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COGNITIVE COACHING<sup>SM</sup>: THE IMPACT ON TEACHER CANDIDATES'  
TEACHER EFFICACY

By

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B.S., University of Louisville, 2003  
M.A.T., University of Louisville, 2004

A Dissertation  
Submitted to the Faculty of the  
College of Education of the University of Louisville  
in Partial Fulfillment of the Requirements  
for the Degree of

Doctor of Philosophy

Department of Curriculum and Instruction  
University of Louisville  
Louisville, Kentucky

May 2014

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A Dissertation Approved on

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## DEDICATION

This dissertation is dedicated to my family

Jeremy, James, and Taylor Burnett and Earl III, Earl IV, and Ruth Wooten. Also, I

dedicated this dissertation to my second mother, Patricia Keiffner.

## ACKNOWLEDGEMENTS

I would like to thank my dissertation co-chairs, Drs. Maggie McGatha and Mary Hums, for their insight, support, and feedback throughout this research study. They both were tremendously helpful and supportive during this process. I would also like to thank the other members of my committee, Dr. Namok Choi, Dr. Shelley Thomas, Dr. Kristi King, and Dr. William Weinberg, my mentor and friend, for their contributions and support.

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## ABSTRACT

### COGNITIVE COACHING<sup>SM</sup>: THE IMPACT OF TEACHER CANDIDATES' TEACHER EFFICACY

Stefanie Wooten Burnett

May 9<sup>th</sup>, 2014

The purpose of this study was to examine the impact Cognitive Coaching<sup>SM</sup>, a mentoring tool, (a) has on physical education teacher candidates' teacher efficacy and (b) their perceptions of the impact Cognitive Coaching<sup>SM</sup> had on the lesson planning and lesson reflection abilities during a student teaching experience. Both quantitative and qualitative measures were employed to determine the impact of Cognitive Coaching<sup>SM</sup> physical education teacher candidate's teacher efficacy.

The design for this study was a quasi-experimental design with an untreated control group with pre-test and post-test samples (Shadish, Cook & Campbell, 2002). The quantitative data was collected through the *Ohio State Teacher Efficacy Scale (OSTES)* (Tschannen-Moran & Hoy, 2001) and the *Physical Education Teaching Efficacy Scale (PETES)* (Humphries, Hebert, Daigle, & Martin, 2012). The qualitative data, semi-structured interviews, the planning and reflecting conversations in Cognitive Coaching<sup>SM</sup>, and an intervention open-ended survey helped identify how the intervention impacted physical education teacher candidates' teacher efficacy and perceptions. Overall, the impact of the treatment, Cognitive Coaching<sup>SM</sup>, had a statistically significant impact of physical education teacher candidates' teacher efficacy measured by the *PETES* and



*OSTES* and the participants perceived Cognitive Coaching<sup>SM</sup> impacted their lesson planning, lesson reflection capabilities, and professional and personal lives. From these findings, a recommendation can be made to incorporate Cognitive Coaching<sup>SM</sup>, a mentoring tool, into physical education teacher education programs to foster growth in teacher efficacy among physical education teacher candidates.

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# CHAPTER 1

## INTRODUCTION

### **Overview**

This study examined the impact of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy and their perceptions of the impact Cognitive Coaching<sup>SM</sup> has on their lesson planning and lesson reflection capabilities. This introduction presents the problem statement, theoretical framework, purpose, research questions, and significance of the study. Lastly, the delimitations, assumptions, and definitions are provided.

### **Problem Statement**

According to Smith and Ingersoll (2004), 46% percent of all beginning teachers in public schools leave the profession within the first five years of their initial teaching experiences. Reasons for their departure include lack of support, conflict with colleagues, low salaries, and underdeveloped teaching skills in relation to lesson preparation (McCormack & Thomas, 2003a; Ingersoll, 2003). A decrease in one construct, teacher efficacy, has been linked to low job satisfaction and higher levels of stress (Betoret, 2006; Gibson & Dembo, 1984; Woolfolk & Hoy, 1990) among teachers. Teacher efficacy has been defined as the confidence teachers hold about their individual and collective capabilities to influence student learning (Klassen, Tze, Betts, & Gordon, 2011). A heightened sense of teacher efficacy has been shown to positively impact teacher persistence and enthusiasm, as well as student outcomes such as achievement, motivation



and self-efficacy (Hodson, Ashby, Malderez, & Tomlinson, 2009; McIntyre & Hagger, 1996; Tschannen-Moran & Hoy, 2001). Additionally, highly efficacious teachers have increased job satisfaction and commitment to the teaching profession (Caprara, Barbaranelli, Steca, & Maolone, 2006; Glickman & Tamashiro, 1982; Trentham, Silvern, & Brogdon, 1985). Further, highly efficacious teachers foster student intrinsic interests and guide them to academic self-directedness (Woolfolk & Hoy, 2001).

Teacher efficacy is formed early in a teacher's professional career, during student teaching and the first years of teaching (Mulholland & Wallace, 2001). Liston and colleagues (2006) found beginning teachers need strong teacher efficacy to be successful because of the unique struggles they face during their first year of teaching. Dedicated support for beginning teachers has proven to increase confidence and self-esteem, which are both linked to teacher efficacy (Carter & Francis, 2001; Franke & Dahlgren, 1996; Marable & Raimondi, 2007; McIntyre & Hagger, 1996; Su, 1992). This focus on increasing teacher efficacy during the early part of a teacher's professional career, including student teaching, is critically important because once efficacy beliefs are established it is difficult to alter them, whether high or low (Bandura, 1997; Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011).

Increasingly, mentoring is being used to support teacher candidates and beginning teachers during the early years of their professional careers (Ballinger & Bishop, 2011; Hobson et al., 2009). Mentoring for beginning teachers and teacher candidates has been cited as the most beneficial form of professional development and helped decrease feelings of isolation, increase confidence and self-esteem, and improve problem-solving skills (Carter & Francis, 2001; Franke & Dahlgren, 1996; Marable & Raimondi, 2007;

McIntyre & Hagger, 1996; Su, 1992). Also, mentoring provides emotional and psychological support, which boosts the confidence beginning teachers need to put difficult situations into perspective, improve classroom management, and increase job satisfaction (Bullough, 2005; Johnson, Berg, Donaldson, 2005; Lindgren, 2005; Marable & Raimondi, 2007).

One emerging mentoring tool, Cognitive Coaching<sup>SM</sup>, has shown the potential to increase teachers' cognition and feelings of efficacy related to teaching practices and professional development (Eger, 2006). Cognitive Coaching<sup>SM</sup> is a "nonjudgmental mediation of thinking" (Costa & Garmston, 2002, p. 10) that supports teachers in changing overt behaviors of instruction by focusing on invisible cognitive behaviors such as values, beliefs, perceptions, and reasoning processes (Costa & Garmston, 2002). The goal of Cognitive Coaching<sup>SM</sup> is to enhance an individual's capacity to develop self-directedness, self-monitoring, and self-modification abilities (Costa & Garmston, 2002). Cognitive Coaching<sup>SM</sup> aids in the development of teacher efficacy by increasing feelings of self-efficacy and empowerment, fostering a trusting and collaborative environment, and promoting reflective thinking (Maskey, 2009). Regarding beginning teachers, Cognitive Coaching<sup>SM</sup> has been shown to (a) increase teacher efficacy (b) encourage professional dialogue among teachers, (c) support innovations in teaching, and (d) increase job satisfaction (Brooks, 2000; Edwards & Newton, 1995; McLymont & da Costa, 1998; Ray, 1998; as cited in Maskey, 2009).

Establishing and maintaining efficacy beliefs are a concern for all teachers and mentoring is proven a tool to increase teacher efficacy. Specifically concerning the participants of this study, beginning physical education teachers face unique obstacles

early in their professional careers. Obstacles faced by beginning physical education teachers include (a) lack of respect and status for the content area, (b) lack of accountability for student learning, and (c) lack of resources (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; O'Sullivan, 1989; Placek, 1983; Sparkes, Templin, & Schempp, 1993; Smyth, 1992; Sparkes, Templin, & Schempp, 1990, 1993; Stroot, Faucette, & Schwager, 1993; Templin, 1998a, 1989; Zajorik, 1980). Martin, McCaughtry, Kulinna, and Cothran (2009) stated physical education teachers who have high teacher efficacy can overcome obstacles in the school setting. Unfortunately, past studies found physical education teachers' teacher efficacy has been weaker compared to other educators (Tschannen-Moran et. al, 1998; Webb & Ashton, 1987). As previously mentioned, mentoring is a tool to increase teacher efficacy (Brooks, 2000; Edwards & Newton, 1995; McLymont & da Costa, 1998; Ray, 1998; as cited in Maskey, 2009). However, few studies have addressed mentoring physical education teacher candidates (Martin et al., 2009; Tannehill & Coffin, 2000).

### **The Current Study**

Past research provided an understanding of the factors that caused beginning teachers to leave the profession. Some beginning teachers lack support and are not adequately prepared to teach effectively. From the literature, beginning teachers, as well as preservice teacher candidates, who are highly efficacious can overcome barriers that arise during their first years of teaching and mentoring is a proven tool to help them overcome those barriers. Cognitive Coaching<sup>SM</sup>, a mentoring tool, aids in the development of teacher efficacy by increasing feelings of self-efficacy through mediative questioning. Physical education teachers, in particular, seem to have low self-efficacy due

to feeling a lack of respect and being devalued by their school communities. Knowing the struggles physical education teachers face, it is important to know how mentoring, in the form of Cognitive Coaching<sup>SM</sup>, impacts physical education teacher candidates' teacher efficacy during the initial stages of their teacher development. The examination of the impact of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates can provide university teacher educators with valuable insights to better prepare preservice teacher candidates for potential barriers they may face during their first years of teaching. For physical education teacher candidates, meaningful and positive mentoring experiences that foster the development of teacher efficacy could impact their overall teaching effectiveness and retention.

### **Theoretical Framework**

The theoretical framework for this study is a combination of Bandura's (1986) social cognitive theory, in particular the construct of teacher efficacy (1997), and Costa and Garmston's (2002) Cognitive Coaching<sup>SM</sup> model.

According to Bandura (1986, 1997), four sources aid in the development of teacher efficacy: (a) physiological and emotional arousal, (b) verbal persuasion, (c) vicarious experiences, and (d) mastery experiences.

- Physiological and emotional arousal are feelings of excitement or disappointment derived from an experience or performance.
- Verbal persuasion includes verbal indicators or feedback from a supervisor or colleague to a teacher that outlines his/her performance after a completed task (Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011). The potency of verbal persuasion highly depends on the credibility

and expertise of the supervisor or colleague providing the feedback (Bandura, 1997).

- Vicarious experiences are experiences where modeling appropriate behaviors are used to increase a teacher's efficacy.
- Mastery experiences are any teaching accomplishments a teacher has with her students such as increased academic success as a result of the teacher's instruction (Tschannen-Moran & Johnson, 2011).

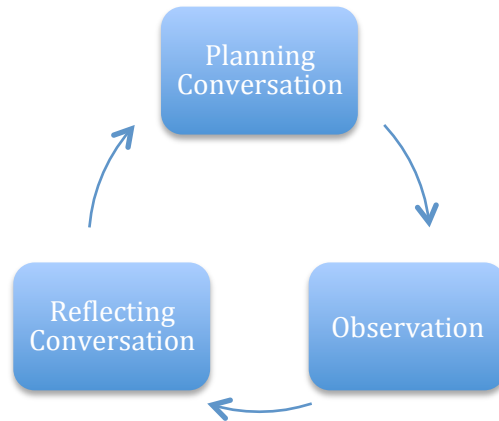
Costa and Garmston's (2002) Cognitive Coaching<sup>SM</sup> model was chosen as a corresponding framework because it has been shown to increase teacher efficacy. One tenet of Cognitive Coaching<sup>SM</sup> that is unique among coaching models is a focus on five internal resources that Costa and Garmston call States of Mind: consciousness, craftsmanship, efficacy, flexibility, and interdependence. A focus on these constructs during interactions with a mentee can support the mentee in becoming more self-directed. Cognitive Coaching<sup>SM</sup> includes a three-phase coaching cycle consisting of a (a) planning conversation, (b) observation, and (c) reflecting conversation. Figure 1 illustrates the three-phase Cognitive Coaching<sup>SM</sup> cycle.

The planning conversation supports the teacher candidate through questioning from a mentor to clarify goals, anticipate strategies for implementation, identify specific indicators for success, establish a personal learning focus, and reflect on the conversation. During the observation phase of the coaching cycle, the mentor collects evidence or data for the mentee to support his/her growth in learning to teach. Lastly, the reflecting conversation supports the teacher candidate through questioning from a mentor to

summarize impressions of the lesson, analyze causal factors, construct new learning, commit to application, and reflect on the coaching process.

Figure 1

*The Cognitive Coaching<sup>SM</sup> Cycle*



(Costa & Garmston, 2002)

Using both frameworks, a combination of Bandura's (1986) social cognitive theory, in particular the construct of teacher efficacy (1997), and Costa and Garmston's (2002) Cognitive Coaching<sup>SM</sup> model, this study explored the use of Cognitive Coaching<sup>SM</sup> with physical education teacher candidates during their student teaching experience to support an increase in their teacher efficacy.

**Purpose**

The purpose of this study was to examine the impact Cognitive Coaching<sup>SM</sup>, a mentoring tool, (a) has on physical education teacher candidates' teacher efficacy and (b) their perceptions of the impact Cognitive Coaching<sup>SM</sup> had on the lesson planning and lesson reflection abilities during a student teaching experience. Both quantitative and

qualitative measures were employed to determine the impact of Cognitive Coaching<sup>SM</sup> physical education teacher candidate's teacher efficacy.

### **Research Questions**

#### *Quantitative*

RQ<sub>1</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>2</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

RQ<sub>3</sub>: Is there a significant gender difference in teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>4</sub>: Is there a significant gender difference in teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

#### *Qualitative*

RQ<sub>5</sub>: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

### **Significance of the Study**

The first year of teaching can be challenging for many beginning teachers and mentoring has been found to be beneficial for both beginning teachers and teacher candidates to overcome those challenges (Carter & Francis, 2001; Franke & Dahlgren, 1996; Marable & Raimondi, 2007; McIntyre & Hagger, 1996; Su, 1992). Although numerous studies chronicle the benefits of mentoring for beginning teachers, fewer

studies have been conducted on mentoring teacher candidates (Hawkey, 1998; Martin, 1997; Rovegno, 1992; Tickle, 1993) and even fewer have been conducted on mentoring physical education teacher candidates (Ballinger & Bishop, 2011; Tannehill & Coffin, 2000; Wright & Smith, 2000). This study contributes to the research literature on mentoring physical education teacher candidates' in order to support an increase in their teacher efficacy. In particular, this study focused on the use of Cognitive Coaching<sup>SM</sup>, a mentoring tool, to support physical education teacher candidates' during their student teaching experience.

### **Delimitations**

This study took place during the fall 2013 semester of an academic school year. The location of the study was a College of Education and Human Development at a mid-western, public, metropolitan university. The sample for this study included fourteen graduate-level physical education teacher candidates enrolled in a teacher certification master's degree program. Overall, the results of this study could be generalizable to physical education teacher candidates earning initial teacher certification at public, urban universities.

### **Assumptions**

This study was based on three assumptions. The first assumption was the sample would be representative of other physical education teacher candidates' located at other public, urban universities. The second assumption was the responses received from the participants would be accurate and not merely socially desirable. The third assumption was the participant answered all questions posed openly and honestly.



## Operational Definitions

**Cognitive Coaching<sup>SM</sup>**: a “nonjudgmental mediation of thinking” (Costa & Garmston, 2002, p. 10) that changes overt behaviors of instruction by rearranging inner, invisible cognitive behaviors.

**Mentoring**: in teacher education, mentoring is the support of a beginning teacher (mentee) by a veteran teacher (mentor) designed primarily to assist with the development of the beginning teacher’s expertise and facilitate his/her induction into the teaching profession (Hobson et al., 2009).

**Planning conversation**: a planned discussion conducted before a lesson/activity to mediate the cognitive processes of planning (Costa & Garmston, 2002).

**Reflecting conversation**: a planned discussion conducted after a lesson/activity to mediate the cognitive processes of reflection (Costa & Garmston, 2002).

**Self-directed**: a person who is resourceful, sets challenging goals, perseveres, is self-managing, self-monitoring, and self-modifying (Costa & Garmston, 2002).

**Self-managing**: the ability to approach task with a clear focus, strategic plan, and then draw conclusion based on past experiences (Costa & Garmston, 2002).

**Self-monitoring**: the ability to reflect in the moment and make appropriate decisions (Costa & Garmston, 2002).

**Self-modifying**: the ability to reflect on past experiences and apply the analysis to future experiences (Costa & Garmston, 2002).

**Teacher candidate:** a prospective teacher earning a teacher certification to teach in the P-12 educational system. Also known as a preservice teacher.

**Mentee:** a beginning teacher or teacher candidate who is supported by a veteran teacher (mentor) designed primarily to assist with the development of the beginning teacher's expertise and facilitate his/her induction into the teaching profession (Hobson et al., 2009).

**Mentor:** a veteran teacher who supports a beginning teacher (mentee) designed primarily to assist with the development of the novice teacher's expertise and facilitate his/her induction into the teaching profession (Hobson et al., 2009).

**Self-efficacy:** one's beliefs in his/her ability to organize and execute the course of action to manage prospective situations (Bandura, 1986).

**Teacher efficacy:** the confidence teachers hold about their individual and collective capability to influence student learning (Klassen et al., 2011).

### **Overview of the Following Chapters**

In Chapter 2 a review of the literature is provided concerning self-efficacy and teacher efficacy, mentoring, and Cognitive Coaching<sup>SM</sup>. Chapter 3 outlines the research design and methodology of the study along with the instruments used to gather the data and procedure to be followed.

## CHAPTER II

### LITERATURE REVIEW

#### **Introduction**

This study examined the impact Cognitive Coaching had on physical education teacher candidates' teacher efficacy and their perceptions of the impact Cognitive Coaching had on their lesson planning and lesson reflection capabilities. This chapter addresses four areas of the literature related to this study: (a) self-efficacy, (b) teacher efficacy, (c) mentoring, and (d) Cognitive Coaching.

