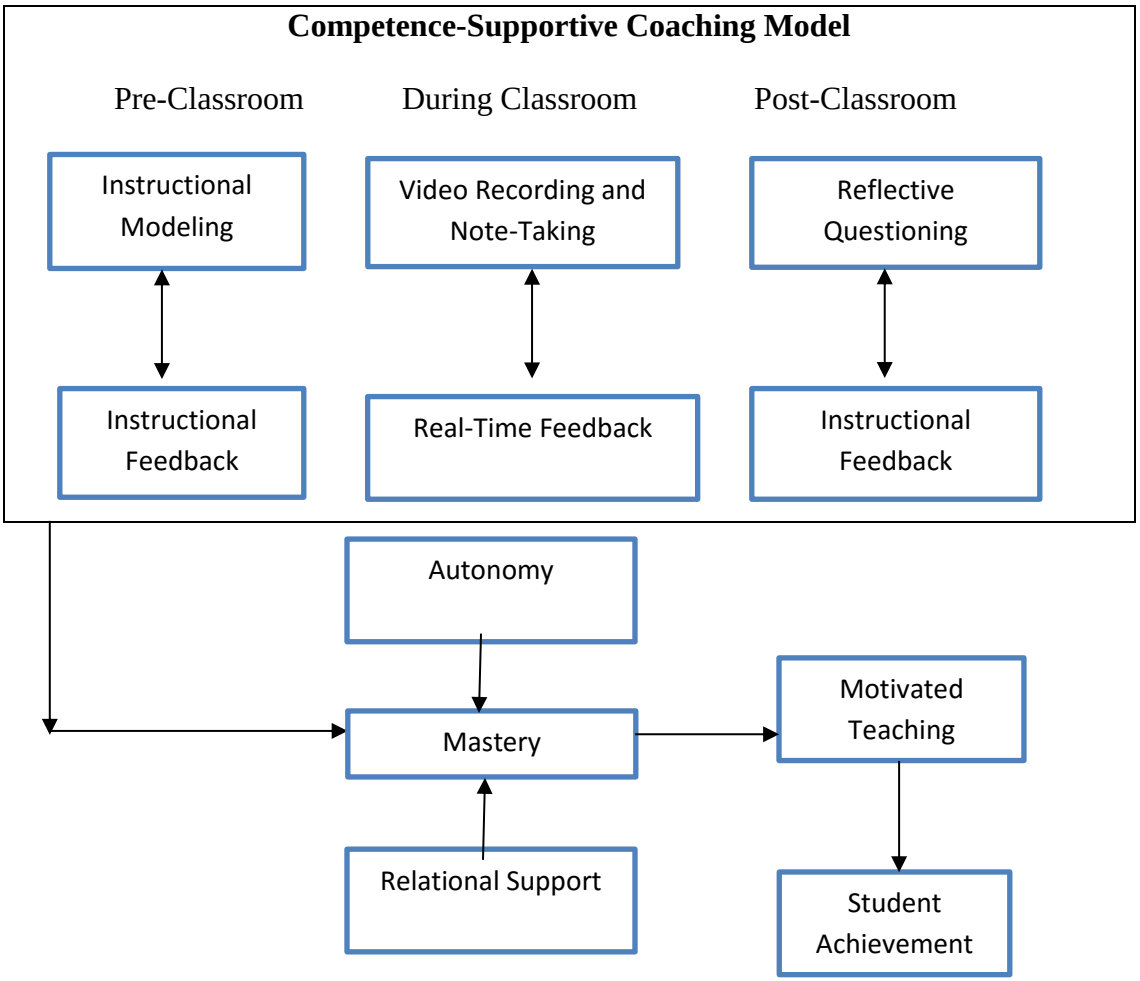

Figure 6: Adjusted Competence-Supportive Coaching Model

As with the original model, the coach practices some direct modeling of an instructional strategy with the lesson that the teacher is about to implement. Then, the teacher would practice and the coach with provide immediate feedback. Again, the goal is to give teachers the muscle memory required to execute the lesson and minimize the complexities of the classroom.

After the initial practice, the teacher implements the instructional strategy and lesson in the classroom. The role of the coach is to observe how the teacher implements

the instructional strategy, video record the lesson, and provide immediate real-time feedback so the teacher can make immediate adjustments. Teachers should see the immediate effect of their actions on students. This immediate feedback provides the coach with evidence for reflective questioning after the classroom experience.