#### **Literature Search**

The use of online databases was the source of the majority of the literature review: EBSCO Academic Search Premier, Education Resources Information Center (ERIC), ProQuest Research Library, and ProQuest Digital Dissertations. The following descriptors were used to aid in the searches: self-efficacy, teacher efficacy, teacher candidate efficacy, student teacher efficacy, physical education efficacy, physical education student teacher efficacy, physical education teacher efficacy, mentoring, mentoring in higher education, mentoring in teacher education, mentoring in education, mentoring in physical education, mentoring physical education student teachers, mentoring physical education teacher candidates, mentoring and self-efficacy, mentoring and teacher efficacy, mentoring and physical education teacher efficacy, Cognitive Coaching, Cognitive Coaching and mentoring, Cognitive Coaching and mentoring tool,

Cognitive Coaching and self-efficacy, and Cognitive Coaching and teacher efficacy. Other references were found within the references of the literature.

### **Self-Efficacy**

According to Bandura's (1986) social cognitive theory, individuals possess the capability to control their own feelings, thoughts, and actions. Within that capability, individuals can symbolize, learn from others and past experiences, strategize for future experiences, and self-reflect. By doing so, individuals can then regulate their own behaviors according to external factors and influences. This means individuals can be self-regulators and in turn influence themselves and their surroundings in the manner they choose. Bandura's social cognitive theory outlines a basis for understanding the impact people's beliefs have on their personal control over themselves and surrounding environment. From this, individuals begin to evaluate their past experiences and actions and/or reactions to those experiences and the thought processes that contributed to their particular course of action and/or reaction. Bandura (1986) considered self-reflection to be one of the key elements to changing one's behavior and thought processes.

Embedded in Bandura's (1986) social cognitive theory is the concept of self-efficacy and which is defined as one's beliefs in his/her ability to organize and execute the course of action to manage prospective situations. Bandura (2006a) emphasized that individuals can (a) exercise some influence over their actions and (b) are self-reflecting, self-organizing, and proactive. The belief in personal competency plays a key role in an individual's behavior and outlines "how" she or he will engage in those experiences. Bandura (1986) suggested that self-efficacy determines how individuals perceive opportunities and obstacles, how their reactions to those opportunities and obstacles

affect an activity, how much effort an individual spends on an activity, and how long an individual will persevere when confronting obstacles. Pajares (1996) concurred with Bandura and posited that highly efficacious individuals tend to be persistent, show resilience, and place higher effort in situations or tasks that are perceived to be difficult or challenging. In contrast, individuals with low self-efficacy tend to believe they are unable to accomplish a difficult or challenging task, and in turn, employ less effort and have an indecisive demeanor. As a result of these influences, self-efficacy beliefs are strong predictors of the level of accomplishment individuals finally attain (Pajares, 1996).

### **Teacher Efficacy**

Based on Bandura's (1997) social cognitive theory, teacher efficacy can be conceptualized as an individual teacher's belief in his or her ability to (a) plan, organize, and implement an effective and age appropriate lesson and (b) accomplish designated educational goals (Skaalvik & Skaalvik, 2010). Gibson and Dembo (1984) delineated teacher efficacy into two components: personal teaching efficacy and general teaching efficacy. Personal teaching efficacy is a teacher's belief of being able to bring about learning in students and general teaching efficacy is one's expectations regarding the extent to which teachers in general can overcome outside factors that obstruct student learning (Gibson & Dembo, 1984).

Research indicates teacher efficacy can positively impact teacher persistence and enthusiasm, as well as, positive student outcomes such as achievement, motivation, and self-efficacy beliefs (Hodson et al., 2009; McIntyre & Hagger, 1996; Tschannen-Moran & Hoy, 2001). A heightened sense of teacher efficacy also proved to impact job satisfaction, commitment to the teaching profession, and length of career (Caprara et. al.,

2006; Glickman & Tamashiro, 1982; Trentham et al., 1985). Teachers who are highly efficacious positively impacted student understanding of content through the use of a variety of teaching strategies that facilitate thought and help them develop flexibility to face difficulties within the classroom (Hodson et al., 2009; Maskey, 2009). Further, highly efficacious teachers fostered student intrinsic interests and guided them to academic self-directedness (Woolfolk & Hoy, 2001). In contrast, teachers with low efficacy experienced low job satisfaction, increased levels of stress, criticized students for failures, wasted time on non-academic activities, and focused on extrinsic factors to motivate students to study (Betoret, 2006; Gibson & Dembo, 1984; Woolfolk & Hoy, 1990).

Teacher efficacy is formed early in a teacher's career, during student teaching and the first years of teaching (Mulholland & Wallace, 2001) and those efficacy beliefs are likely to stay consistent and unchangeable over time (Bandura, 1997; Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011). The development of teacher efficacy is critical in the development of highly efficacious teachers who stay in the workforce (Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011). Bandura (1997) suggested four influences that aid in the development of a teacher's efficacy: (a) physiological and emotional arousal, (b) verbal persuasion, (c) vicarious experiences, and (d) mastery experiences. Bandura (1997) described physiological and emotional arousal as feelings of excitement or disappointment derived from an experience or performance. The second influence on teacher efficacy, verbal persuasion, was conceptualized as verbal indicators or feedback from a supervisor or colleague to a teacher that outlines his/her performance after a completed task (Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011). The

potency of verbal persuasion highly depends on the credibility and expertise of the supervisor or colleague who provided the feedback (Bandura, 1986). Vicarious experience, the third influence on teacher efficacy, was conceptualized as experiences where modeling is used to increase a teacher's efficacy. Finally, a mastery experience was defined as any teaching accomplishment a teacher has with his/her students.

Tschannen-Moran and Johnson (2011) also discussed this construct and noted that an increase in teacher efficacy can be observed when students show an improvement or increased academic success as a result of a teacher's instruction. The increased success contributes to the self-belief that the teacher can produce similar outcomes in the future.

The impacts of the four influences on efficacy have been widely studied (Housego, 1992; Johnson, 2010; Tschannen-Moran & McCaster, 2009; Wenner, 2001; Yeung & Watkins, 2000). Yeung and Watkins (2000) found teacher candidates' beliefs about their teaching abilities were influenced by verbal persuasion, the quality of supervision they received, as well as the mastery experiences they had during practice teaching. All four of the influences on teacher efficacy were found to positively impact teacher candidates' efficacy during college teacher preparation courses as well as student teaching (Housego, 1992; Wenner, 2001). Johnson (2009) found modeling by the teacher educator and master teachers, a vicarious experience, influenced teacher candidates' self-efficacy concerning literacy instruction (Johnson, 2010). Tschannen-Moran and McMaster (2009) tested different professional development models that embodied verbal persuasion, vicarious experiences, and mastery experiences. The model that included the full mastery experience showed the highest gains in self-efficacy among the teachers.

For teacher candidates, the mastery experiences embedded in teacher preparation programs are an important sources of teacher efficacy beliefs (Mulholland & Wallace, 2001) and research focused on the development of those beliefs has been deemed critical because once efficacy beliefs are established they appear to remain consistent over time (Bandura, 1997; Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011). Further, Bandura (1997) found that efficacy beliefs were most flexible and changeable in the early years of learning. Studies conducted by Mulholland and Wallace (2001), Hoy and Spero (2005), Tschannen-Moran and Johnson (2011), Tschannen-Moran et al. (1998), and Friedman (2000) found through the use of effective methods, strategies, and interventions, teacher preparation programs were able to foster growth in teacher efficacy among teacher candidates. Further Tschannen-Moran and colleagues (1998) found beginning teachers who ended their first school year feeling highly efficacious, reported strong teacher preparation programs as a source of their efficacy beliefs. These findings suggest effective teacher preparation and teacher efficacy are positively associated. Another study completed by Friedman (2000) found beginning teachers who expressed difficulties during their first year of teaching identified isolation, large workloads, and inadequate initial teacher training as factors that caused a decrease in teacher efficacy. Additionally, longitudinal studies across teacher education programs are needed to paint a clearer picture of the development of efficacy beliefs among teacher candidates (Hoy & Spero, 2005), more specifically physical education teacher candidates.

### **Physical Education Teacher Efficacy**

Physical education teachers face unique obstacles during their early professional careers that impact their sense of efficacy. Researchers have identified the following



obstacles encountered by physical education teachers: (a) a lack of respect of physical educators and their content by administrators, faculty/staff, parents, and students; (b) a lack of accountability for student learning; (c) fewer colleagues and opportunities available for collaboration; and (d) a lack of resources and space (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; Marso & Pigge, 1987; O'Sullivan, 1989; Odell, 1986; Placek, 1983; Ryan et al, 1980; Sparkes et al., 1993; Smyth, 1992; Sparkes et al., 1990, 1993; Stroot et al., 1993; Templin, 1998a, 1989; Zajorik, 1980).

One researcher, Smyth (1995), interviewed 12 first year physical educators at the conclusion of their first year of teaching and cited numerous workplace factors such as lack of equipment, support, respect, collaboration and job security that affected their first year of teaching. In particular, the physical educators noted “the need to feel some sense of efficacy” (p.210) during their first year of teaching. Although the beginning physical educators discussed a sense of heightened efficacy in relation to the impact made with their students’ lives, they stated very little could be done to change their negative workplace environments indicating a low sense of efficacy. The beginning physical educators also started to comply with the subpar expectations placed upon physical education by the school’s administration, faculty/staff, and students. They abandoned the high expectations taught in their teacher education programs by lowering their expectations concerning student learning (Smyth, 1995). Similar findings were cited by Etheridge (1989), Sparkes and colleagues (1990), and Zeichner and Tabachnik (1983). Martin and colleagues (2009) found physical education teachers who had strong teacher efficacy overcome barriers in the school setting compared to physical education teachers

with low efficacy. They pointed out the importance of developing the efficacy of beginning teachers to better equip them with the ability to overcome obstacles (Martin, et al., 2009). Further, teacher efficacy has been found to be weaker with excessive role demands, low status, lack of recognition, and professional alienation (Tschannen-Moran et. al, 1998; Webb & Ashton, 1987).

Understanding the development of teacher efficacy among physical education teacher candidates and the connection between the obstacles they face is essential (Fieman-Nemser, 2001; Ingersoll & Strong, 2011; Paese & Zinkgraf, 1991; Wendt & Bain, 1989). According to Wendt and Bain (1989), challenging and stressful teaching experiences do not waiver over the first five-year period after student teaching so it is important to understand stress and teacher efficacy during student teaching and establish positive perceptions of teaching (Paese & Zinkgraf, 1991) because the effects could be detrimental to teacher efficacy and retention (Wendt & Bain, 1989). The support provided to teacher candidates during their professional preparation is essential because it could potentially help them overcome first year challenges (Fieman-Nemser, 2001; Ingersoll & Strong, 2011).

### **Specificity of the Self-Efficacy Construct**

When measuring self-efficacy, one factor that contributes to the predictive power of self-efficacy on performance is related to the measurement of the self-efficacy construct (Choi, 2005). From Finney and Shaw (2003), self-efficacy is task specific and when measuring the construct the items on a self-efficacy scale should measure the specific task under review. For example, when measuring teacher efficacy the items on a scale should attempt to measure teacher efficacy. According to Choi (2005), when

measuring self-efficacy with respect to the specific task being assessed, the construct tends to have high predictive validity. If there is a lack of similarity between the level of self-efficacy and the performance in a research study, a significant effect of the self-efficacy construct on the dependent variable might not be observed (Bandura, 1997; Pajares, 1996).

### **Summary of Efficacy**

Teacher efficacy, based on Bandura's (1997) social cognitive theory, is a teacher's belief in his/her ability to teach effectively and accomplish designated educational goals (Skaalvik & Skaalvik, 2010). Highly efficacious teachers positively impact student learning (Hodson et al., 2009; Maskey, 2009) while teachers with low efficacy experience dissatisfaction in the classroom (Betoret, 2006; Gibson & Dembo, 1984; Woolfolk & Hoy, 1990). Past experiences and professional teacher preparation shape teachers' beliefs concerning teaching, specifically for beginning teachers and teacher candidates. A focus on the four influences on teacher efficacy (Bandura, 1997) is essential to the development of teacher efficacy among teacher candidates.

Establishing and maintaining efficacy beliefs are concern for all teachers in every subject area, including physical education teachers. Lack of respect and resources are unique struggles physical educators face during their early professional careers (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; O'Sullivan, 1989; Placek, 1983; Smyth, 1992; Sparkes et al., 1990, 1993; Stroot et al., 1993; Templin, 1998a, 1989; Zajorik, 1980) and using appropriate measures (Finney and Shaw, 2003), for collecting data concerning self-efficacy, specifically

physical education teacher efficacy, will help researchers determine appropriate methods for increasing efficacy among teachers.

### **Mentoring**

Historically, mentoring has been traced back to Greek civilization and has been evident in various fields: medicine, social services, industry, banking, military, management, psychology, and education (as cited in Strong & Baron, 2004; Jacobi, 1991). For the purposes of this study, the research on mentoring in teacher education will be reviewed.

#### **Mentoring in Teacher Education**

Mentoring in initial teacher preparation programs and in early teacher career development has played a critical role in supporting teacher candidates and beginning teachers since the early 1980s (Hobson et al, 2009). Mentoring in teacher education is the support of a beginning teacher (mentee) by a veteran teacher (mentor) designed primarily to assist with the development of the beginning teacher's expertise and facilitate his induction into the teaching profession (Hobson et al., 2009). Mentoring lends support to mentees to increase retention and effectiveness with the ultimate goal of improving student performance (Coladarci & Breton, 1997; Cothran et al., 2009; Fritz, Miller-Heyl, Kreutzer, & MacPhee, 1995; Maskey, 2009; Onafowara, 2004; Ross & Brice, 2007).

#### **Benefits of Mentoring in Teacher Education**

Mentoring benefits the mentee, mentor, and educational system in various ways. First, mentoring for teacher candidates and beginning teachers has been cited as the most beneficial form of professional development as it helps to decrease feelings of isolation, increase confidence and self-esteem, and improve problem-solving skills (Carter &

Francis, 2001; Franke & Dahlgren, 1996; Marable & Raimondi, 2007; McIntyre & Hagger, 1996; Su, 1992). Also, mentoring provides emotional and psychological support, which boosts confidence, enabling teacher candidates and beginning teachers to put difficult situations into perspective, improve classroom management, and increase job satisfaction (Bullough, 2005; Johnson et al., 2005; Lindgren, 2005; Marable & Raimondi, 2007). Although studies have found numerous benefits of mentoring concerning teacher candidates and beginning teachers, the direct impact of mentoring on these individuals' teaching skills is limited (Hobson et al., 2009). Concerning the mentors, mentoring impacted their professional and personal development as well (Hagger & McIntyre, 2006; Yeomans & Sampson, 1994). Mentors gained new knowledge, perspectives, and teaching styles from mentoring teacher candidates and beginning teachers (Abell, Dillon, Hopkins, McInerney, & O'Brien, 1995; Simpson, Hastings, & Hill; 2007). Research also suggested mentors feel less isolated, enjoy collaborative efforts, and gain satisfaction from helping mentees reach their educational goals and find enjoyment in witnessing the success of the mentee (Hagger & McIntyre, 2006; Simpson et al., 2007).

Organizationally, educational school systems benefit from mentoring programs through an increase in teacher retention and stability among beginning teachers, who are less likely to leave the teaching profession or school (Ingersoll & Kralik, 2005; Johnson et al., 2005; Smith & Ingersoll, 2004). According to Hobson et al. (2009),

It is also possible that both schools and educational systems may benefit from the enhanced retention of those teacher-mentors who become more confident and committed as a result of their participation in mentoring, which is one of the aims of some mentoring schemes, though there is limited direct evidence of this to date (p. 210).

While several researchers have cited the positive benefits of mentoring teacher candidates and beginning teachers, additional research has pointed out that mentoring may have some negative impacts on the mentor. Several studies pointed out the mentor may experience unmanageable workloads, feelings of insecurity and nervousness, and isolation (Bullough, 2005; Graham, 1997; Hart & Murphy, 1990; Lee & Feng, 2007; Simpson, et al, 2007). Providing support to a mentee requires extra time to effectively meet the needs of the mentee. The mentor is constantly balancing the time needed for the mentee and the time needed for his/her own classroom planning. Simpson and colleagues (2007), found that feelings of nervousness could develop from judgments the mentor may feel from the mentee concerning inadequate lessons and classroom procedures. Mentors who provide inadequate support hinder the growth of the mentee (Hardy, 1999; Hobson et al., 2009, Smith & Maclay, 2007).

### **The Effectiveness of Mentoring Programs**

The effectiveness of mentoring programs is influenced by several factors concerning the mentor and mentee relationship. Time, financial incentives, modeling, and lesson observations all play a role in the effectiveness of mentoring programs (Abell et al., 1995; Bullough, 2005; Foster, 1999; Jonson, 2002; Lee & Feng, 2007; Martin & Rippon, 2003; Roehrig, Bohn, Turner, & Pressley, 2008; Schmidt, 2008; Simpson, et al, 2007; Yeomans & Sampson, 1994). Time and financial incentives were the most consistent findings in the mentoring literature concerning the influence of the mentee and mentor relationship. Mentoring was most effective when the mentor and mentee were provided release time to meet and discuss complexities during the school day (Abell et al., 1995; Bullough, 2005; Lee & Feng, 2007). Abell and colleagues (1995) and Simpson

and colleagues (2007) found positive outcomes in programs where mentors were provided financial incentives.

Modeling allowed mentors to demonstrate good professional practices and be supportive, non-judgmental, and trustworthy to support the professional and emotional needs of the mentee (Abell et al., 1995; Foster, 1999; Roehrig et al., 2008; Yeomans & Sampson, 1994). Lesson observations were impactful if clear objectives were agreed upon between the mentor and mentee (Jonson, 2002; Martin & Rippon, 2003; Schmidt, 2008). The observation process consisted of a pre-observation conference, observation, and post-observation conference where goals and outcomes were discussed by means of constructive dialogue concerning the strengths and weaknesses of the mentee's teaching.

Mentoring in teacher education programs in conjunction with K-12 schools has been shown to be effective in the development of beginning teachers. Long and colleagues (2012) discussed the importance of continuity and collective support between teacher education programs and K-12 schools through mentoring and collaborative efforts. In several studies, continuity between teacher education programs and schools was critical to the development of beginning teachers. In addition, collaborative efforts between schools, university programs, and school administrators was found to be a sustainable support system that could ensure beginning teachers remain in the teaching profession (Carr & Evans, 2006; Feiman-Nemser, 2001; Lovett & Davey, 2009). Further, beginning teachers who were highly satisfied with their teacher training programs perceived fewer problems during their first years of teaching (Adams & Martray, 1980; Taylor & Dale, 1971).

## **Mentoring in Physical Education Teacher Education**

The mentoring literature concerning teacher education and beginning teachers is plentiful. However, mentoring studies in physical education teacher preparation are limited (Ballinger & Bishop, 2011; Tannehill & Coffin, 2000; Wright & Smith, 2000). According to Ballinger and Bishop (2011), mentoring has become more important because of the increased accountability required in physical education. Physical education teacher education (PETE) programs are currently reviewed by national, state, and local accreditation bodies and faculty are under scrutiny to demonstrate teacher candidates are competent professionally in physical education (NASPE, 2009). From this, PETE programs heavily rely on student teaching to assess the readiness of physical education teacher candidates (mentees) to enter the profession. Mentoring and mentors are critical to their success (Ballinger & Bishop, 2011).

Both informal and formal mentoring have been studied in PETE (Cheffers, 1997; Tannehill & Coffin, 1996; Wright & Smith, 2000). Tannehill and Coffin (1996) found that informal mentoring, although not structured, occurred daily between undergraduate students, beginning teachers, and faculty members in physical education and found formal mentoring in PETE was limited. Wright and Smith (2000) conducted a study concerning the lack of formal mentoring in PETE by contacting 22 university faculty members in the PETE profession. Open-ended questions were asked concerning the availability and variety of mentoring, if any, in the faculty's respective institution. None of the faculty reported involvement in formal mentoring specifically for physical education teacher candidates. The researchers found informal mentoring was prevalent between students and faculty members as was student peer mentoring (Wright & Smith,



2000). Cheffers (1997) discussed a teaching experience where graduate students at the Boston University laboratory school mentored undergraduate teacher candidates. With a positive outcome, undergraduate students taught age appropriate lesson plans to elementary students while a graduate student observed the taught lessons and provided feedback (Cheffers, 1997).

As stated previously, physical education teachers face additional unique struggles during their early professional careers that could cause them to feel overwhelmed. (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; O'Sullivan, 1989; Placek, 1983; Smyth, 1992; Sparkes et al., 1990, 1993; Stroot et al., 1993; Templin, 1998a, 1989; Zajorik, 1980). The emotional aspect concerning teachers' decisions to leave or remain in the profession cannot be ignored (Banville & Rikard, 2009). Liston and colleagues (2006) found beginning teachers need strong teacher efficacy to be successful. These researchers suggested more attention should be focused on better understanding the development of teacher efficacy in beginning physical education teachers. Schalock, Schalock, and Ayres (2006) stated the affective domain of teaching is critical but ignored in the preparation and support of physical education teachers and teacher candidates who need coping skills and support mechanisms to handle failures they may face during their early teaching experiences.

### **Summary of Mentoring**

Mentoring is evident in various fields: medicine, social services, industry, banking, military, management, psychology, and education (as cited in Strong & Baron, 2004; Jacobi, 1991) and has been evident in teacher education as well. The support of a mentee by a mentor is designed to assist with the development of the beginning teacher's

expertise and facilitate his/her induction into the teaching profession (Hobson et al., 2009). Mentoring lends support to a mentee to increase retention and effectiveness with the ultimate goal of improving student performance (Coladarci & Breton, 1997; Cothran et al., 2009; Fritz et al., 1995; Maskey, 2009; Onafowara, 2004; Ross & Brice, 2007).

Although mentoring is evident for some teacher candidates, it is limited for beginning physical education teachers and is lacking in PETE programs. Physical education teacher candidates need mentoring to prepare them for possible obstacles they may face during their first years of teaching (Banville & Rikard, 2009; Cheffers, 1997; Liston et al., 2006; Schalock et al., 2006; Tannehill & Coffin, 1996) and one form of mentoring, Cognitive Coaching<sup>SM</sup>, has been used among teacher candidates to positively impact their teacher efficacy.

### **Cognitive Coaching<sup>SM</sup>**

A brief overview of the Cognitive Coaching<sup>SM</sup> model (Costa & Garmston, 2002) is provided to inform the reader prior to presenting the research on the model. The following section will include, an overview of the model including characteristics that make it unique among other coaching models.

#### **Description of the Model**

Costa and Garmston defined Cognitive Coaching<sup>SM</sup> as a “nonjudgmental mediation of thinking” (2002, p. 10) that changes overt behaviors of instruction by rearranging inner, invisible cognitive behaviors. The goal of Cognitive Coaching<sup>SM</sup> is to enhance an individual’s capacity to develop self-directedness, self-monitoring, and self-modification abilities (Costa & Garmston, 2002). The Cognitive Coaching model includes a three-phase coaching cycle: (a) planning conversation, (b) observation, and (c)

reflecting conversation. Designed specifically for teacher supervision with roots grounded in the theories by Vygotsky (1978) and Bandura (1997), the application of Cognitive Coaching<sup>SM</sup> has been applied in the corporate world, peer coaching, mentoring services, and in classrooms.

Theories by (a) Vygotsky - social constructivism (1978), (b) Koestler – holonomy (1972), (c) Bandura - peak performance (1997), and (d) Goldhammer (1969), Cogan (1973), and Anderson and Snyder (1993) - clinical supervision, all provided theoretical bases for Cognitive Coaching (Costa & Garmston, 2002). Vygotsky's (1978) theory of social constructivism stated that the perception surrounding development and learning is based upon social and collaborative activities. Individuals strive for self-assertion and affiliation continuously and simultaneously among themselves and within groups, which is a source of tension. In order to resolve the conflicts, an individual must develop intellectual, moral, and ego resourcefulness (Vygotsky, 1978). Further, Costa and Garmston (2002) stated intelligence grows in two ways: (a) through personal past experiences and (b) through interactions with others. Individuals are in constant interaction with each other and those past experiences, whether negative or positive in nature, shape their thinking, perceptions, and possible future actions.

Cognitive Coaching<sup>SM</sup> helps individuals navigate through past experiences and interactions to become holonomous and self-directed individuals. Holonomy, coined by Koestler (1979), refers to part versus whole interaction and is one of the unique components of Cognitive Coaching<sup>SM</sup>. Holonomy refers to an individual who strives to be self-directed in a large community of peers. Holonomous environments consist of individuals who are capable of working alone and with a larger group.

Cognitive Coaching<sup>SM</sup> utilizes the notion of self-efficacy and teacher efficacy conceptualized by Bandura (1986, 1997) as an instrumental component that hones in on the initial purpose of Cognitive Coaching<sup>SM</sup>, to enhance an individual's capacity to develop self-directedness, self-monitoring, and self-modification abilities. Bandura (2006a) emphasized that individuals can (a) exercise some influence over their actions and (b) are self-reflecting, self-organizing, and proactive. The belief in personal competency plays a key role in an individual's behavior and outlines "how" she or he will engage in those experiences.

In the 1960s, Morris Cogan and Robert Goldhammer, developed the clinical supervision model in an attempt to support the development of professional teachers to be more analytical, flexible, and self-directed (as cited in Costa & Garmston, 2002). Cogan and Goldhammer believed that instructional improvements could be achieved by changing or modifying instructional behaviors through an eight-phase process involving conferencing and observation. The overall intent of this process was to cultivate teacher self-appraisal, self-direction, and self-supervision. In 1984, building from the clinical supervision model, Costa and Garmston developed Cognitive Coaching<sup>SM</sup>. In contrast to the clinical supervision models, described by Cogan and Goldhammer, that focused on transforming overt teacher behaviors, Cognitive Coaching<sup>SM</sup> focuses on transforming inner thought processes and intellectual support functions by altering inner cognitive behaviors, such as perceptions, reasoning processes, and values, that drive teaching behavior.

**The mission of Cognitive Coaching<sup>SM</sup>.** The mission of Cognitive Coaching<sup>SM</sup> is twofold. First, Cognitive Coaching<sup>SM</sup> aims to produce self-directed individuals with high

performance cognitive abilities and second, create individuals who have the ability to work independently or interdependently. An individual who is self-directed has the ability to: (a) self-manage – the ability to plan strategically, draw conclusions from past experiences, and anticipate indicators for success; (b) self-monitor – the ability to reflect “on the spot” and make decisions to expand or contract the plan; and (c) self-modify – the ability to evaluate, analyze, and construct meaning from past experiences and apply that knowledge to future plans. Holonomous individuals have “an awareness of themselves in this somewhat oxymoronic state of being an independent entity while also part of and responsive to a larger system” and “ have the cognitive capacity to exercise responsible self-directedness in both arenas” (Costa & Garmston, 2002, p. 18). The Cognitive Coaching<sup>SM</sup> model, does not attempt to change a teacher’s behavior, but to influence her perceptions, reasoning processes, beliefs, and values.

The focus on supporting others in changing their internal thought processes is one aspect that makes Cognitive Coaching<sup>SM</sup> unique among coaching models. Costa and Garmston (2002) describe five states of mind that serve as internal resources for all humans: consciousness, craftsmanship, efficacy, flexibility, and interdependence (a more detailed look at each state of mind follows in the next section). Humans draw upon these states of mind to become holonomous. For example, when all five states of mind are high, a person would be described as being holonomous, which means they can interact with others both independently and in group settings. When one or more of the states of mind are low, this creates tensions in dealing with other people. A Cognitive Coach (mentor) understands how the five states of mind interact and uses this knowledge to support a teacher (mentee) in specific tasks such as planning or reflecting on lessons and,

more globally, in becoming a more holonomous person. Elevating a mentee's five states of mind through mediative questioning is a goal of the mentor. Additionally, the mentor provides support by using reflective questioning, pausing, paraphrasing, and probing to foster development of superior skills in planning, problem solving, decision-making, and reflecting. Through this process, trust and rapport are built, aiding the development of a consistent and sustainable bond between the mentor and the mentee.

A competent coach (mentor) is the key to Cognitive Coaching<sup>SM</sup> and he/she has the ability to: (a) establish and maintain trust in the coaching relationship; (b) interact with the intention of producing self-directed learning; (c) envision, assess, and mediate the five states of mind; (d) generate strategies to enhance the five states of mind; and (e) maintain the ability to mediate one's own and others capacity to grow. The mentor crafts questions to facilitate reflective thought and responses from the mentee. Skillful mentors use paralanguage, response behaviors, structuring, and meditative questioning to facilitate cognitive growth (Costa & Garmston, 2002). These four strategies are used within the planning and reflective conversations to assist the mentee in making age appropriate and effective decisions concerning her teaching.

### **The Five States of Mind**

The five states of mind, a unique component of Cognitive Coaching<sup>SM</sup>, are (a) consciousness, (b) craftsmanship, (c) efficacy, (d) flexibility, and (e) interdependence. Consciousness can be conceptualized as the awareness of one's thoughts, feelings, viewpoints, and behaviors and the effect they have on the self and others. The goal is for the mentee to be aware of his/her thinking and after reflection, how his/her thinking affected student learning. Second, craftsmanship is described as a healthy dissatisfaction

with a performance and/or results. An individual with high craftsmanship will set high goals, strive for continuous improvement and growth, persevere to close the gap between the existing and desired state, maintain flexible thinking, and attend to details. Third, efficacy can be conceptualized as the belief that an individual's work will make a difference and is related to being optimistic, confident, and knowledgeable. Efficacy is the most important state of mind since it is a predictor of how an individual will solve problems in relation to education. According to Costa and Garmston (2002), teacher efficacy is a precursor for an improvement in student learning, a critical factor for change in instruction, and plays a role in student mastery of pertinent content (Fullan, 1982; Rosenholtz, 1989).

Studies of Cognitive Coaching<sup>SM</sup> consistently find significant improvements in teacher efficacy. Efficacy may be the most catalytic of the five states of mind, because a person's sense of efficacy is a prime factor in determining how complex problems are resolved. If a teacher feels little efficacy, then despair, hopelessness, blame, withdrawal, and rigidity are likely to follow. However, research indicates that teachers with robust efficacy are likely to expend more energy in their work, persevere longer, set more challenging goals, and continue in the face of barriers or failure (Costa & Garmston, 2002, p. 127).

Fourth, flexibility can be conceptualized as an individual's capacity to comprehend multiple perspectives, adapt to change, and expand his/her selection of response patterns. Individuals who are flexible are capable of juggling many tasks, alter their thoughts as new information is received, and are able to step beyond themselves and interpret a situation from a different perspective. Lastly, interdependence can be conceptualized as an individual's desire for reciprocity, belonging, connectedness, and being one with a larger system and community. This state of mind emphasizes the importance of collaboration so individuals can achieve a defined goal. Collectively, the five states of

mind enhance a person's capacity to develop self-directing, self-monitoring, and self-modifying abilities.

### **Cognitive Coaching<sup>SM</sup> Conversations**

In order to meet the goals of Cognitive Coaching<sup>SM</sup>, the mentor guides the mentee through a three-phase cycle consisting of a (a) planning conversation, (b) observation, and a (c) reflecting conversation. The mentor crafts questions that facilitate reflective thought and responses from the mentee, which in turn facilitates cognitive growth.

**Planning Conversation.** The planning conversation happens before a target lesson or activity. Within the planning conversation, first the mentor assists the mentee with clarifying goals by determining the desired outcome of the lesson or activity. Second, the mentor asks questions to identify strategies intended to achieve the desired outcome, otherwise known as anticipating strategies for implementation. Third, the mentor asks the mentee to identify observable behaviors during the observation to indicate success of the lesson or activity, also known as identifying specific indicators for success. The fourth section of the conversation is establishing personal learning focus and the mentor hopes to establish a foundation for self-directed learning for the mentee. Lastly, the mentor asks the mentee to reflect on the coaching process by identifying the effects of the conversation in relation to his/her thinking and decision-making.

During the planning conversation, the mentor illuminates and facilitates the refinement of the mentee's cognitive process of planning and engages those processes to maximize the significance, success, and meaning of the lesson or activity. When identifying specific indicators for success, the mentor has a unique opportunity to record evidence to illustrate the effectiveness of the planned lesson or activity. That information



would be shared and discussed during the reflecting conversation to further impact the cognitive growth process. The mentee has sole ownership concerning when and how the data will be collected so the data “makes sense” to the mentee during the reflecting conversation (Costa & Garmston, 2002, p. 48). Collecting data is a learning tool that can significantly impact the cognitive growth for the mentee by illustrating the amount of success observed in the planned lesson or activity.

Costa and Garmston (2002) stated the planning conversation is essential to the Cognitive Coaching<sup>SM</sup> model for six reasons. First, the planning conversation is a trust building opportunity for the mentor and mentee and allows the mentor to focus attention on the mentee’s goals. During the planning conversation, the mentor focuses attention on the instructional needs of the mentee, which aids in the development of trust and rapport for a lasting and impactful coaching relationship. Next, the planning conversation provides a mental rehearsal of the desired lesson or activity and establishes guidelines for the reflecting conversation. During the planning conversation, specific questions are posed to foster thought concerning the desired lesson or activity, allowing the mentee to cognitively “rehearse” the lesson or activity. Cognitive “rehearsal” coupled with the mentee’s responses to the questions posed by the mentor establishes guidelines for the reflecting conversation recapping the outcome of the lesson or activity. Lastly, the planning conversation aids in the development of self-coaching skills and mature instructional thinking in the mentee. After numerous planning conversations, the mentee begins to internalize the thought process one goes through in the planning conversation and begins to automatically think of every lesson or activity in that manner. The mentee thinks of future lessons or activities on a more sophisticated level.

**Observation.** During the observation phase of the Cognitive Coaching<sup>SM</sup> cycle, the mentor will collect evidence or data concerning the effectiveness of the lesson outlined by the mentee. While navigating the planning conversation, the mentor will help the mentee create the method of data collection. For example, video recordings and frequency counts of specific teacher behaviors (i.e. number of time he/she says “um” or “uh” or calls on males verses females) could be collected and recorded for further discussion during the reflecting conversation. It is important to note that the mentee, not the mentor, will decide the specifics of the data collection process. According to Costa and Garmston (2002), the intent is to cast the mentee in the role of the researcher and experimenter, which will help him/her have a better understanding of their actions or inactions that will be discussed during the reflecting conversation.

**Reflecting Conversation.** After the observed lesson or activity, the mentor conducts a reflecting conversation. First, the mentor asks questions to help the mentee reevaluate the happenings of the lesson or activity, otherwise known as summarizing impressions and recalling information. Second, questions posed by the mentor helps the mentee compare the planned lesson or activity to the actual happenings of the lesson or activity known as analyzing causal factors. Third, the mentee will analyze and synthesize any personal knowledge gained from the lesson or activity. Fourth, the mentee will commit to apply any new knowledge to future lessons or activities. Lastly, questions posed by the mentor will help the mentee explore the effects on decision making and thinking gained from the reflecting conversation. During the reflecting conversation, the mentor allows the mentee to make her own judgments surrounding the happenings of the lesson or activity and encourages the mentee to project how future lessons or activities

will be impacted by the new knowledge and insights gained from the conversation.

Within the reflecting conversation, the mentor will share the data requested by the mentee so she can make conclusions concerning the events of the lesson or activity. Overall, the reflecting conversation is a culminating experience for the three-phase Cognitive Coaching<sup>SM</sup> cycle that aids in the development of self-directing, self-monitoring, and self-modifying individuals.

### **Additional Cognitive Coaching<sup>SM</sup> Techniques**

The planning conversation, observation, and reflecting conversation are used in Cognitive Coaching<sup>SM</sup> to mediate a mentee's thinking through carefully crafted questions but a mentor can use another conversation to guide a mentee. The problem-resolving conversation is used when a mentee is unclear on necessary steps to mediate a problem. This conversation can be used within the planning and reflecting conversation if a mentee is "stuck" during the coaching process or requests assistance from the mentor (Costa & Garmston, 2002). During the problem-resolving conversation, the mentor hopes to remove any cognitive barriers posed by the mentee and shift the dialog to the planning or reflecting conversation depending on the needs of the mentee.

In Cognitive Coaching<sup>SM</sup>, the questioning techniques posed by the mentor have a profound impact on the mentee. The mentor uses specific questioning techniques within coaching conversations to assist the mentee in making decisions concerning teaching. The mentor will use (a) paralinguage, (b) response behaviors, and (c) mediative questioning to facilitate self-directedness. Paralinguage can be conceptualized as the "vocal qualities, body language, and other verbal and nonverbal behaviors that exist alongside the words we speak" (Costa & Garmston, 2002, p. 73). For example, a

mentor's posture, hand gestures, voice inflection, pitch, volume, rate of speech, and breathing all play a role in building rapport with the mentee. To effectively use these behaviors, a mentor would "mirror" the mentees' behaviors to illustrate he/she acknowledged and understood the mentees' feelings concerning the lesson or activity thus building rapport. Using the appropriate paralanguage techniques in coaching conversations will help build a strong and lasting coaching relationship.

Next, response behaviors are a mentor's verbal responses that build rapport with the mentee. According to Costa and Garmston (2002), there are four response behaviors (a) silence, (b) acknowledgement, (c) paraphrasing, and (d) clarifying. A mentor uses silence, or wait time, to provoke cognitive processing after a question is asked or a response is given. Instead of quickly moving to the next question, the extra moment will give the mentee time to reflect further concerning the future or past activity.