The post-classroom experience is an important part of the revised coaching model. Similar to the initial Competence-Supportive Coaching model, the coach and the teacher review the classroom evidence. However, the critical change is that this review of evidence is used as an opportunity to ask reflective questions to allow teachers to reason through the choices that they made in the classroom. In addition, the coach and the teacher decide on a focus area and once again, practice the implementation of that focus area. The emphasis is on building confidence through practice outside of the complexities of the classroom. However, since the coach and the teacher have the shared experience of the classroom observation, the coach can contextualize the practice experience, making it feel more authentic to the teacher.

However, this coaching model requires a lot of time on the part of the teacher and the coach. Thus, adaptations can be made to allow for more teachers to be served through instructional coaching. For example, the pre-classroom experience can be implemented in a group setting. The coach can model an instructional strategy for a group of teachers and they can collectively practice and give feedback to one another. Execution clinics or rehearsal protocols are structures that can be used with groups of teachers to build teacher competence.

There are several key additions to the revised Competence-Supportive Coaching Model. These include the addition of real-time feedback, video recording, and reflective questioning. This section will explain the reasons for these additions to the coaching model using additional literature and evidence.

Real-Time Feedback

Real-time feedback was outlined as an adaptation that some coaches used during the initial empirical test. Teachers and coaches reflected on the effectiveness of this practice on the teachers' competence. The data shows that the more directive approach to coaching was effective as building competence, especially in technical areas. Thus, the addition of real-time feedback would allow teachers to build concrete, technical skills in an authentic way and maintain a directive approach to build competence.

Recent innovations in instructional coaching involves the use of technology to give real-time feedback to teachers. The "real-time coaching" approach involves a set of handheld transceivers, or walkie-talkies. An instructional coach would use the technology to provide immediate feedback to help the teacher adjust his or her approach to the classroom. This real-time coaching approach is most often used to support teachers in developing classroom management skills (e.g., Rock, Gregg, Thead, Acker, Gable, & Zigmond, 2009; Scheeler & Lee, 2002). "Real-time coaching follows the behavioral approach to coaching, which emphasizes promoting learning in the midst of real-world activities" Peterson (2006) states (p. 51). According to a study conducted with early childhood educators, real-time coaching improved a teacher's implementation of at least one communication strategy within the classroom with a large to moderate effect size

(Ottley, & Hanline, 2014). Adding real-time feedback to the coaching model would allow for teachers to integrate specific practices for the long-term. The other goal of adding the real-time feedback into the coaching model is to bring the authenticity to the practice that teachers reported as an area of concern with coaching.

Another reason for the addition of real-time feedback to build competence is related to research on competence. The coaching model encouraged coaches to use classroom-based evidence to prioritize teaching methodologies to then practice in a session. In these practices, teachers were asked to project forward to future lessons to practice the skills identified. This forward-thinking method may be counter to building teacher competence. Real-time coaching allows for the teacher to build task-referential competence (Elliot, et al., 2002; Deci & Ryan, 2002). The in-the-moment feedback allows teachers to anchor the task and instructional practice in an authentic way.

Video Recording

Another addition to the Competence-Supportive Coaching Model is the use of video recording. There are several pieces of evidence to suggest that video recording is an approach that would add to the Competence-Supportive Coaching Model including the willingness to accept feedback, teacher learning style, and the ability to build more adaptive skills.

First, the evidence suggests that teachers must be willing to accept feedback and identify classroom-based problems in order for the Competence-Supportive Coaching Model to be effective. The video can be used as additional evidence to help the teacher and coach analyze the same pieces of information. This process would take some of the

subjectivity out of the conversation and allow for teachers to correctly identify the problems that the coach may observe. Gross-Davis (1993) describes, "Analyzing a recording of the dynamics of your classroom, you can check the accuracy of your perceptions of how well you teach, identify those techniques that work and those that need revamping" (p. 34).