Acknowledgement is a non-judgmental verbal or nonverbal cue provided by the mentor to illustrate he/she "has heard" what the mentee stated. For example, a mentor could nod during a planning or reflecting conversation. Paraphrasing is used by a mentor to summarize and organize a mentee's statements into themes to illustrate he/she acknowledged and understood the mentee's feelings concerning the lesson or activity. If used correctly, this technique is one of the most essential because it overtly illustrates to the mentee how well the mentor is listening thus building rapport. The mentor uses clarifying when the mentee lacks specificity during the conversation. The mentee may speak with vague nouns and action words, make comparisons, and use universal quantifiers, which limits the understanding of the mentor. Clarifying simply helps the mentor better understand the mentee by providing specifics.

Lastly, mediative questioning is the intentional questioning technique used to engage and transform the mentee's thinking and perceptions concerning teaching. According to Costa and Garmston (2002), the three characteristics of mediative questioning are (a) intention, (b) engaging specific cognitive operations, and (c) invitation. Intentional questioning links external content, happenings outside of an individual, and internal content, happenings inside an individual's mind, to explore and specify her thinking. Costa and Garmston (2002) point out, "questions that most effectively mediate thinking link internal content with external content" (p.89). Throughout the Cognitive Coaching<sup>SM</sup> cycle, mentors ask questions that invite a variety of levels of complex thinking. Embedded in the questions posed by the mentor, verbs that invoke thought are used to trigger specific cognitive operations. For example, recall, define, infer, synthesize, predict, and envision are used to invoke a higher level of planning and reflection within the mentee. Mentors use an approachable voice, plural forms, tentative language, positive presuppositions, and open ended questions to expand the mentee's thinking when planning a lesson or activity or reflecting on a past lesson or activity. Invitational questioning moves the mentee from thinking singular to plural by using specific wording. For example, a mentor could ask a mentee, "What are your *goals* for the project?" instead of "What is your *goal* for the project?" (p.87). The first question allows the mentee to expand his/her thinking, where the latter limits her thinking.

### **Research in Cognitive Coaching<sup>SM</sup>**

A synthesis of research on Cognitive Coaching<sup>SM</sup> compiled by Edwards (2011) outlined several positive outcomes. Cognitive Coaching<sup>SM</sup> has been linked to (a) increased student test scores, (b) increased reflective thinking, (c) more professional

school cultures, (d) more teacher collaboration, (e) benefiting teachers professionally, (f) benefiting teachers personally, (g) benefiting individuals in other fields, (h) increased teacher efficacy, and (i) job satisfaction. Each of these outcomes and related studies are described below.

**Increased student achievement.** Rennick (2002) found kindergarten students taught by teachers who received Cognitive Coaching<sup>SM</sup> for a year significantly increased their literacy test scores compared to those students whose teachers did not receive Cognitive Coaching<sup>SM</sup>. Likewise, Fine and Kossack (2004) found third and fourth grade students earned significantly higher test scores on a reading comprehension test when compared to other students when taught by teachers who coached each other using Cognitive Coaching<sup>SM</sup> for a four-month period. In addition, teachers in Eger's (2006) study perceived that Cognitive Coaching<sup>SM</sup> "influenced student behaviors, their thinking, and climate of the classroom thus impacting student achievement" (p. 64). Similarly, Reed (2007) found third grade student's reading test scores increased over a three-year period with the implementation of a grant, Read to Achieve, and Cognitive Coaching<sup>SM</sup> which was implemented by an instructional coach. "Teachers attributed the success of the third grade students to the collaboration of the second and third grade team and the instructional coach" (p. 232). From the studies outlined above, teachers who used Cognitive Coaching<sup>SM</sup> revamped their teaching strategies and those changes were linked to an increase in student test scores (Edwards, 2011).

**Increased reflective thinking.** Cognitive Coaching<sup>SM</sup> has impacted teacher reflective thinking (Burk, Ford, Guffy, & Mann, 1996; Eger, 2006; Krpan, 1997; Schlosser, 1998). Eger (2006) found Cognitive Coaching<sup>SM</sup> impacted teachers' thinking

when they evaluated and analyzed aspects of their teaching. Teachers from the study shared how the reflective aspects of Cognitive Coaching<sup>SM</sup> resulted in “higher levels of thinking and more critical analysis of goals, lesson plans, and teaching behavior, as well as evaluation of their own teaching and student performance” (p. 67). Krpan (1997) studied second through fourth year teachers and found, compared to a control group, teachers who participated in Cognitive Coaching<sup>SM</sup> training became more reflective concerning their teaching practice and realized several opportunities for professional growth. Cognitive Coaching<sup>SM</sup> has also been shown to increase reflective thinking in relation to problem solving in teaching (Burk et al., 1996).

**Improved professional school culture.** Cognitive Coaching<sup>SM</sup> impacted teachers’ collaboration efforts, professional careers, and personal lives, creating a more professional school culture (Awakuni, 1995; Clinard, et al., 1995; Edwards & Newton, 1994b; Eger, 2006; Liebmann, 1993; Townsend, 1995). Awakuni (1995) found teachers involved in a year long Cognitive Coaching<sup>SM</sup> training program had increased involvement in leadership opportunities at their respective schools (i.e. presenting at faculty meetings, involvement in state-wide leadership conferences, and joining school leadership teams). Regarding collaboration among teachers, Eger (2006) found Cognitive Coaching<sup>SM</sup> supported teachers in establishing strong collaborative relationships with colleagues and students through increased communication and attentiveness. Similarly, Edwards and Newton (1994b) found Cognitive Coaching<sup>SM</sup> helped increase communication and rapport within the school community thus creating a positive work environment. Teachers who were coached or implemented Cognitive Coaching<sup>SM</sup> grew in relation to their professional careers. Novice teachers who were

mentored using Cognitive Coaching<sup>SM</sup> stated the process helped them think deeper concerning their teaching and attitudes improved towards students. In two studies focused specifically on teacher candidates and university supervisors, Cognitive Coaching<sup>SM</sup> was found to support an increased awareness of professional growth areas, an improved ability to build community with others and an increase in trust (Clinard, et al., 1995; Townsend, 1995).

**Increased job satisfaction.** Teachers who completed a year long Cognitive Coaching<sup>SM</sup> training program reported an increase in job satisfaction because of the support they provided to each other (Awakuni, 1995). Edwards and Newton (1994a, 1995) found teachers who were trained in Cognitive Coaching<sup>SM</sup> were significantly more satisfied with teaching as a professional career than a control group. Regarding beginning teachers, Edwards (1993) found higher job satisfaction amongst beginning teachers who were supervised by mentors who had been trained in Cognitive Coaching<sup>SM</sup> compared to beginning teachers supervised by mentors who had not been trained in Cognitive Coaching<sup>SM</sup>. Clinard et al. (1995), focusing on the university supervisor, found supervisors trained in Cognitive Coaching<sup>SM</sup> were eager to continue their teaching careers and found new enjoyment for teaching as a result of the Cognitive Coaching<sup>SM</sup> training.

**Increased teacher efficacy.** According to Edwards et al. (1998), teachers grew in teacher efficacy on the Teacher Efficacy Scale (Gibson & Dembo, 1984) after using Cognitive Coaching<sup>SM</sup> in a three-year program. Similarly, Edwards and Green (1997) found teachers who were trained using Cognitive Coaching<sup>SM</sup> grew significantly in teacher efficacy over a three-year period. Likewise, teacher efficacy was significantly higher in teachers who used Cognitive Coaching<sup>SM</sup> when compared with a control group



(Edwards & Newton, 1995) and teachers who used Cognitive Coaching<sup>SM</sup> consistently scored higher in teaching efficacy than teachers who used it less consistently (Edwards & Newton, 1994b). Regarding beginning teachers, second through fourth year teachers who completed a training in Cognitive Coaching<sup>SM</sup> scored significantly higher on the Teacher Efficacy Scale (Gusky & Passaro, 1993) compared to a control group (Krupan, 1997; Smith, 1997). According to Maginnis (2009), teacher candidates who received mentoring from mentors trained in Cognitive Coaching<sup>SM</sup> increased their teacher efficacy more compared to teacher candidates who received mentoring from mentors who were not trained in Cognitive Coaching<sup>SM</sup>. From the studies above, Cognitive Coaching<sup>SM</sup> has a positive impact on teacher efficacy for experienced and novice teachers as well as teacher candidates (Edwards, 2011).

**Impact on teacher education.** Research has been conducted on the impact of Cognitive Coaching<sup>SM</sup> on teacher education programs, more specifically using Cognitive Coaching<sup>SM</sup> as a mentoring tool for teacher candidates (Clinard et al., 1997; Maginnis, 2009; Townsend, 1995). Both cooperating teachers and teacher candidates have been positively impacted by the use of Cognitive Coaching<sup>SM</sup> as a mentoring tool. According to Clinard et al. (1997), cooperating teachers indicated Cognitive Coaching<sup>SM</sup> impacted their own teaching through their use of more nonjudgmental feedback concerning teacher candidates' performance in the classroom. The same study also reported that cooperating teachers felt an increased sense of professionalism. Concerning teacher candidates, Edwards (1998) found an increase in teacher candidates' reflective thinking in relation to their own teaching. Maginnis (2009) found teacher candidates who received mentoring from mentors trained in Cognitive Coaching<sup>SM</sup> increased their teacher efficacy more

compared to teacher candidates who received mentoring from mentors who were not trained in Cognitive Coaching<sup>SM</sup>. The teacher candidates described the benefits of supportive language and relationships and formal feedback used in Cognitive Coaching<sup>SM</sup> as a means for their growth in teacher efficacy. Teacher candidates along with supervising teachers who were trained in Cognitive Coaching<sup>SM</sup> for ten hours stated Cognitive Coaching<sup>SM</sup> provided them with a better understanding of teaching, lesson planning, built trust, and facilitated deeper reflective thought (Townsend, 1995). From the studies above, Cognitive Coaching<sup>SM</sup> impacted teacher candidates' teacher efficacy and professional growth (Edwards, 2011).

### **Benefits of Cognitive Coaching<sup>SM</sup> in Education**

In the education field, Cognitive Coaching<sup>SM</sup> encourages dialogue concerning teaching, collaboration, innovation, teacher efficacy, reflection, job satisfaction, and empowerment among teachers (Brooks, 2000; Edwards & Newton, 1995; McLymont & da Costa, 1998; Ray, 1998; as cited in Maskey, 2009). By nature, effective teachers are reflective and Cognitive Coaching<sup>SM</sup> has been proven to impact a teacher's reflective skills. Moche (2001) found Cognitive Coaching<sup>SM</sup> improved the reflective skills of teachers in New York City through the three-phase cycle (planning conversation, observation, and reflecting conversation) developed by Costa and Garmston (2002). Cognitive Coaching<sup>SM</sup> was used as a means to improve teachers' performance by alerting their attention to assumptions and perceptions impacting the decisions they make while designing, planning, and implementing a lesson (Costa & Garmston, 2002). Cognitive Coaching<sup>SM</sup> benefits the mentor, mentee, and also K-12 students. According to Eger (2006), students' self-confidence increased, connections to difficult concepts were made,

classroom climate improved, and student achievement increased. In 2007, Edwards compiled documents from past Cognitive Coaching<sup>SM</sup> research and reported students' achievement increased when taught by teachers, mentors and mentees, who had participated in Cognitive Coaching<sup>SM</sup>. Their teaching style was transformed, teacher efficacy increased, trust and collaborative relationships developed amongst colleagues, and higher job satisfaction was reported (Edwards, 1998, 2007; Eger, 2006).

### **Gaps in the Literature**

Before teachers enter the teaching profession, critical steps in teacher preparation programs could be taken to promote teacher efficacy to better prepare teacher candidates for the potential struggles and frustrations they may face during their first years of teaching. Cognitive Coaching<sup>SM</sup> is a mentoring tool that a teacher education department can employ to provide support, increase teacher efficacy, and enable development of self-directed learners not only during their studies in teacher education programs but, also long after graduation. Teacher candidates are not the only benefactors of Cognitive Coaching<sup>SM</sup>, as K-12 students, school systems, and mentors benefit as well. Overall, Cognitive Coaching<sup>SM</sup> has the potential to improve the effectiveness of any teacher education program and all individuals involved.

Although extensive literature addresses Cognitive Coaching<sup>SM</sup> in education generally, discipline specific work with Cognitive Coaching<sup>SM</sup> is missing. Of particular interest to the researcher in this study is the field of physical education. An extensive review of the Cognitive Coaching<sup>SM</sup> literature revealed no studies concerning the self-efficacy of physical education teachers, and in particular, teacher candidates in physical education. Given the benefits outlined in this literature review, it would be valuable to

explore the benefits of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy. This study seeks to fill that gap in the literature.

CHAPTER III  
METHODOLOGY

**Introduction**

This study examined the impact Cognitive Coaching<sup>SM</sup>, a mentoring tool, had on physical education teacher candidates' teacher efficacy and their perceptions of the impact Cognitive Coaching<sup>SM</sup> had on their lesson planning and lesson reflection capabilities. For this study, a quasi-experimental design using mixed methods, both quantitative and qualitative measures, was used to examine the impact of Cognitive Coaching<sup>SM</sup> on teacher candidates' teacher efficacy using pre- and post-test measures to determine the impact of the prescribed intervention, Cognitive Coaching<sup>SM</sup>. During the intervention phase, semi-structured interviews and an intervention open-ended survey was collected and examined as well. This chapter includes a description of the research design and questions, population and sample, instrumentation, data collection, data analysis, positionality, validity, and limitations.

**Research Questions**

*Quantitative*

RQ<sub>1</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>2</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

RQ<sub>3</sub>: Is there a significant gender difference in teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>4</sub>: Is there a significant gender difference in teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

#### *Qualitative*

RQ<sub>5</sub>: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

### **Research Design**

A quasi-experimental design using mixed methods, both quantitative and qualitative measures, was used to show the impact of the intervention, Cognitive Coaching<sup>SM</sup>, on physical education teacher candidates' teacher efficacy and their perceptions of the impact Cognitive Coaching<sup>SM</sup> had on their lesson planning and lesson reflection capabilities. The design is a quasi-experimental design with an untreated control group with pre- and post-test samples (Shadish, Cook & Campbell, 2002). Like other quasi-experimental designs, the use of pre-tests and control groups helped compare the differences between groups and identified any internal threats that affected the significance of the study. Pre- and post-test measures helped the researcher determine if the intervention impacted physical education teacher candidates' teacher efficacy. The qualitative data, semi-structured interviews and an intervention open-ended survey helped

identify how the intervention impacted physical education teacher candidates' teacher efficacy and perceptions. Roberts (2010) stated employing both qualitative and quantitative measures could be important to “providing results with greater breadth and depth” (p. 145).

### **Overview of the Physical Education Teacher Preparation Program**

The physical education teacher preparation program where the study took place is an initial teacher certification graduate that prepares teacher candidates to teach school health and physical education at K-12 grade levels. The program is aligned with various state and national standards for school health and physical education, most notably, the National Standards for Initial Physical Education Teacher Education (2008) proposed by the National Association for Sport and Physical Education (NASPE). Figure 2 outlines the national standards physical education standards that are addressed in the program. The program is 36-hours, typically completed in two semesters, and provides the teacher candidates with numerous clinical experiences to hone their teaching and classroom management skills.

Figure 2

*National Standards - NASPE*

<b>National Standards for Initial Physical Education Teacher Education (2008) National Association for Sport and Physical Education (NASPE)</b>	
<i>Standard 1: Scientific and Theoretical Knowledge</i>	Physical education teacher candidates know and apply discipline-specific scientific and theoretical concepts critical to the development of physically educated individuals.
<i>Standard 2: Skill-Based and Fitness-Based Competence</i>	Physical education teacher candidates are physically educated individuals with the knowledge and skills necessary to demonstrate competent movement performance and health-enhancing fitness as delineated in the NASPE K – 12 Standards.
<i>Standard 3: Planning and Implementation.</i>	Physical education teacher candidates plan and implement developmentally appropriate learning experiences aligned with local, state and national standards to address the diverse needs of all students.
<i>Standard 4: Instructional Delivery and Management</i>	Physical education teacher candidates use effective communication and pedagogical skills and strategies to enhance student engagement and learning.
<i>Standard 5: Impact on Student Learning</i>	Physical education teacher candidates use assessments and reflection to foster student learning and inform decisions about instruction.
<i>Standard 6: Professionalism</i>	Physical education teacher candidates demonstrate dispositions essential to becoming effective professionals.

(National Association for Sport and Physical Education, 2008).

During the fall semester, teacher candidates complete three courses, Teaching and Learning for Elementary Physical Education, Methods in Practical Living: Health, and Teaching and Learning for Secondary Physical Education. Three different faculty members associated with the graduate program teach the three courses, which each last five weeks. For the first two weeks of the course on campus, the teacher candidates focus on lesson and unit planning and strategies for implementation. The last three weeks of the course, the field placement portion, teacher candidates spend all of their time in the K-12



setting practicing their teaching skills discussed during the first two weeks of the courses. During the field placement portion of the courses, the teacher candidates implement strategies learned with K-12 students under the guidance of a certified health and/or physical education teacher. Also, the faculty members associated with the courses observe each teacher candidate at least twice during the fieldwork portion of the course using college-approved rubrics to assess their teaching skills. The rubrics are aligned with colleges, state, and national guidelines and standards. Content specific feedback concerning the teacher candidates' implementation of topics and skills are provided to aid in the development of their teaching skills at each grade level.

Before a taught lesson, objectives, assessments, and content are reviewed for continuity and after a lesson, the teacher candidates' reflection is reviewed for a detailed analysis of how the students met the objectives. Grades are assigned to the teacher candidates based on their abilities to plan and implement an effective lesson, create age appropriate units, execute effective classroom managements skills, and reflect on taught lessons in a thoughtful manner. Teacher candidates who not do earn satisfactory grades, B or higher, during the fall semester are not permitted to enroll in the spring semester courses.

The courses during the spring semester are structured similar to the courses in the fall semester. During the spring semester, teacher candidates complete student teaching in three placements, Student Teaching: Elementary Physical Education, Student Teaching: Health Education, and Student Teaching: Middle and Secondary Physical Education. Three different faculty members associated with the graduate program oversee the student teaching experience. During student teaching, faculty members provide feedback

to the teacher candidate before and after a taught lesson similar to the fall semester. Teacher candidates who do earn satisfactory grades, C or higher, during the spring semester are not permitted to graduate and earn initial teacher certification.