There is a research base for the use of video recording and video playback as a professional development tool. Tripp and Rick (2012) reviewed sixty-three studies to explore the effect of video playback on teacher's performance and reflection. The type of reflection task such as checklists, conferences, written reflections, and interviews allowed for teachers to reflect upon their teaching. An important conclusion from the Tripp and Rick (2012) reviews: teachers tended to prefer reflecting with other people rather than independently, which supports the use of video playback as an instructional coaching task. In fact, pre-service teachers valued the viewpoints of others over their own ideas (Rich & Hannafin, 2008). By examining video evidence, teachers would be more willing to accept feedback.

In addition, some teachers reported having a different learning style such as seeing it done, hearing about it, or reading about it. In fact, reported learning style directly affected the resulting sense of competence. By integrating video recording, the coach can appeal to other learning styles, particularly those who learn best by seeing it done. Video observation allows for teachers to become sensitized to behaviors associated with effective practice. A video-based analysis of practice can allow for teachers to "analyze footage of their teaching in structured and prompted ways" (Donnelly & Fitzmaurice, 2011, p. 335).

Also, the addition of video protocols can support the adaptive skill development that the coaches identified as a need. The evidence suggests that the Competence-Supportive Coaching Model was ineffective at building important key mindsets that support novice teachers. One of the major outcomes of instructional coaching is to develop a set of reflective practices that allows teachers to connect their actions to the actions and outcomes of students (Knight, 2009). Yerrick, Ross, and Molebash (2005) found that teachers focused on student thinking rather than themselves when using video. Another study that used pre and post-test measures found a major shift in focus after using video reflection. Teachers started to think more about the students rather than themselves (Martin-Reynolds, 1980). Video protocols are only effective if the coach goes through the recording in "structured and prompted ways" (Donnelly & Fitzmaurice, 2011). Probing can include observations, inquiring, understanding motivations, and connections between teacher actions and student actions, supporting teacher mindset development.

The addition of video recording will provide additional opportunities to build teacher competence. The video allows for teachers to build both task-referential and past-referential competence (Elliot, et al., 2002; Deci & Ryan, 2002). By viewing themselves in video, teachers can identify the specific instructional tasks to focus on, with the help of the instructional coach. In addition, the teachers will have ongoing video evidence of the improvement in the classroom, building past-referential competence over time if used strategically.

Reflective Questioning

The revision to the coaching model must include opportunities for reflective questioning to mirror the traditional clinical supervision model. There are several reasons for this addition, including the importance of adaptive skills and key mindsets, particularly helping teachers to build a growth mindset, appealing to different learning styles, and supporting teacher-coach relationship dynamics.

As the results indicate, teachers must have a growth mindset about themselves and their students for the Competence-Supportive Coaching Model to be effective. Reflective practice is a term that is used to describe the process of thinking through challenges in the classroom and determine how to adjust for future lessons. The concepts associated with reflection has a long history in education literature, dating back to the early 1930s (Dewey, 1933). The reason reflection is emphasized in the revised coaching model is because of the necessity of reflection in the act of teaching. Dewey (1933) describes the 5 phases of reflective thinking: suggestions, problems, hypothesis, reasoning, and testing. These phases closely mirror the revision to the coaching model because the coach and teacher would implement the instructional practices in the classroom. The act of reflecting on the practices would allow for teachers to "resolve the doubt, settle, and dispose of perplexity" and thus, increase teacher competence (Dewey, 1933, p. 12). This reflective part of the coaching process could lead to more sustainable and lasting adaptive changes within a teacher because reflection allows for teachers to understand the reasons for classroom-level changes, thus reinforcing a growth mindset.

In addition, the use of reflective questioning would help teachers to continue to build self-worth and thus, competence. With the addition of reflective questioning, over time teachers would become more autonomous in self-improvement because they are able to identify classroom-based issues, take appropriate action, and determine the result on students. "As individuals develop in the direction of greater autonomy, their sense of self-worth is based in organismic functioning, that is, on simply "being" what they are by nature as they act choicefully in integrated ways and fulfill potentialities," Hodgins, and Knee (2002) describe (p. 87). Thus, teachers would be able to integrate teaching practices as regular choices and feel as though they are able to be effective on a daily basis. Therefore, novice teachers would feel confident that they can continue in the teaching profession independent of an instructional coach.