### **Case Study**

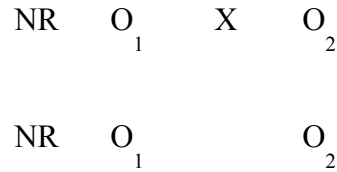
An exploratory, case study (Tashakkori & Teddlie, 1998) was conducted in 2012 by the researcher to better understand the complexities of the current study and the nature of the problem, physical education teacher candidates' teacher efficacy. Data was collected using the *Ohio State Teacher Efficacy Scale* (Tschannen-Moran & Hoy, 2001), semi-structured interview questions (Appendix A and B), and the intervention open-ended survey (Appendix C). One physical education teacher candidate was the participant in the case study and findings indicated Cognitive Coaching positively impacted the teacher candidate's efficacy. The case study provided the researcher with an understanding of the appropriate allotment of time needed to collect the qualitative data and helped the researcher outline necessities for the upcoming study.

### **Quantitative Methods**

As stated earlier, this study used a quasi-experimental design with an untreated control group with pre- and post-test samples as the means for collecting data. The measurements used were the *Ohio State Teacher Efficacy Scale (OSTES)* (Tschannen-Moran & Hoy, 2001) (Appendix E) and the *Physical Education Teaching Efficacy Scale (PETES)* (Humphries, Hebert, Daigle, & Martin, 2012) (Appendix F).

The design in diagram form is below with NR representing a non-random sample, O representing the measures, and X representing the treatment. The quantitative and

qualitative data collected were used to test the hypotheses that the treatment impacted teacher candidates' teacher efficacy.



First, random assignment was used to assign the participants into the treatment and control groups. The groups completed the *OSTES* and *PETES* represented by O<sub>1</sub>. This was administered and collected along with demographic information prior to treatment, *Phase 1*. After the six-week treatment, both treatment and control groups completed the *OSTES* and *PETES* represented by O<sub>2</sub>, *Phase 2*. A faculty member associated with the teacher preparation administered the surveys at both collection times and kept them for the researcher until the end of the study.

### **Qualitative Methods**

In order to fully explain teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their teacher efficacy, qualitative data was collected in the form of semi-structured interviews and an intervention open-ended survey. Collecting data in this manner provided a viewpoint of the participants with descriptive detail and "provided a possible why" for the findings of the quantitative data (Roberts, 2010, p. 145). Physical education teacher candidates participated in the semi-structured interviews with the researcher before and after the lesson that was observed. The interviews utilized the Planning and Reflecting Conversation Maps from Cognitive Coaching<sup>SM</sup>. The intervention open-ended survey was sent via email to the participants by a faculty associated with the teacher preparation program at the end of each intervention phase.

The faculty member collected the completed open-ended survey for the researcher and kept them until the end of the study. Both qualitative and quantitative data sources and their connection to the research questions are shown in Figure 3.

Figure 3

*Research Questions and Data Sources*

Research Question	Instrument/Data Sources
<p>RQ<sub>1</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the <i>Ohio State Teacher Efficacy Scale</i>?</p> <p>RQ<sub>2</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the <i>Physical Education Teaching Efficacy Scale</i>?</p> <p>RQ<sub>3</sub>: Is there a significant gender difference in teacher efficacy measured by the <i>Ohio State Teacher Efficacy Scale</i>?</p> <p>RQ<sub>4</sub>: Is there a significant gender difference in teacher efficacy measured by the <i>Physical Education Teaching Efficacy Scale</i>?</p> <p><i>(Quantitative)</i></p>	<ul style="list-style-type: none"> <li>• The <i>Ohio State Teacher Efficacy Scale</i></li> <li>• The <i>Physical Education Teaching Efficacy Scale</i></li> </ul>
<p>RQ<sub>5</sub>: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?</p> <p><i>(Qualitative)</i></p>	<ul style="list-style-type: none"> <li>• Semi-Structured Interview 1: Planning Conversation</li> <li>• Semi-Structured Interview 2: Reflection Conversation</li> <li>• Intervention Open-ended Survey</li> </ul>

**Population and Sample**

The target population in this study was physical education teacher's candidates earning initial teacher certification. The sample included all 14 physical education teacher

candidates enrolled in a one-year master's program of initial certification in health and physical education in a College of Education and Human Development at a mid-western, public, metropolitan university. The age range of students was 18-25. The university is a nationally recognized research university with the commitment to economic, intellectual and cultural development of the diverse community within which the university is housed. The College of Education and Human Development is NCATE accredited and has programs geared toward producing qualified graduates in the fields of teaching, administration, sport management, counseling, and student affairs. The College of Education and Human Development housed within the mid-western university has a large physical education teacher education program and has strong ties to the largest school district in the state.

### **Sampling Plan**

At the beginning of the academic year, participants were asked to volunteer for participation in the study. All participants self-selected into the study and were randomly assigned into treatment and control groups with seven teachers candidates in each group.

### **Instrumentation/Data Sources**

#### **Quantitative**

This study used pre- and post-test measures in the form of two surveys, *OSTES* and *PETES*, to collect data in order to examine the impact of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy. The *OSTES* (Tschannen-Moran & Hoy, 2001), a self-report instrument, was chosen because the survey has "good validity and the factors were conceptually sound representation of the various tasks of teaching" (Tschannen-Moran & Hoy, 2001, p. 798) (see Appendix E). Concerning the specificity of

the self-efficacy construct for this study, the specific task being assessed by the *OSTES* is teacher efficacy. While assessing a broad range of teacher capabilities, the *OSTES* allows for comparisons of teachers and inservice teachers across contexts and subject. The survey yields three subscales: instruction, classroom management, and engagement. The survey is a 24-item survey with 8 items for each on a 9-point Likert-type scale with responses ranging from 1 (nothing) to 9 (a great deal). The higher the scores are, the higher teacher self-efficacy a physical education teacher candidate perceives they possess. Internal consistency reliability coefficient, Cronbach's alpha, reported for this instrument were .94 for the entire scale, .87 for engagement, .91 for instruction and .90 for management (Tschannen-Moran & Hoy, 2001). Nunnally (1978) and DeVellis (2003) suggest coefficients of .70 or higher are acceptable, suggesting that the internal consistency reliability of the scores generated from the subscales are acceptable. In this study, the same instrument was administered both for pre- and post-tests.

Construct validity was reported by the researchers by assessing the correlation of the *OSTES* measures with other existing measures (Kerlinger, 1986). Total scores on the *OSTES* were positively related to the Rand items (Armor, Conroy-Oseguera, Cox, King, McDonaldd, Pascal, Pauly, & Zellman, 1976) ( $r=0.35$  and  $0.28$ ,  $p<0.01$ ) as well as the Gibson and Dembo measures (Hoy & Woolfolk, 1993) personal teaching efficacy ( $r=0.48$ ,  $p<0.01$ ) and general teaching efficacy factors ( $r=0.30$ ,  $p<0.01$ ) (Tschannen-Moran & Hoy, 2001). Discriminant validity for teacher efficacy was measured using a survey of work alienation and pupil control ideology. Work alienation is "the extent to which individuals fail to experience intrinsic pride or meaning in the work" (Forsyth & Hoy, 1978, p.85). Pupil control ideology is the extent to which a teacher takes a custodial

rather than a humanistic stance toward students (Willower, Eidell, & Hoy, 1967). For both surveys, teacher efficacy was negatively related to work alienation ( $r = -0.31$ ,  $p < 0.01$ ) and pupil control ideology ( $r = -0.25$ ,  $p < 0.01$ ) suggesting that the OTES measures a construct different from work alienation and control ideology.

The *PETES* (Humphries et al., 2012), also a self-report teacher efficacy instrument, was chosen because “the preliminary results suggest that the instrument is appropriate for measuring PE teaching efficacy” (Humphries et al., 2012, p. 296) (see Appendix F). The *PETES* assesses teaching efficacy in physical education with seven subscales: content knowledge, applying scientific knowledge, accommodating skill level differences, teaching students with special needs, instruction, assessment, and using technology. The researchers, Humphries et al. (2012), used the NASPE Initial Physical Education Teacher Education Standards as a basis for creating the survey. The *PETES* is based on a 10-point scale and comprises of 35-items with 4-6 items for each of the seven subscales. The responses range from 1 (disagree/cannot do) to 10 (agree/highly certain I can do) and 5 (neutral/moderately certain I can do). The higher the scores are, the higher teacher efficacy in physical education a candidate perceives they possess. Internal consistency reliability coefficients, Cronbach’s alphas, reported for each factor in the instrument ranged from .77 to .91 (Humphries et al., 2012). Nunnally (1978) and DeVellis (2003) suggest coefficients of .70 or higher are acceptable, suggesting that the internal consistency reliability of the scores generated from the subscales are acceptable. In this study, the same instrument was administered both for pre- and post-tests. For this measurement, construct validity was mentioned by the researchers but no evidence supporting validity of the scores from this instrument was provided. The

researchers stated that the establishment reliability and validity is an ongoing process and further evaluation of the surveys psychometric properties is need (Humphries et al., 2012). For validity specifically, the multitrait and multmethod approach is a good way to establish validity (Campbell & Fiske, 1959).

### **Qualitative**

This study used semi-structured interviews and an intervention open-ended survey to collect data concerning physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection capabilities. Two semi-structured interviews, Cognitive Coaching<sup>SM</sup> Planning Conversation (Appendix A) and Cognitive Coaching<sup>SM</sup> Reflecting Conversation (Appendix B), were used to support teacher candidates before and after an observed lesson. Both of the conversation maps from Cognitive Coaching<sup>SM</sup> are structured with five sections containing specific questions. For example, the Planning Conversation supports the teacher candidate in: (a) clarifying goals, (b) specifying success indicators, (c) anticipating approaches and strategies, (d) establishing a personal learning focus, and (e) reflecting on the coaching process. The Reflecting Conversation supports the teacher candidate in (a) summarizing impressions, (b) analyzing causal factors, (c) constructing new learning, (d) committing to application, and (e) reflecting on the coaching process. Even though questions are suggested for each section of the conversation maps (see Appendices A & B), the researcher is given flexibility in adding probing or clarifying questions, as needed, to follow-up on candidates' responses. All interviews/coaching conversations were recorded and transcribed for data analysis.



At the conclusion of *Phase 2* of the intervention, the participants completed the intervention open-ended survey to gain additional insights into the teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup>. The intervention open-ended survey showed the impact of Cognitive Coaching<sup>SM</sup> after the intervention (Appendix C). The intervention open-ended survey ask the participants to reflect on how they perceive Cognitive Coaching<sup>SM</sup> has helped their planning and reflecting capabilities and how the overall coaching process has impacted their field placement experience. These conversations were collected via email.

### **Data Collection**

The process for data collection for this study is outlined in the following section. A timeline and details explaining the three-phase process is provided. For the purpose of this study, data was collected during the fall semester of the physical education teacher preparation program.

#### **Phase 1**

First, in October, the participants were randomly assigned into treatment and control groups and the researcher scheduled the dates and times when the intervention, Cognitive Coaching<sup>SM</sup>, would occur at various public schools in three counties surrounding the university. Lastly, in mid-October, treatment and control groups completed the pretest measures, *OSTES* and *PETES*.

#### **Phase 2**

In keeping with the structure of the initial certification program, all participants in the treatment and control groups started their field placement experience at the same time, mid-October, but at different school settings. The researcher traveled to various

schools, following the intervention schedule, and conducted the first semi-structured interview, Cognitive Coaching<sup>SM</sup> Planning Conversation (Appendix A) with the treatment group. This first step of the intervention (planning conversation) occurred one-two days before the physical education teacher candidate taught a lesson. The researcher traveled back to the school setting and observed the planned lesson and conducted the second structured interview, Cognitive Coaching<sup>SM</sup> Reflecting Conversation (Appendix B), approximately one - two hours after the observed lesson with the treatment group. Each participant in the treatment group had a total of three Cognitive Coaching<sup>SM</sup> Planning Conversations (Appendix A) and a total of three Cognitive Coaching<sup>SM</sup> Reflecting Conversations (Appendix B). Both semi-structured interviews, planning and reflecting conversations, were recorded, transcribed, and coded for analysis. The control group continued with the customary structure of the initial certification outlined above.

At the conclusion of the intervention phase, both treatment and control groups completed the surveys, *OSTES* and *PETES*, and the treatment group completed the intervention open-ended survey (Appendix C). Figure 4 is provided to outline the timeline of the study.

Figure 4

*Study Timeline*

Phase	Date	Data Collected
<b>Phase 1</b>	<i>Early October 2013</i>	Demographic Information ( <i>Treatment and Control</i> )  <b>Quantitative Data</b> (Treatment and Control)  <ul style="list-style-type: none"> <li>• <i>OSTES</i> and <i>PETES</i> (Pre-Test)</li> </ul>
<b>Phase 2</b>	<i>Mid-October to Mid-November 2013</i>	<b>Qualitative Data</b> ( <i>Treatment</i> )  <ul style="list-style-type: none"> <li>• Semi-structured Interview 1: Planning Conversation</li> <li>• Semi-structured Interview 2: Reflecting Conversation</li> <li>• Intervention Open-ended Survey</li> </ul> <b>Quantitative Data</b> ( <i>Treatment and Control</i> )  <ul style="list-style-type: none"> <li>• <i>OSTES</i> and <i>PETES</i> (Post-Test)</li> </ul>

**Data Analysis**

This study used a mixed methods design with both qualitative and quantitative methods. The concurrent analysis of the two methods, parallel mixed analysis or triangulation of data sources, was used to analyze the two data sources (Tashakkori & Teddlie, 1998).

**Analysis of Quantitative Data**

RQ<sub>1</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>2</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

RQ<sub>3</sub>: Is there a significant gender difference in teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>4</sub>: Is there a significant gender difference in teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

Data from pre- and post-tests was analyzed using total score from the *Ohio State Teacher Efficacy Scale* and *Physical Education Teaching Efficacy Scale* before and after the intervention. The first independent variable was Cognitive Coaching<sup>SM</sup> with two conditions: Cognitive Coaching<sup>SM</sup> treatment and control. The second independent variable was tests because of the repeated measures, pre-test and post-test. The dependent variable was scores reported by the participants from two surveys, *OSTES* and *PETES*. A split-plot analysis of variance, SPANOVA, or mixed two-factor ANOVA was used to analyze the data. According to Shavelson (1996), the design is one of the most common mixed designs. This design was used because there was one within-subjects factor and one between-subjects factor. Since the *OSTES* measures teachers efficacy broadly and the *PETES* measures teacher efficacy specific to physical education teachers, the use of the mixed two-factor ANOVA helped determine if the treatment, Cognitive Coaching<sup>SM</sup>, had an impact on the teachers candidates teacher efficacy broadly or specifically. Also, the design helped the researcher distinguish if the differences in the treatment and control groups means occurred by chance, distinguish if the differences in the pre- and post-tests capabilities means occurred by chance, and distinguish whether the interaction of the treatment and control groups with the pre- and post-tests capabilities occurred by chance. The significance level was established at  $p < .05$ . After the assumptions, independence,

normality, sphericity, and symmetry, were met, the researcher reviewed the marginal mean plots and post hoc analyses for results.

Additionally, an analysis of covariance, ANCOVA, was used to determine if there was a significant gender difference on teacher efficacy measured by the *OSTES* and *PETES*. For this analysis, gender was the independent variable, while post-test scores on the *OSTES* and *PETES* was dependent variable with the pretest scores on the *OSTES* and *PETES* were the covariates. The ANCOVA uses the covariate, pretest, “to remove systematic differences among subjects among the groups” (Shavelson, 1996, p. 504). Also the ANCOVA, helped the researcher determine if the observed differences, if any, between means was due to chance or to systematic differences among treatment groups. With removing individual differences from the dependent variable, post-test scores, provided an accurate estimate of experimental error and a powerful statistical test (Shavelson, 1996). The significance level was established at  $p < .05$ . After the assumptions, independence, normality, homogeneity of variances, linearity, and homogeneity of regression slopes (Shavelson, 1996) were met, the researcher reviewed the analyses for interpretation of results.

### **Analysis of Qualitative Data**

*RQ<sub>5</sub>*: What are physical education teacher candidates’ perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

In this study, qualitative data was collected through three sources (a) semi-structured interview 1: planning conversation, (b) semi-structured interview 2: reflecting conversation, and (c) intervention open-ended survey. Content analysis, the analysis of text (Patton, 2002), was used to analyze the structured interviews. The interviews were

collected through voice recordings, transcribed, and coded for patterns and themes. In the initial stages of the data analysis, the researcher organized similar questions into categories to identify patterns and themes within the different phases of the semi-structured interviews (Patton, 2002). For example, responses from all participants about goal setting and clarity were grouped together to identify themes. All of the semi-structured interviews and intervention open-ended survey were read numerous times to ensure all patterns and themes were identified.

Over a six-week period, the treatment group, seven teacher candidates, received three cycles of the Cognitive Coaching<sup>SM</sup> Model. Each teacher candidate received a total of three planning conversations and three reflecting conversations, for a total of 42 conversations. All 42 voice recorded conversations were transcribed and patterns and themes were identified. Figure 5 outlines the transcription process.

Figure 5

*Qualitative Analysis: Transcriptions*

	<i>Number of Candidates</i>	<i>Number of Cognitive Coaching<sup>SM</sup> Cycles</i>	<i>Total Number of Planning Conversations</i>	<i>Total Number of Reflecting Conversations</i>	<i>Total Number of Transcriptions</i>
<b>Semi-structured interviews</b>	7	3	21	21	42

**Positionality**

At the start of my professional career, I was a physical education and health teacher for one year before I accepted a position as an instructor at a university. During my year of teaching in the public school system, I taught a multitude of units in health and physical education while supervising physical education teacher candidates who were

sent by the university to observe my instruction style and classroom management skills. I also had the opportunity to observe these future educators teach lessons and to evaluate their progress.

At the university level, I have taught physical education method courses to undergraduate and graduate students for the past eight years. As a methods instructor, I also had the opportunity to observe teacher candidates during their student teaching experiences. Many of my physical education teacher candidates expressed concern with the prospects of finding employment as a physical educator and spoke of disrespect displayed to them by peers and instructors. Upon graduation, many found teaching jobs but several left and found employment at a different school or left the teaching profession after a few years because of the lack of support they felt from administrators and colleagues. Over the years, I became interested in why these beginning teachers were feeling disenfranchised with their chosen profession. Also during this time, I began to reflect on my past experiences as a teacher candidate. As a teacher candidate at the university, I experienced situations in which peers and instructors showed a lack of understanding and respect for my chosen profession. As a first-year teacher, I did not feel support from some administrators and colleagues and after my first year of teaching, I left the public school system.