The addition of the reflective questioning can also support different learning styles. Individuals who had an active learning style had a greater sense of efficacy in all areas if they consistently received the Competence-Supportive Coaching Model. However, not all teachers have a learning style that is aligned to this active approach. Thus, adding a reflective component will support the needs of individuals who learn by hearing about it.

Finally, reflective questioning is an important addition to the coaching approach because of the importance of relationships between the teacher and coach. As the results indicate, most coaches were able to push teachers more effectively in the teacher and coach had a trusting relationship. In addition, time constraints did not allow for teachers and coaches to spend time developing relationships. Asking questions about the experience in the classroom, the teacher's reactions to the experiences, and what lessons

they have learned from the experiences will strengthen trust between the coach and teacher, allowing the coach to be able to challenge them further (Knight, 2009).

Conclusions

Improvement science studies are meant to be an ongoing process of testing, reflection, revision, and testing (Bryk, et al., 2015). As with any study, future research is proposed to continue to add to the understanding of phenomenon. Instructional coaches are here to stay. Thus, more research must be done to understand the actions and processes that instructional coaches use to build teacher capacity and mindset. Understanding variation in the coach-teacher interactions requires more empirical evidence beyond a single field test of a coaching approach.

This study provides a strong basis for future research on coaching in general and specifically on the Competence-Supportive Model because it provides descriptive evidence of individual differences among coaches and teachers. First, there are several key points that emerged for coaching, in general. Coaches must have situational awareness and understand a teacher's developmental level to determine an approach coaching approach. They must determine the teacher's skill and will within the instructional task and adapt their approach based upon these factors. This approach may involve challenging mindsets and focusing on adaptive skills rather than only technical skills. In addition, teachers and coaches must have a strong relationship but coaches must be willing to use that relationship to push and challenge teachers. Over emphasizing relationships can hinder teachers from developing key skills and mindsets.

Given the importance of the instructional coach role and the thousands of dollars spent each year on instructional coaches, it is critical to consider the level and quality of the training and support that instructional coaches receive. Even in such a small context and having two direct supervisors of the coaches, it was difficult to maintain the high standards and consistency across the summer school system. In fact, many coaches are not provided with any training in their roles (Murphy, 2005; Neufeld & Roper, 2003). Although there are emerging examples of competency-based (Casey, 2006; Knight, 2009a) or standard-based (Hamilton, Stecher, & Yuan, 2012) evaluations for instructional coaches, very few support structures exist for instructional coaches in practice. The approach to coach support and development is based in the old traditions of "supervision" based in evaluation rather than collaboration (Allen & Ryan, 1969; Hamilton, et al., 2012). Leaders benefit from professional development structures as teachers do and must be developed with the research on adult learning in mind. Ongoing, targeted, and differentiated development for instructional coaches on how to meet the psychological needs of teachers is critical for the effectiveness of any coaching model (Knapp, Copeland, Honig, Plecki, & Portin, 2010).

This study also demonstrates the importance of developing a comprehensive coaching model that supports the psychological needs of beginning teachers. Although this study indicated the need for several adaptations to the Competence-Supportive Coaching Model, there are several implications for practice because of this initial test. For example, this study indicated the critical need to develop technical and adaptive skills. Coaches can build technical skills by providing specific instructional modeling and feedback. However, coaches must also be willing to ask tough questions that allow for

teachers to reflect on their mindsets and beliefs about teaching. Thus, while building technical skills, coaches can help build adaptive skills such as reflective practice and the mindsets to hold high expectations for and build relationships with students. Given the diversity of the students and teachers, this development of adaptive skills allows for sustainable, long-term change.

Thus, schools should be investing in early coaching and support for beginning teachers. However, as Allen and Ryan (1969) cite, "To train teachers initially—and then to maintain professional skill through a lifetime of service—is a tremendously complex task" (p. 3). Simply doing some initial coaching of beginning teachers will not solve all of the problems of teach retention and effectiveness. Sustainable coaching programs requires an enormous investment of talent. However, the practices outlined in the Competence-Supportive Coaching Model can be implemented by those already in staff positions in schools. The clinical supervision process, which the Competence-Supportive Coaching Model is based loosely off of, is a practice that many principals in formal leadership positions have been trained to execute (Panigrahi, 2013). Thus, principals can integrate modeling, practice, and feedback into their post-observation conversations with teachers to continue to build teacher competence.