My past experiences coupled with the experiences of many of my past students, sparked my interest to understand why physical education teachers experienced feelings of isolation and decreased confidence and how those feelings might be overcome. Through my doctoral coursework, I learned feelings of isolation and decreased confidence can lead to a decrease sense of efficacy and mentoring was a way to increase

self-efficacy. Also during this time, I was introduced to Cognitive Coaching<sup>SM</sup>, a mentoring tool, shown to increase efficacy (Maskey, 2009). I completed the 8-day Cognitive Coaching<sup>SM</sup> training twice in spring of 2009 and in the fall of 2011.

These experiences have helped me develop my interest and desire to support physical education teacher candidates' in becoming more highly efficacious. Also, these experiences have provided me with a strong background to understand the needs of physical education teacher candidates.

### **Validity/Trustworthiness**

During the course of the study, the researcher maintained professional integrity, followed all IRB guidelines to maximize confidentiality of all participants, and adhered to all procedures outlined in the study. Validity and trustworthiness for this study is outlined below.

#### **Quantitative**

For this study, there are potential threats to construct, internal, external and statistical conclusion validity. Figure 6 outlines the specific threats for each.



Figure 6

*Quantitative: Validity Threats*

<b>Validity: Four Types</b>	<b>Threats Specific to the Study</b>
<i>Construct Validity</i>	<ul style="list-style-type: none"> <li>• Reactivity to experimental situations</li> </ul>
<i>Internal Validity</i>	<ul style="list-style-type: none"> <li>• Maturation</li> <li>• Testing</li> <li>• Selection</li> </ul>
<i>External Validity</i>	<ul style="list-style-type: none"> <li>• Interaction of Casual relationship with units</li> </ul>
<i>Statistical Conclusion Validity</i>	<ul style="list-style-type: none"> <li>• Low statistical power</li> <li>• Unreliability of treatment implementation</li> </ul>

(Shadish et al., 2002)

**Construct Validity**

For this study, reactivity to the experimental situation is a threat to construct validity. The participants in the study have known the researcher for several years and they could complete the surveys, *OSTES* and *PETES*, in a manner they think the researcher would want them to. One way to reduce this issue is to have another person administer the *OSTES* and *PETES*. Decreasing the visible contact with the researcher could lessen any potential pressure the participants may feel to provide positive results concerning the impact of the intervention. For this study, another faculty member administered the *OSTES* and *PETES* during both data collection times and kept the surveys for the researcher until the completion of the study.

**Internal Validity**

Three threats to internal validity - maturation, testing, and selection - are possible for this study. Concerning maturation, the initial teacher certification program is

structured as a cohort model and is an extension of the teacher candidates' undergraduate education. These students completed their undergraduate education together, passed entrance exams with similar scores, and applied to the program at the same time. For this cohort, maturation will occur as they better their teaching skills through experiences they have in the K-12 school. Because this group of participants act as a cohort their "individual maturation status is about the same" (Shadish et al., 2002, p. 57) thus reducing the threat. In relation to testing effects, the teacher candidates will take the survey a total of three times during the study. The repetition could cause the participants to become familiar with the questions and answer accordingly. Because only two surveys are being used, the data collection protocol was followed to ensure no inconsistencies during the data collection procedures. Selection is the last potential threat to internal validity. The students who are enrolled in the initial teacher certification program and self-selected into the study could already have teacher high efficacy. The participants' past experiences in relation to teaching could foster the development of high teacher efficacy, in a positive manner, and affect the data being collected.

### **External Validity**

Interaction of causal relationship with units is a threat to external validity. The participants, physical education teacher candidates, specialize in physical education content and their experiences differ from other teacher candidates in various content areas. The effects found for these participants might not be found with others in different content areas. The effects might not be generalizable. Also, with the small sample size, the effects of the intervention might not hold true for other physical education teacher candidates at other universities. Since random sampling of teacher candidates was not

feasible for this study, the researcher adhered to the data collection protocol to ensure no inconsistencies during the data collection procedures.

### **Statistical Conclusion Validity**

Low statistical power is a threat to statistical conclusion validity (Shadish et al., 2002) because of the small sample size ( $N=14$ ). The limited number of applicants admitted into the program could affect the power of the results. Also, unreliability of treatment implementation is a threat to the statistical conclusion validity. The structure of the initial teacher certification program is celebrated because teacher candidates visit several schools allowing them to observe various teaching styles and improve upon their own teaching skills. Feedback from cooperating teachers and university supervisors, a customary component of the program, is beneficial and necessary for professional growth of the teacher candidates but not ideal for data collection and could impact the effect size.

### **Qualitative**

Traditional notions of validity do not apply to qualitative research. Instead qualitative researchers focus on trustworthiness (Shenton, 2004). Shenton (2004) suggests there are “provisions that the qualitative researcher may employ to meet” (p. 64) trustworthiness using four constructs outlined by Guba (1981). The four constructs are (a) credibility, (b) transferability, (c) dependability, and (d) confirmability. For this study the strategies for ensuring trustworthiness are outlined in Figure 7.

Figure 7

*Qualitative: Ensuring Trustworthiness*

<b>Trustworthiness Constructs</b>	<b>Criteria</b>
<i>Credibility</i>	<ul style="list-style-type: none"> <li>• Established Research Methods</li> <li>• Random Sampling</li> <li>• Triangulation</li> <li>• Experience and Qualifications of the Researcher</li> <li>• Thick Description</li> </ul>
<i>Transferability</i>	<ul style="list-style-type: none"> <li>• Detailed Descriptions</li> </ul>
<i>Dependability</i>	<ul style="list-style-type: none"> <li>• Implementation of the Research Design</li> <li>• Detailed Data Collection Procedures</li> </ul>
<i>Confirmability</i>	<ul style="list-style-type: none"> <li>• Triangulation</li> <li>• Admission of researcher beliefs</li> </ul>

(Guba, 1981; Shenton, 2004)

**Credibility**

In qualitative research, a researchers “attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented” is referred to as credibility (Guba, 1981, p. 63). Guba (1981) stated credibility is one of the most important constructs in establishing trustworthiness. For this study, (a) establishing clear research methods, (b) random sampling, (c) triangulating data sources, (d) qualifying the experiences of the researcher, and (e) providing thick descriptions were provisions followed by the researcher to promote credibility.

Establishing clear research methods was achieved by the thoroughness of this chapter in outlining the research methods used in this study. The detailed analysis of the qualitative data provided in Chapter 4 demonstrates the results of those methods. Random

sampling was used in this study to ensure credibility. Although, the participants self-selected into the study, they were randomly assigned into treatment and control groups. Triangulation was addressed through four qualitative data sources. Semi-structured interviews 1 and 2 and intervention open-ended surveys 1 and 2, were triangulated to explain the extent the intervention impacted physical education teacher candidate perceptions.

According to Patton (2002), the experiences of the researcher are important in qualitative data because the researcher is the instrument of data collection and analysis. The researcher who conducted this study has extensive experience implementing the intervention, Cognitive Coaching<sup>SM</sup>. After completing two Cognitive Coaching<sup>SM</sup> trainings and conducting a preliminary study using Cognitive Coaching<sup>SM</sup>, the researcher can accurately deliver the intervention to the treatment groups. A more detailed description of the researchers experiences is outlined in the positionality section.

Thick descriptions of the collected data promotes credibility because it helps explain any impact observed in the study. After data analysis, the researcher provided a detailed account of how Cognitive Coaching<sup>SM</sup> impacted physical education teacher candidates' perceptions by reporting consistencies and inconsistency in their semi-structured interviews and intervention open-ended surveys. By providing a detailed analysis of the collected data, the researcher provided the reader with a detailed account of the impact of Cognitive Coaching<sup>SM</sup>

### **Transferability**

Traditionally, findings and conclusions in qualitative studies are difficult to apply to other situations and populations because of the small number of participants and

settings used in the studies (Shenton, 2004). However, if sufficient contextual information about the fieldwork site is provided to the readers (Shenton, 2004), they can make a transfer of the results described in a research report with those that they have seen in other situations. Sufficient contextual information, number of participants, data collection methods, and number and length of data collection sessions, outline the boundaries of the study and provide a frame of reference for the readers so they can transfer the findings to other situations. For the purpose of this study, the researcher provided sufficient contextual information related to this study in the data collection section of this dissertation.

### **Dependability**

Dependability, closely tied to credibility, is achieved through the use of “overlapping methods, interviews and focus groups” (Shenton, 2004, p. 71) and can be addressed by providing a detailed description of the research design, data collection process, and results. The detailed description provides future researchers with an understanding of the methods and its effectiveness and enables the researchers the ability to repeat the study. For the purpose of this study, semi-structured interviews and intervention open-ended surveys were the overlapping methods and a detailed description of the design, data collection process, and results were provided.

### **Confirmability**

Confirmability is the concept that the study’s findings are the result of the experiences of the participant and not the preferences of the researcher (Shenton, 2004). Triangulation, used to reduce the effects of a researcher’s preference, and a researcher’s own admission of predispositions are key principles for confirmability. According to

Shenton (2004), beliefs underpinning decisions made and methods used should be outlined in the description of the study. For the purpose of this study, the researcher used triangulation and provided a detailed description of the data collection and analysis process to show why and how certain methods were used.

## **Reliability**

### **Quantitative**

Reliability is the degree to which the results of a measurement represent the quality of a construct (Tashakkori & Teddlie, 1998). In this study, two surveys were used to determine the impact of Cognitive Coaching on physical education teacher candidates' teacher efficacy, the *Ohio State Teacher Efficacy Scale (OSTES)* (Tschannen-Moran & Hoy, 2001) and the *Physical Education Teaching Efficacy Scale (PETES)* (Humphries et al., 2012).

For the *PETES*, internal consistency reliability coefficient, Cronbach's alpha, reported for each factor in the instrument ranged from .77 to .91 (Humphries et al., 2012). Nunnally (1978) and DeVellis (2003) suggest a score of .70 or higher are acceptable alpha level scores. Also, test-retest reliability (Tashakkori & Teddlie, 1998) was used to determine reliability of the survey. To examine test-retest reliability, 64 participants completed the *PETES* twice over a three-day period and the interclass correlations ranged from .63 to .88 (Humphries et al., 2012).

For the *OSTES*, Internal consistency reliability coefficient, Cronbach's alpha, scores reported for this instrument were .94 for the entire scale, .87 for engagement, .91 for instruction and .90 for management (Tschannen-Moran & Hoy, 2001). Nunnally (1978) and DeVellis (2003) suggest a score of .70 or higher are acceptable alpha level

scores. Also, parallel forms and split half reliability measures were used to determine the reliability of the survey. To examine parallel forms reliability between the long (24 items) and short (12 items) forms of the survey, correlations for the three subscales ranged from .95 and .98 (Tschannen-Moran & Hoy, 2001). To examine split half reliability between the three subscales, correlations were .60, .70, and .058 ( $p < 0.001$ ) (Tschannen-Moran & Hoy, 2001).

### **Qualitative**

Transparency, consistency, communicability (Rubin & Rubin, 1995) and dependability (Shenton, 2004) are all factors that determine reliability in qualitative data sources. Transparency was addressed through a thoroughly outlined data collection and analysis process to show consistencies and inconsistencies among the data sources. The clear outline was a strength of the study and illustrated it could be replicated among different participants and locations. Consistency and communicability were evident through the systematic analysis of both data sources. Procedures throughout the entire study stayed consistent during all three phases. All participants received the treatment during the intervention. Thick descriptions based on the semi-structured interviews and open-ended surveys provided insights into the participants' perceptions. Dependability was evident through detailed descriptions of the research design, data collection process, data analysis process and study results providing future researchers the opportunity to employ the same methods found in this study.

### **Limitations**

A limitation of this study was the fairly small sample size, which could affect the generalizability of the results. Only 14 physical education teacher candidates' were



included in the study. The findings for these specific participants may not be generalizable to physical education teacher candidates at other universities since each program is structured differently.

Another limitation is the researcher is a program director and faculty member at the university where the study was conducted. Participants in the study have known the researcher for several years and their responses on the *OSTES* and *PETES* and intervention open-ended survey and in the semi-structured interviews could be intentionally inflated. The participants in the study could answer questions on the surveys and conversations and in the interviews the way they think the researcher would want them to answer. Also, the researcher assigned grades for work completed during their field placements. It is possible that those grades could impact the teacher candidates' responses.

Lastly, the duration of the study is a limitation. The total duration of the study is only six-weeks. Ensuring an adequate amount of time for impacting teacher efficacy could be effected due to the limited time.

## CHAPTER IV

### RESULTS

#### **Introduction**

The intent of this chapter is to present the findings of how Cognitive Coaching<sup>SM</sup>, a mentoring tool, impacted physical education teacher candidates' teacher efficacy. Both quantitative and qualitative data were collected. For this study, a quasi-experimental design using mixed methods, both quantitative and qualitative measures, was used to examine the impact of Cognitive Coaching<sup>SM</sup> on the teacher candidates' teacher efficacy using pre- and post-test measures, the *Ohio State Teacher Efficacy Scale (OSTES)* and the *Physical Education Teaching Efficacy Scale (PETES)*, to determine the impact of the prescribed intervention, Cognitive Coaching<sup>SM</sup>. During the intervention phase, semi-structured interviews, planning and reflecting conversations, and response to an intervention open-ended survey were collected and examined as well. The participants in the study were 14 physical education teacher candidates enrolled in a one-year master's program for initial teacher certification in health and physical education. This chapter will report findings to the research questions. The research questions are as followed:

#### *Quantitative*

RQ<sub>1</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>2</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Physical Education Teacher Efficacy Scale*?

RQ<sub>3</sub>: Is there a significant gender difference in teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>4</sub>: Is there a significant gender difference in teacher efficacy measured by the *Physical Education Teacher Efficacy Scale*?

### *Qualitative*

RQ<sub>5</sub>: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

For this chapter, an overview of the data collection procedure, analysis of quantitative data, and qualitative data analysis are discussed.

### **Overview of Data Collection Procedure**

After IRB approval, all participants were informed of their rights as human subjects and agreed via written consent to participate in the study. Also, the researcher explained to the participants their grades were not contingent upon their participation in the study. First, the participants were randomly assigned into treatment and control groups and the researcher scheduled the dates and times when the intervention, Cognitive Coaching<sup>SM</sup>, would occur in one school district near the university. Before the study began, the participants, treatment and control groups, completed the pretest measures, *OSTES* and *PETES*.

After one week, all participants in the treatment ( $n = 7$ ) and control ( $n = 7$ ) groups started their field placement experience and the researcher traveled to various schools,

following the intervention schedule, and conducted the first semi-structured interview, the Cognitive Coaching<sup>SM</sup> Planning Conversation (Appendix A) with the treatment group. This first step of the intervention (planning conversation), occurred one-two days before the physical education teacher candidate taught a lesson. The researcher traveled back to the school setting and observed the planned lesson and conducted the second structured interview, Cognitive Coaching<sup>SM</sup> Reflecting Conversation (Appendix B), approximately one-two hours after the observed lesson with the treatment group. Each participant in the treatment group had a total of three Cognitive Coaching<sup>SM</sup> Planning Conversations (Appendix A) and a total of three Cognitive Coaching<sup>SM</sup> Reflecting Conversations (Appendix B). The control group continued with the customary structure of the initial certification program, which is detailed in Chapter 3.

At the conclusion of the intervention phase, both treatment and control groups completed the *OSTES* and *PETES* surveys. In addition, the treatment group completed the intervention open-ended survey (Appendix C).

### **Quantitative Data Analysis**

For the quantitative research questions, data were collected using the *Ohio State Teacher Efficacy Scale (OSTES)* and *Physical Education Teaching Efficacy Scales (PETES)* for pre- and post-test measure after the prescribed treatment, Cognitive Coaching<sup>SM</sup>. First, a split-plot analysis of variance, SPANOVA, or mixed two-factor ANOVA was used to distinguish differences between means scores of the pre-test and post-test measures with a significance level of  $p < .05$ . Second, an analysis of covariance, ANCOVA, was used to determine if there was a significant gender difference in teacher efficacy measured by the *OSTES* and *PETES* with the pretest scores from the *OSTES* and

*PETES* as the covariates. The significance level was established as  $p < .05$  as well.

Descriptive statistics, correlational analysis, and reliability analysis are reported first followed by SPANOVA and ANCOVA analyses.

**Descriptive Statistics.** Means and standard deviations for the major variables were first obtained. Table 1 illustrates the means and standard deviations for the subscales in the *OSTES* and *PETES*. For all the subscales on the *OSTES* and *PETES*, females had higher levels of efficacy. For example, the subscale of student engagement on the *OSTES* shows females had higher efficacy concerning student engagement ( $M = 62.000$ ,  $SD = 6.458$ ) compared to males ( $M = 55.500$ ,  $SD = 9.772$ ). Similarly, the subscale of content knowledge on the *PETES* shows females had higher efficacy concerning content knowledge ( $M = 40.250$ ,  $SD = 6.692$ ) compared to males ( $M = 34.000$ ,  $SD = 8.602$ ).

Table 1

*Means and Standards Deviations – Post-Test Scores*

Variable		<i>N</i>	<i>M</i>	<i>SD</i>
<i>OSTES</i>				
Student Engagement	Male	6	55.500	9.772
	Female	8	62.000	6.458
	Total	14	59.214	8.386
Instructional Strategies	Male	6	53.500	11.657
	Female	8	63.125	5.986
	Total	14	59.000	9.797
Classroom Management	Male	6	54.833	9.453
	Female	8	63.875	6.289
	Total	14	60.000	8.788
<i>PETES</i>				

Table 1 (continued)  
*Means and Standards Deviations*

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Content Knowledge	Male	6	34.000	8.602
	Female	8	40.250	6.692
	Total	14	37.571	7.929
Scientific Knowledge	Male	6	31.500	4.593
	Female	8	37.000	2.725
	Total	14	34.642	4.482
Skill Differences	Male	6	39.500	9.332
	Female	8	47.500	3.505
	Total	14	44.071	7.549
Special Needs	Male	6	32.833	8.183
	Female	8	42.625	4.983
	Total	14	38.428	8.026
Instruction	Male	6	47.166	8.953
	Female	8	56.625	3.662
	Total	14	52.571	7.851
Assessment	Male	6	37.166	9.108
	Female	8	45.500	3.422
	Total	14	41.928	7.518
Technology	Male	6	37.000	8.414
	Female	8	47.250	3.105
	Total	14	43.785	8.285

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*Note:* Maximum mean score for *OSTES* was 72.000 and 50.000 for *PETES*.