Future research must be done to examine the use of the Competence-Supportive Coaching Model within various contexts and groups. For example, additional testing could involve examining pre-service experiences for individuals who have gone through traditional education training. Student teaching structures can leverage the Competence-Supportive Coaching Model. Advising teachers could use coaching approach to develop student teachers and build confidence before the teacher enters his or her own classroom.

Testing of this nature can examine whether the Competence-Supportive Coaching Model is sustainable over a longer coaching relationship and with a basis of teacher knowledge.

In addition, longitudinal studies examining coach and teacher relationships over the first year of teaching can examine how the coaching approach changes over a longer coaching relationship. This type of study can also establish a correlational link between coaching structures and teacher retention of beginning teachers. For example, do teachers who receive a competence-supportive coaching approach in their first year stay in the profession longer? Can a competence-supportive coaching approach improve teacher motivation? Understanding the long-term effect of a competence-supportive coaching approach can help schools and districts to determine whether this more directive coaching method is appropriate for the school's beginning teachers.

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Appendix A: Coaching Framework and Aligned Indicators

(Adapted from Rush, 2003; Rush & Shelden, 2006; Voss and Post, 1988))

Component	**Coaching Practices Rating Scale Indicator**
Coach and teacher analyze observation evidence (Rush, 2003)	Acknowledged the learner's existing knowledge and abilities as the foundation for improving knowledge and skills Provided feedback about the learner's knowledge and skills following the learner's reflection on his/her performance
Coach and teacher decide on a priority area (Rush & Shelden, 2006; Voss & Post, 1988)	Identified with the learner the targeted skills and a timeline for the coaching process Developed with the learner a plan for action/practice necessary to achieve targeted skill(s) following each coaching conversation
Coach models effective teaching practice (Rush, 2003)	Created opportunities for the learner to observe the coach and/or others model the target skill(s) or practice(s) **LEVEL 1: OBSERVATION**
Coach engages teacher in practice and feedback (Rush, 2003)	Observed the learner's use of the targeted skill(s) or practice(s) **LEVEL 2: FEEDBACK** Promoted the use of multiple opportunities for the learner to practice implementation of the targeted skill(s) and practice(s) (e.g. role plays, in context) **LEVEL 3: BOTH**
Coach and teacher identify future needs	Provided and/or promoted access to new information and resources after the learner reflects on his/her performance

Appendix B: Teacher Measures

Pre-Institute Measure

(Adapted from: Tschannen-Moran, & Woolfolk Hoy, 2001)

1	2	3	4	5	6
Strong Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

1. I can get through to the most difficult students.
2. I can help my students think critically in my content area.
3. I can control disruptive behavior in the classroom.
4. I can motivate students who show low interest in school work.
5. I can make expectations clear about student behavior.
6. I can get students to believe they can do well in school work.
7. I can respond to difficult questions from students.
8. I can establish routines to keep activities running smoothly.
9. I can help students value learning.
10. I can gauge student comprehension of what I've taught.
11. I can craft good questions for students.
12. I can foster student creativity in my content area.
13. I can get children to follow classroom rules.
14. I can improve the understanding of a student who is failing.
15. I can calm a student who is disruptive or noisy.
16. I can establish a classroom management system with each group of students.
17. I can adjust my lessons to the proper level for individual students.
18. I can use a variety of assessment strategies.
19. I can keep a few problem students from ruining an entire lesson.
20. I can provide an alternative explanation or example when students are confused.
21. I can respond to defiant students.
22. I can you assist families in helping their children do well in school.
23. I can implement alternative strategies in my classroom.
24. I can provide appropriate challenges for very capable students.
25. I feel confident in my ability to plan for my content.

Efficacy in Student Engagement	1, 4, 6, 9, 14, 22
Efficacy in Instructional Strategies (includes assessment)	7, 10, 11, 17, 18, 20, 23, 24
Efficacy in Classroom Management	3, 5, 8, 13, 15, 16, 19, 21
Efficacy in Content Planning	2, 12, 25

Have you taught before?

1) Yes, in a low-income school
2) Yes, in a high or middle income school
3) Yes, for my student teaching
4) No
5) Other: ___

What would you say is your learning style?

1) I learn by doing and practicing (3)
2) I learn by seeing it done (0)
3) I learn by reading about it (1)
4) I learn by hearing about it (2)

Post-Institute Survey Additional Factors

What level do you teach?

a. Early childhood (0)
b. Elementary (1)
c. Middle school (2)
d. High school (3)

What subject matter do you teach?

a) All (elementary/self-contained)
b) Math
c) Science
d) Language arts

What has helped you to feel more effective in the classroom? (select one)

1) My sessions (0)
2) My coach: specific feedback (1)
3) My coach: doing practice (2)
4) My time to reflect (3)
5) Other: ____ (4)

What type of practice did you engage in most often during your coaching sessions with your TLDC (Coach)? (adapted from Ross & Shelden, 2006)

Observation: I observed the coach demonstrate a skill for me (1)

Feedback of Skill: I practiced the skill and received feedback from the coach (2)

Both: I observed the coach demonstrate a skill for me, practiced, and received feedback (3)

None: I did not engage in observation or practice during the coaching sessions. (0)

Appendix C: Four Instructional Components (Knight, 2009)

Instructional Component	**Details**
Student engagement	Teachers must work to inspire students to engage in content in a meaningful way (Knight, 2009). Building student interest and investment in the content is a major part of a teacher's responsibility.
Instructional strategies	There are a number of instructional strategies that help students learn and gauge student learning (Knight, 2009). Some of these include modeling thinking, asking high-order questions, and providing engaging, meaningful activities (Knight, 2009). In addition, the teacher must "know whether their students are learning the content" (Knight, 2009, p. 23). This can also include how students are monitoring their own progress towards their goals and how teachers provide constructive feedback (Knight, 2009).
Classroom management	Teachers must "articulate and teach expectations, effectively correct behavior, increase the effectiveness of praise statement, and increase students' opportunities to respond" (Knight, 2009, p. 23; Sprick, Knight, Reinke, and McKale, 2007).
Content planning	Teacher must develop a "deep understanding of the content they are teaching," including unpacking standards, planning units, planning lessons, and making prioritization decisions about the content (Knight, 2009, p. 23).

Appendix D: Coach Weekly Reflection (Weeks 3 through 6)

What level do you support?

a) Early childhood
b) Elementary
c) Middle school
d) High school

What subject do you support?

a) All (ECE, elementary, self-contained)
b) Math
c) Science
d) Language arts

How many coaching sessions did you have this week?

a) 0-5
b) 6-10
c) 11-15
d) 16 or more

How many teachers did you have coaching session with?

a) 0-2
b) 3-5
c) 6-8
d) More than 8

What type of practice did you engage in most often during your coaching sessions with your teachers? (adapted from Ross & Shelden, 2006)

a) Observation: The teacher observed me demonstrate a skill
b) Feedback of skills: The teacher practiced a skill and I provided feedback
c) Both: The teacher observed me demonstrate a skill, practice, and I provided feedback
d) None: The teacher did not engage in observation or practice/feedback during the coaching session.

If applicable, how effective do you think the level of practice was in improving the teachers' confidence?

What teachers do you think practice is most effective with? Why?

What other reflections do you have about the effectiveness of your coaching sessions this week?

Appendix E: Statistical Analysis of Liking Coaching and Efficacy

Dependent Variable: TEcmpost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	.131[a]	3	.044	.098	.961	.004	.293	.067
Intercept	1341.948	1	1341.948	2992.206	.000	.978	2992.206	1.000
CSCM	.050	1	.050	.112	.739	.002	.112	.063
LikedCoaching	.044	1	.044	.098	.755	.001	.098	.061
CSCM * LikedCoaching	.002	1	.002	.005	.941	.000	.005	.051
Error	30.048	67	.448					
Total	1639.250	71						
Corrected Total	30.180	70						

a. R Squared = .004 (Adjusted R Squared = -.040)

b. Computed using alpha = .05

Dependent Variable: TEispost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	.286[a]	3	.095	.257	.856	.011	.772	.097
Intercept	1377.688	1	1377.688	3721.560	.000	.982	3721.560	1.000
CSCM	.079	1	.079	.214	.645	.003	.214	.074
LikedCoaching	.038	1	.038	.102	.750	.002	.102	.061
CSCM * LikedCoaching	.087	1	.087	.234	.630	.003	.234	.076
Error	24.803	67	.370					
Total	1672.469	71						
Corrected Total	25.088	70						