**Correlation Analysis.** Next, inter-correlations among the major variables were obtained. As shown in Table 2, the correlation coefficients ranged from .296 to .872 for pre-test measures. Also, the correlation coefficients ranged from .511 to .944 for post-test measures as shown in Table 3. In spite of the small sample size, many correlations from both pre- and post-test measures, were statistically significant at both  $p < .05$  and  $p < .01$

alpha levels. For example in Table 2, the correlations between efficacy in skill development and efficacy in scientific knowledge on the *PETES* was .739, which was statistically significant at  $p < .01$ . This indicated that the two subscale scores shared approximately 55% of the variance and that the more understanding of skill development and scientific knowledge a teacher had, the more efficacious they were in relation to teaching. Tables 2 and 3 illustrate the intercorrelations for the pre- and post-tests major variables.

Table 2

*Intercorrelations: Pre-Test scores for the OSTES and PETES*

	1	2	3	4	5	6	7	8	9	10
<i>PETES</i> - Content Knowledge 1	1.00									
<i>PETES</i> - Scientific Knowledge 2	.499	1.00								
<i>PETES</i> - Skill Differences 3	.466	.739**	1.00							
<i>PETES</i> - Special Needs 4	.579*	.457	.602*	1.00						
<i>PETES</i> - Instruction 5	.342	.696**	.764**	.763**	1.00					
<i>PETES</i> - Assessment 6	.341	.296	.463	.824**	.670**	1.00				
<i>PETES</i> - Technology 7	.515	.496	.482	.828**	.665**	.848**	1.00			
<i>OSTES</i> - Student Engagement 8	.357	.459	.611*	.634*	.808**	.532*	.669**	1.00		
<i>OSTES</i> - Instructional Strategies 9	.474	.369	.639*	.749**	.772**	.749**	.872**	.828**	1.00	
<i>OSTES</i> - Classroom Management 10	.456	.673**	.562	.647*	.855**	.585*	.589*	.623*	.657*	1.00

\*.  $p < .05$ , \*\*.  $p < .01$

Table 3

*Intercorrelations: Post-Test scores for the OSTES and PETES*

	1	2	3	4	5	6	7	8	9	10
<i>PETES</i> – Content Knowledge 1	1.00									
<i>PETES</i> - Scientific Knowledge 2	.705**	1.00								
<i>PETES</i> - Skill Differences 3	.562*	.887*	1.00							
<i>PETES</i> - Special Needs 4	.647*	.832*	.795**	1.00						
<i>PETES</i> – Instruction 5	.523	.865**	.927**	.915**	1.00					
<i>PETES</i> – Assessment 6	.521	.814**	.871**	.913**	.943**	1.00				
<i>PETES</i> – Technology 7	.511	.801**	.832**	.891**	.931**	.953**	1.00			
<i>OSTES</i> - Student Engagement 8	.534*	.763**	.736**	.926**	.871**	.885**	.776**	1.00		
<i>OSTES</i> - Instructional Strategies 9	.580*	.683**	.783**	.902**	.880**	.909**	.834**	.904**	1.00	
<i>OSTES</i> - Classroom Management 10	.553*	.752**	.735**	.944**	.892**	.892**	.852**	.938**	.921**	1.00

\*.  $p < .05$ , \*\*.  $p < .01$

**Reliability Analysis.** Cronbach’s alphas were computed for each pre-test and post-test measure. These coefficients are presented in Table 4. In general, the internal consistency reliability coefficients of the scores from the subscales scores were high, indicating the participants’ responses were fairly consistent. The internal consistency reliability coefficients for the total scores from both pre- and post-test measures on the *PETES* were .947 and .984, respectively and the internal consistency reliability



coefficients for the total scores from both pre- and post-test measures on the *OSTES* were .916 and .979. Nunnally (1978) and DeVellis (2003) suggested coefficients of .70 or higher are acceptable. The high internal consistency reliability coefficients reported for this study are consistent with the suggested coefficient outlined by Nunnally (1978) and DeVellis (2003). However, one internal consistency reliability coefficient for a subscale was below .70. For the *PETES*, efficacy in scientific knowledge was .250 and indicates the responses from the participations were not consistent.

Table 4

*Reliability Analysis – Pre- and Post-Test Coefficients for the OSTES and PETES*

	<i>OSTES</i>		<i>PETES</i>	
	Pre	Post	Pre	Post
Student Engagement	.813	.936		
Instructional Strategies	.733	.957		
Classroom Management	.860	.934		
Content Knowledge			.813	.820
Scientific Knowledge			.250	.844
Skill Levels			.905	.970
Special Needs			.880	.957
Instruction			.864	.980
Assessment			.895	.949
Technology			.781	.976
Total	.916	.979	.947	.984

**Research Question 1**

The research question posed was: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the

Physical Education Teacher Efficacy Scale? For this question, a split-plot analysis of variance, SPANOVA, was used to analyze the data. A non-random sample of physical education teacher candidates ( $N = 14$ ) were randomly assigned into one of two conditions, treatment or control. For this analysis, the independent variables were, treatment with two levels (Cognitive Coaching<sup>SM</sup> and control groups), and test with two levels (pre- and post-tests). The treatment was the between-subject factor and the test was the within-subject factor. The dependent variable was teacher efficacy scores measured by the *Physical Education Teaching Efficacy Scale (PETES)*.

Prior to the analyses, relevant assumptions (Shavelson, 1996) were checked. For independence, participants were randomly assigned into treatment and control groups and all participants were tested individually. All scores were normally distributed thus, meeting the normality assumption. Next two assumptions related to the within-subjects design were checked: sphericity and symmetry. Sphericity assumption states that all the variances of the differences are equal in the population. The Mauchly's test of sphericity, all the variances of the differences in the scores are different from one another, was not significant,  $\chi^2(0) = .000, p = 1.00$ , thus reflecting that the assumption was met. The other assumption, symmetry assumption, states that all the covariances of the difference scores are equal in the population. For this assumption, Box's M test was examined, which was not significant,  $F(1, 25920.000) = 1.542, p = .201$ , thus meeting the assumption as well. Lastly, Levene's test of homogeneity of variance at each group level was examined. The test results indicated that both groups had equal variances for both tests: for pre-test total scores was  $F(1,12) = .129, p = .726$  and post-test scores was  $F(1,12) = 2.012, p = .182$  indicating the assumptions were met.

The results of the split-plot analysis of variance indicated a significant interaction effect of treatment, illustrated in Figure 8, on teacher efficacy scores measured by the *PETES*,  $F(1,12) = 12.950, p = .004$ . The significant interaction indicated that the effect of treatment, Cognitive Coaching<sup>SM</sup>, on teacher efficacy was dependent on the type of test, pre- and post-test. The partial eta square statistic for test and treatment was .519 indicating 52% of the variance in teacher efficacy scores on the *PETES* was accounted for by the interaction between treatment and test. Overall, Cognitive Coaching<sup>SM</sup> had a statistically significant impact on physical education teacher candidates' teacher efficacy measured by the *PETES*. Table 5 is the ANOVA summary table for this analysis.

Table 5

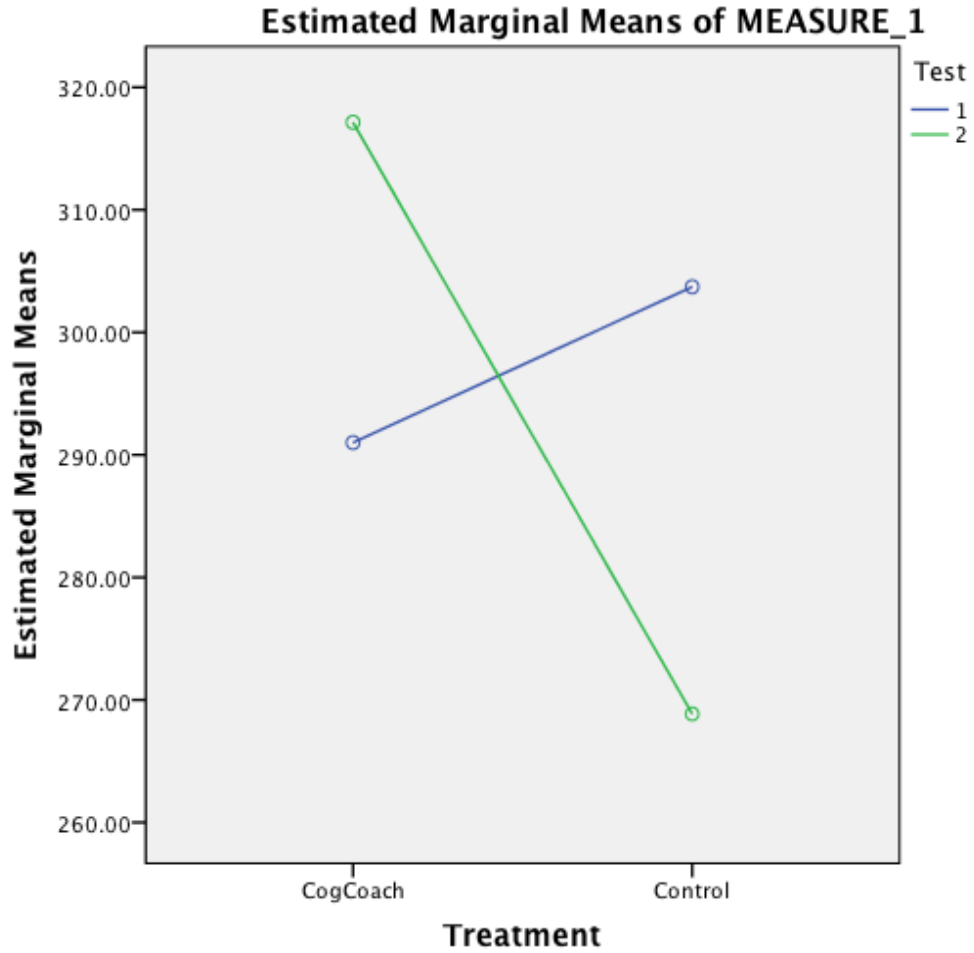
*Split-plot Analysis of Variance: PETES*

Source	SS	df	MS	F
Treatment	1.808	1	1.808	1.056
Error (Between)	20.545	12	1.712	
Test	.108	1	.108	.617
Treatment x Test	5.316	1	5.316	12.950
Error (Within)	4.929	12	.410	
Total	32.706	27		

Figure 8

*Split-plot Analysis of Variance: Interaction of Treatment Measured by the PETES*

□



*Note:* Test 1 signifies the treatment group and Test 2 signifies the control group.

Following a significant interaction between the treatment and test, a simple effects analysis was conducted as a follow-up to determine if there was a difference observed in each group was statistically significant. As shown in Table 6, the results indicated that the difference in pre- and post *PETES* scores was statistically significant for the treatment group ( $F = 4.76, p = .050$ ), and for the control group ( $F = 8.46, p = .013$ ).

Table 6

*Simple Effects Analysis: PETES*

Source of Variation	SS	df	MS	F	Sig of F
Within + Residual	4.93	12	.41		
Within Treatment (1) By Test	1.95	1	1.95	4.76	.050
Within Treatment (2) By Test	3.47	1	3.47	8.46	.013

**Research Question 2**

The research question posed was: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*? For this question, a split-plot analysis of variance, SPANOVA, was used to analyze the data as well. A non-random sample of physical education teacher candidates ( $N = 14$ ) was randomly assigned into one of two conditions, treatment or control. For this analysis, the independent variables were, treatment with two levels (Cognitive Coaching<sup>SM</sup> and control groups), and test with two levels (pre- and post-tests). The treatment was the between-subject factor and the test was the within-subject factor. The dependent variable was teacher efficacy scores measured by the *Ohio State Teacher Efficacy Scale (OSTES)*.

Prior to the analyses, relevant assumptions (Shavelson, 1996) were checked. For independence, participants were randomly assigned into treatment and control groups and all participants were tested individually. All scores were normally distributed thus, meeting the normality assumption. Next two assumptions related to the within-subjects

design were checked: sphericity and symmetry. Sphericity assumption states that all the variances of the differences are equal in the population. The Mauchly's test of sphericity, all the variances of the differences in the scores are different from one another, was not significant,  $\chi^2(0) = .000, p = 1.00$ , thus reflecting that the assumption was met. For this assumption, Box's M test was examined, which was not significant,  $F(3, 25920.000) = .623, p = .917$ , thus meeting the assumption as well. Lastly, Levene's test of homogeneity of variance at each group level was examined. The test results indicated that both groups had equal variances for both tests: for pre-test total scores was  $F(1,12) = .380, p = .549$  and post-test scores was  $F(1,12) = .022, p = .883$  indicating the assumptions were met.

The results of the split-plot analysis of variance indicated a significant interaction effect of treatment, illustrated in Figure 9, on teacher efficacy scores measured by the *OSTES*,  $F(1,12) = 8.561, p = .013$ . The significant interaction indicated that the effect of treatment, Cognitive Coaching<sup>SM</sup>, on teacher efficacy was dependent on the type of test, pre- and post-test. The partial eta square statistic for test and treatment was .416 indicating 42% of the variance on self-efficacy scores on the *OSTES* was accounted for by the interaction between treatment and test. Overall, Cognitive Coaching<sup>SM</sup> had a statistically significant impact on physical education teacher candidates' teacher efficacy measured by the *OSTES*. Table 7 is the ANOVA summary table for this analysis.

Table 7

*Split-plot Analysis of Variance: OSTES*

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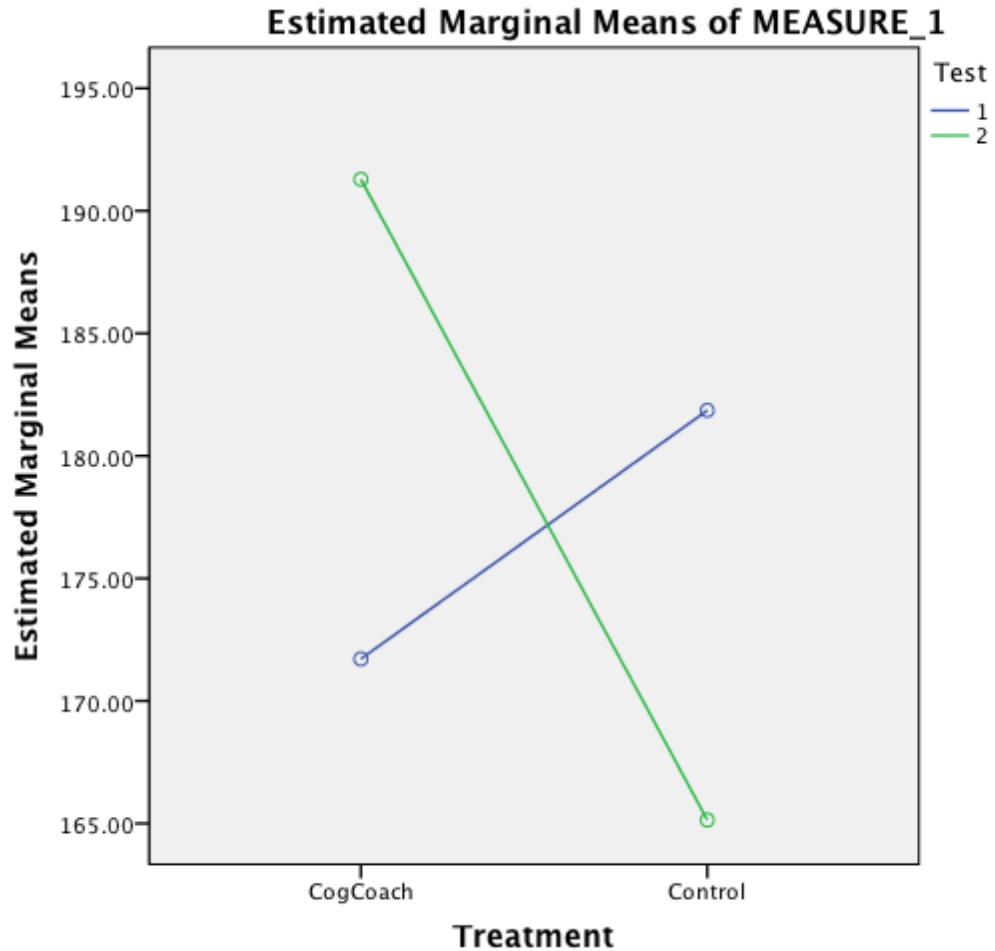
Source	SS	df	MS	F
Treatment	.778	1	.778	.874
Error (Between)	10.679	12	.890	
Test	.025	1	.025	.053
Treatment x Test	4.000	1	4.000	8.561
Error (Within)	5.607	12	.467	
Total	21.089	27		

---

Figure 9

*Split-plot Analysis of Variance: Interaction of Treatment Measured by the OSTES*

□



*Note:* Test 1 signifies the treatment group and Test 2 signifies the control group.

Following a significant interaction between the treatment and test, simple effects analysis was conducted as a follow-up to see if there the difference observed in each group was statistically significant. As shown in Table 8, the results indicated that the difference in pre- and post *OSTES* scores was statistically significant for the treatment group ( $F = 4.98, p = .045$ ), but not for the control group ( $F = 3.63, p = .081$ ).



Table 8

*Simple Effects Analysis: OSTES*

Source of Variation	SS	df	MS	F	Sig of F
Within + Residual	5.61	12	.47		
Within Treatment (1) By Test	2.33	1	2.33	4.98	.045
Within Treatment (2) By Test	1.70	1	1.70	3.63	.081

**Research Question 3**

The research question posed was: Is there a significant gender difference in teacher measured by the *Ohio State Teacher Efficacy Scale*? An analysis of covariance, ANCOVA, was used to determine if there was a significant gender difference on teacher efficacy measured by the *OSTES*. For this analysis, gender was the independent variable, while post-test scores on the *OSTES* was dependent variable with the pretest scores on the *OSTES* was the covariates.

Prior to analyses, the major related assumptions, independence, normality, homogeneity of variances, linearity, homogeneity of regression slopes, covariates measured without error, and independence of covariate and treatments (Shavelson, 1996) were first checked. The results indicated all assumptions were upheld. For independence, participants were randomly assigned into treatment and control groups and all participants were tested individually. All scores were normally distributed, after reviewing a scatterplot, thus, meeting the normality assumption. Levene's test of equality of error, the test of homogeneity of variance, was  $F(1,12) = 1.412, p = .258$  indicating

the assumption was met. Lastly, concerning homogeneity of regression slopes,  $F(1, 10) = .267, p = .617$  indicating the assumption was met.

The results of the ANCOVA indicated that there was no significant gender differences in post teacher efficacy scores measured by the *OSTES*, controlling for pre-test scores. There was not significant effect of gender on teacher efficacy scores measured by the *OSTES* after controlling for the effects of pre-test scores,  $F(1,11) = 3.377, p = .093$ . In the analysis, pre-test teacher efficacy scores were used as the covariate. The original mean for males was  $M = 163.833$  (adjusted mean = 163.896) and for females was  $M = 189.000$  (adjusted mean = 188.953). Overall, a significant gender difference on teacher efficacy measures by the *OSTES* was not evident. Table 9 is the ANOVA summary table for this analysis.