a. R Squared = .011 (Adjusted R Squared = -.033)

b. Computed using alpha = .05

Dependent Variable: TEsepost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	.125[a]	3	.042	.118	.949	.005	.354	.070
Intercept	1344.071	1	1344.071	3818.099	.000	.983	3818.099	1.000
CSCM	.084	1	.084	.237	.628	.004	.237	.077
LikedCoaching	.002	1	.002	.004	.947	.000	.004	.050
CSCM * LikedCoaching	.009	1	.009	.025	.876	.000	.025	.053
Error	23.586	67	.352					
Total	1631.194	71						
Corrected Total	23.710	70						

a. R Squared = .005 (Adjusted R Squared = -.039)

b. Computed using alpha = .05

Dependent Variable: TEcppost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	.008[a]	3	.003	.006	.999	.000	.019	.051
Intercept	1379.118	1	1379.118	3203.577	.000	.980	3203.577	1.000
CSCM	.007	1	.007	.015	.902	.000	.015	.052
LikedCoaching	.000	1	.000	.000	.988	.000	.000	.050
CSCM * LikedCoaching	.000	1	.000	.000	.988	.000	.000	.050
Error	28.843	67	.430					
Total	1679.444	71						
Corrected Total	28.851	70						

a. R Squared = .000 (Adjusted R Squared = -.044)

b. Computed using alpha = .05

Appendix F: Statistical Analysis of Learning Style and Efficacy

Dependent Variable: TEcppost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2.640[a]	3	.880	2.250	.091	.092	6.749	.545
Intercept	1573.891	1	1573.891	4023.164	.000	.984	4023.164	1.000
CSCM	.038	1	.038	.098	.755	.001	.098	.061
Alignedwithlearningstyle	2.626	1	2.626	6.714	.012	.091	6.714	.724
CSCM * Alignedwithlearningstyle	.038	1	.038	.098	.755	.001	.098	.061
Error	26.211	67	.391					
Total	1679.444	71						
Corrected Total	28.851	70						

a. R Squared = .092 (Adjusted R Squared = .051)

b. Computed using alpha = .05

Dependent Variable: TEsepost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1.966[a]	3	.655	2.019	.120	.083	6.058	.497
Intercept	1539.388	1	1539.388	4743.235	.000	.986	4743.235	1.000
CSCM	.144	1	.144	.443	.508	.007	.443	.101
Alignedwithlearningstyle	1.746	1	1.746	5.379	.023	.074	5.379	.628
CSCM * Alignedwithlearningstyle	.181	1	.181	.557	.458	.008	.557	.114
Error	21.744	67	.325					
Total	1631.194	71						
Corrected Total	23.710	70						

a. R Squared = .083 (Adjusted R Squared = .042)

b. Computed using alpha = .05

Dependent Variable: TEispost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2.802[a]	3	.934	2.808	.046	.112	8.423	.651
Intercept	1570.632	1	1570.632	4721.750	.000	.986	4721.750	1.000
CSCM	.257	1	.257	.772	.383	.011	.772	.139
Alignedwithlearningstyle	2.605	1	2.605	7.831	.007	.105	7.831	.788
CSCM * Alignedwithlearningstyle	.022	1	.022	.066	.798	.001	.066	.057
Error	22.287	67	.333					
Total	1672.469	71						
Corrected Total	25.088	70						

a. R Squared = .112 (Adjusted R Squared = .072)

b. Computed using alpha = .05

Dependent Variable: TEcmpost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1.459[a]	3	.486	1.135	.341	.048	3.404	.293
Intercept	1543.531	1	1543.531	3600.825	.000	.982	3600.825	1.000
CSCM	.086	1	.086	.200	.656	.003	.200	.073
Alignedwithlearningstyle	1.206	1	1.206	2.814	.098	.040	2.814	.380
CSCM * Alignedwithlearningstyle	.249	1	.249	.582	.448	.009	.582	.117
Error	28.720	67	.429					
Total	1639.250	71						
Corrected Total	30.180	70						

a. R Squared = .048 (Adjusted R Squared = .006)

b. Computed using alpha = .05