Table 9

*ANCOVA: OSTES*

Source	SS	df	MS	F
Covariate	1.238	1	1.238	.002
Gender	2083.387	1	2083.387	3.377
Error	6785.596	11	616.872	
Total	8958.357	13		

#### **Research Question 4**

The research question posed was: Is there a significant gender difference in teacher measured by the Physical Education Teacher Efficacy Scale? An analysis of covariance, ANCOVA, was used to determine if there was a significant gender difference

on self-efficacy measured by the *PETES*. For this analysis, gender was the independent variable, while post-test scores on the *PETES* was dependent variable with the pretest scores on the *PETES* was the covariates. The assumptions, independence, normality, homogeneity of variances, linearity, and homogeneity of regression slopes were reviewed.

Prior to analyses, the major related assumptions, independence, normality, homogeneity of variances, linearity, homogeneity of regression slopes, covariates measured without error, and independence of covariate and treatments (Shavelson, 1996) were first checked. The results indicated all assumptions were upheld. For independence, participants were randomly assigned into treatment and control groups and all participants were tested individually. All scores were normally distributed, after reviewing a scatterplot, thus, meeting the normality assumption. Levene's test of equality of error, the test of homogeneity of variance, was  $F(1,12) = 5.776, p = .033$  indicating the assumption was violated. Lastly, concerning homogeneity of regression slopes,  $F(1, 10) = .153, p = .704$  indicating the assumption was met.

The results of the ANCOVA indicated that there was a significant gender differences in post teacher efficacy scores measured by the *PETES*, controlling for pre-test scores. There was significant effect of gender on teacher efficacy scores measured by the *PETES* after controlling for the effects of pre-test scores,  $F(1,11) = 6.236, p = .030$ . In the analysis pre-test teacher efficacy scores were used as the covariate. The original mean for males was  $M = 259.166$  (adjusted mean = 262.906) and for females was  $M = 318.375$  (adjusted mean = 315.571). Overall, a significant gender difference on teacher

efficacy measures by the *PETES* was evident. Table 10 is the ANOVA summary table for this analysis.

Table 10

*ANCOVA: PETES*

Source	SS	df	MS	F
Covariate	1307.230	1	1307.230	.953
Gender	8549.570	1	8549.570	6.236
Error	15081.479	11	1371.044	
Total	28408.000	13		

### Overall Quantitative Data Analysis

The quantitative data collected provided insight on the effect Cognitive Coaching<sup>SM</sup> had on physical education teacher candidates' teacher efficacy. Pre- and post-test measures were analyzed using a split-plot analysis of variance, SPANOVA, to determine if there was a statistical significant difference between the treatment and control groups with a significance level of  $p < .05$ , and an analysis of covariance, ANCOVA, was used to determine if there was a significant gender difference on self-efficacy measured by the *PETES*.

The results of the split-plot analysis of variance indicated a significant interaction effect of treatment and test on teacher efficacy scores measured by both *PETES*,  $F(1,12) = 12.950$ ,  $p = .004$ , and *OSTES*,  $F(1,12) = 8.561$ ,  $p = .013$ . Meaning, Cognitive Coaching<sup>SM</sup> had a statistically significant impact on physical education teacher candidates' teacher efficacy measured by the *PETES* and *OSTES*. The results of the ANCOVA indicated that there was a significant gender differences in post teacher

efficacy scores measured by the *PETES*, controlling for pre-test scores. However, there was no significant effect of gender on teacher efficacy scores measured by the *OSTES* after controlling for the effects of pre-test scores. Overall, the impact of the treatment, Cognitive Coaching<sup>SM</sup>, had a statistically significant impact of physical education teacher candidates' teacher efficacy measured by the *PETES* and *OSTES*.

### **Qualitative Data Analysis**

For the qualitative research question, data were collected and analyzed from the semi-structured interviews, planning and reflecting conversations, and intervention open-ended survey. The researcher conducted 42 conversations, 21 planning conversations and 21 reflecting conversations, during three cycles of Cognitive Coaching<sup>SM</sup> over a six-week period with the treatment group that consisted of seven participants. The researcher transcribed all conversations verbatim. At the conclusion of the intervention, the participants were sent the intervention open-ended survey and completed it via email. The survey was initially sent and then retrieved when completed by a faculty member associated with the teacher education program. The faculty member then sent the completed surveys to the researcher. The research question is included below:

RQ<sub>5</sub>: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

#### **Semi-structured interview 1: Planning conversation.**

At the conclusion of the study, the researcher transcribed the semi-structured interviews 1. First, the researcher read through all planning conversations and located response patterns identifying the reasons participants perceived Cognitive Coaching<sup>SM</sup> impacted their lesson planning abilities. The first read through of the semi-structured

interviews helped the researcher pinpoint the specific question where the participants identified their perceptions of how Cognitive Coaching<sup>SM</sup> impacted their lesson planning abilities. The last question in the semi-structured interview 1 (Appendix A) was where participants identified their perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning abilities. The concluding question, “How has this conversation helped you?” or “How has this conversation supported your thinking?” was asked to all participants by the researcher. These questions required the participants to reflect on the coaching process.

The researcher then reread all semi-structured interviews for the second, third, and fourth time and scribed the teacher candidates’ responses to help identify patterns. After a final read through of the interviews, the three themes that emerged from semi-structured interview 1 were: (a) student focused development, (b) self-development, and (c) lesson planning development.

***Student focused development.*** From the 21 interviews, the participants indicated the planning conversation helped them become more aware of student needs, category 1. Overall, from the 37 points extracted from the teacher candidates’ responses, seven responses concerning student development were identified in the planning conversation from the teacher candidates.

Student A explained how the planning conversation impacted her focus on student development through her lesson planning, “It is what is best for the students not what is best for how you plan.” Student B explained how the conversation impacted her focus for student development as well, “I’m thinking more about how I can observe the students to see if they are succeeding and how I can make adjustments to improve their

performance.” Further, Student C indicated the planning conversation helped her realize how her actions influence student learning:

Its helped me think about what behaviors, what actions need to come from me to provide the best learning environment and it has also made me, you know, think about how important the instruction part is, giving clear instructions is.

Lastly, Student D specified how the planning conversation helped her realize the importance of engaging students to foster their learning:

And in different activities and different ways I can engage the students more so that they will learn more as well. Instead of me just talking to them or them just reading out of a book, I will try to come up with better ways to engage them and their learning.

As perceived by the participants, the planning conversation that occurred before the observed lesson impacted their lesson planning abilities by fostering their awareness of student development for the forthcoming planned lesson.

***Self-development.*** From the 21 interviews, the participants indicated the planning conversation helped them become more aware of their self-development. The participants indicated the planning conversation helped them (a) think critically – category 1, (b) set realistic expectations – category 2, and (c) be more flexible – category 3. Overall, from the 37 points extracted from the teacher candidates’ responses, six responses concerning teacher candidates’ self- development was identified from the planning conversation from the teacher candidates. For the purpose of this study, thinking critically refers to the participants perceived feeling of how Cognitive Coaching<sup>SM</sup> impacted their lesson planning and lesson reflection abilities.

Student A stated the planning conversation helped her realize specific actions she needs to take to better implement the planned lesson, “It has made me aware that I need to be flexible for situations.” Student B expressed how the planning conversation helped

him identify expectations for the planned lesson, “Well, the conversation made me analyze the lesson that I’m going to teach in Wednesday. Breaking it down, what my expectations are so it’s made it a lot easier for me to plan the lesson.” Further, Student C said the planning conversation helped her think critically, “Now that I’ve thought of ways to improve it, I will be able to go back and be more of a critical thinker and think how I can make this better.” Similar to Student C, Student D stated the planning conversation helped him think critically:

It’s helped me think critically, I don’t have to think like this very often. Normally, I just go with emotions and just do what I’m doing. I don’t actually, well I reflect, but not this intensely. So it makes me think back on what I’ve done previously more. Normally I’m a future person, I think to the future. But this conversation has made me reflect on what I’ve already done.

As perceived by the participants, the planning conversation that occurred before the observed lesson impacted their lesson planning abilities by fostering their awareness of their own teaching development for the future lessons.

***Lesson planning development.*** From the 21 interviews, the participants indicated the planning conversation helped them become more aware of their lesson planning development. The participants indicated the planning conversation helped them (a) plan lessons - category 1, (b) clarify the goal of the lesson - category 2, and (c) pre-reflect on the planned lesson - category 3. Overall, from the 37 points extracted from the teacher candidates’ responses, six responses concerning lesson planning, seven responses concerning goal clarification, and six responses concerning pre-reflection was identified from the planning conversation from the teacher candidates.

Student C stated the planning conversation helped her plan for the present lesson and future lessons, “It definitely makes me think about not only tomorrow but lessons after that and preparing for lessons after that.” Like Student C, Student E said the



planning conversation helped him/her plan for future lessons, “This conversation has supported my thinking/learning by thinking about preparing myself for future lessons maybe more so in advance.” Student A indicated the planning conversation helped her plan for the upcoming lesson, “So it has reminded me that it is good to plan and have a backup.” Student D concluded the planning conversation help him/her think critically about the purpose and goals of the lesson:

It has helped me think really in-depth about what my goals are with the class and what I want to see. It has also helped me think about what the purpose of this lesson is and why we decided to do a tournament.

Lastly, Student B stated the planning conversation helped him/her pre-reflect on the planned lesson:

I think it has helped me by I guess thinking about tomorrow and trying to do pre-reflection, does that make sense? Just already thinking about reminding myself about when they do go outside be ready for it with the bats all of that. Taking that and thinking more about it and being even more prepared.

As perceived by the participants, the planning conversation that occurred before the observed lesson impacted their lesson plan abilities by fostering their awareness of lesson plan development for present and future lessons and goal clarification with in the lessons as well. Below, Figure 10 outlines the findings for the semi-structured interviews 1.

Figure 10

Semi-Structured Interview 1 Results

	<b>Theme 1: Student Focused Development</b>	<b>Theme 2: Self-Development</b>	<b>Theme 3: Lesson Planning Development</b>
<b>Semi-Structured Interviews 1 (Planning Conversation)</b>	Category 1: Aware of student needs	Category 1: Think critically Category 2: Set realistic expectations Category 3: Be flexible	Category 1: Plan a lesson Category 2: Pre-reflect Category 3: Goal clarification

### **Semi-structured interview 2: Reflecting conversation.**

The researcher transcribed the semi-structured interviews 2. First, the researcher read through all reflecting conversations and located patterns identified by the participants as the reasons they perceived Cognitive Coaching<sup>SM</sup> impacted their future lesson planning abilities. The first read through of the semi-structured interviews helped the researcher pinpoint the specific question where the participants identified their perception of how Cognitive Coaching<sup>SM</sup> impacted their lesson reflection abilities. The last question in semi-structured interview 2 (Appendix B) was where all participants identified their perception of the impact of Cognitive Coaching<sup>SM</sup> on their lesson reflection abilities. At the conclusion of the interview, all participants were asked, “As you reflect on this conversation, how has it supported your learning?” or “How might you incorporate this process into your own thinking?” These questions asked the participants to reflect on the coaching process.

The researcher then reread all semi-structured interviews for the second, third, and fourth time and scribed the teacher candidates’ responses for identification of patterns. After a final read through of the interviews, the themes that emerged from the patterns were: (a) self-development, and (b) lesson reflection development.

***Self-development.*** From the 21 interviews, the participants indicated the reflecting conversation helped them be aware of (a) thinking critically – category 1, and (b) setting goals, category 2, concerning their teaching and personal conduct. Overall, from the 35 points extracted from the teacher candidates’ responses, seven responses concerning thinking critically and setting realistic expectations were identified from the planning conversation from the teacher candidates.

Student E stated the reflecting conversation helped him think critically concerning the outcome of the taught lesson:

And then just looking back on it, you know, reflecting on it has made me realize, you know, how well the lesson did go and maybe, you know, I probably wouldn't of thought this much about it had we not had this conversation.

Student C indicated the reflecting conversation helped her set goals in relation to teaching:

I've never really thought about setting goals for myself until just now. So that's helped. So I guess really setting those short term or long-term goals for myself. Whether it is one particular class that I see every day or all of my classes but yeah, making the goal and seeing if I can incorporate it, achieve it, all that good stuff.

Student D indicated the reflecting conversation helped her think critically relative to teaching and helped her realize how personal conduct could affect her professionally and personally:

Even after we have our conversations about the planning or the reflecting, I reflect on those conversations and it makes me think about even more what I could do to improve my teaching. Or like I said even in life. I will, take this out in to my life. Like when somebody comes in or I meet somebody and I have prejudgments of them, that's not fair. And then from this also I realized I don't communicate very well with people, even outside of teaching. So, I have that to improve on too. And yes, just the way I look at people in general. These conversations have made me reflect on all of it.

Student G's interview indicated the reflecting conversation helped him think critically in relation to teaching:

Before this process, I would think about reflecting. I knew it was important but this process has helped me think more critically. And it has opened up new questions that I haven't thought of before. Like visualization and what I would hear and what I would want to see if I was videotaped. That helps me more now just to be able to put that in my head like how is this going to work.

Lastly, Student C stated the reflecting conversation helped him identify ways to better himself in relation to teaching:

Yes cognitive coaching, or whatever you want to call it, I mean this could happen in so many different ways where you are just reflecting in this manner but for this

example cognitive coaching is kind-of comparable to, I mean it has the same benefit you could put this into any category of life. I mean you have marriage counselors for

marriage, you have coaches for sports, you have counselors for when you have mental problems. I mean this is kind of like that for teaching. It's just like the way you better yourself and it kind of seems like a professional development tool.

As perceived by the participants, the reflecting conversation that occurred after the observed lesson impacted their lesson reflection abilities by fostering their awareness of setting goals and thinking critically.

***Lesson reflection development.*** From the 21 interviews, the participants indicated the reflecting conversation helped them become more aware of their lesson reflection development. The participants indicated the reflecting conversation helped them (a) reflect on the lesson - category 1, and (b) plan an effective lesson for future implementation - category 2. Overall, from the 35 points extracted from the teacher candidates' responses, nine responses concerning lesson reflection and ten responses concerning future lesson implementation were identified from the planning conversation from the teacher candidates.

Student A stated the reflecting conversation helped her plan a lesson better lesson for future implementation, "It's definitely helped me plan better for the next time I teach a lesson," and "It has helped me because I really think about the ways to make the lesson better for the next time."

Similar to Student A's response, Student C said the conversation helped her plan for future lessons, "It has supported my thinking by just reflecting on moving around the classroom, preparing me more for tomorrow's lesson even though it is a new lesson."

Also, Student D indicated the reflecting conversation helped him plan for future lessons, similar Student A and C responses, "Well, it's just made me think about what I learned

and it's made me think about what kind of things I need to have in mind when planning a future unit or lesson," and "The reflecting conversation helped me think about how the lesson went and really determined what made the lesson go well and just reflecting on how well it did go."

Lastly, Student G indicated the reflecting conversation helped him reflect on the taught lesson:

It has helped me reflect on how I did and on how the lesson went. It helped me think about all the different aspects of it. You know not just how the students responded towards it but how, what I did to make them respond that way and what I didn't do that lead to stuff I didn't want to happen.

As perceived by the participants, the reflecting conversation that occurred after the observed lesson impacted participants' lesson reflection abilities by fostering their lesson reflection development and development of future lesson plans. Below, Figure 11 outlines the findings for the semi-structured interviews 2.

Figure 11

*Semi-Structured Interview 2 Results*

	<b>Theme 1: Self-Development</b>	<b>Theme 2: Lesson Reflection Development</b>
<b>Semi-Structured Interviews 2 (Reflecting Conversation)</b>	Category 1: Think critically Category 2: Set realistic goals	Category 1: Reflect on a lesson Category 2: Create lessons for future implementation

**Intervention open-ended survey.**

At the conclusion of the intervention, the participants were sent the intervention open-ended survey (Appendix C), which they completed via email. The survey was initially sent and then retrieved when completed by a faculty member associated with the teacher education program. The faculty member then sent the completed surveys to the

researcher. The researcher analyzed the intervention open-ended surveys by question. The first statement, “Explain how Cognitive Coaching<sup>SM</sup> has helped you with your planning capabilities”, asked the participants to reflect on how their overall perception of the impact Cognitive Coaching<sup>SM</sup> had on their lesson planning abilities. The second statement, “Explain how Cognitive Coaching<sup>SM</sup> has helped you with your reflecting capabilities”, asked the participants to reflect on how their overall perception of the impact Cognitive Coaching<sup>SM</sup> had on their lesson reflection abilities. Lastly, the third statement, “Explain how the overall process has impacted your overall student teaching experience”, asked the participants to reflect on how their overall perception of the total impact Cognitive Coaching<sup>SM</sup> had on their student teaching experience.

First, the researcher read through all intervention open-ended surveys and identified patterns identified by the participants as reasons the Cognitive Coaching<sup>SM</sup> cycles impacted their lesson planning capabilities, lesson reflection capabilities, and student teaching experience. The researcher then reread all intervention open-ended surveys for the second, third, and fourth time and scribed the teacher candidates’ responses for identification of patterns. After a final read through of the surveys, the themes that emerged from the survey are as followed.

**Overall impact of *Cognitive Coaching*<sup>SM</sup> on lesson planning.** From the seven surveys, 12 points were extracted from the teacher candidates responses and the participants indicated that Cognitive Coaching<sup>SM</sup> helped their lesson plan development overall. The themes that emerged from the survey for overall lesson plan development were (a) self-development and (b) lesson plan development.

From self-development, one category emerged, critical thinking and an increase in confidence. Overall, out of the 12 points extracted from the teacher candidates' responses, five responses concerning thinking critically and increasing confidence were identified from the overall impact of Cognitive Coaching<sup>SM</sup> on lesson planning perceived the teacher candidates.

Also, for lesson plan development, one category emerged as well, planning lesson plans for student success. Overall, out of the 12 points extracted from the teacher candidates' responses, five responses concerning planning lessons for student success was identified from the overall impact of Cognitive Coaching<sup>SM</sup> on lesson planning perceived the teacher candidates.

Student A stated all the planning conversations had an impact on her lesson planning abilities by increasing her confidence in relation to planning a lesson, setting goals for student success, and helping her become comfortable with creating comprehensive lesson plans:

Cognitive Coaching has tremendously helped me with planning my lessons this semester. The planning conversations that I was able to have with (the researcher) helped me analyze exactly what I had prepared for the lesson that I was teaching. Its easy for people to have something written down on paper to teach but to actually talk about what you are going to be doing reassures my lesson is well planned. Lesson planning also helped me reassure that my goals and outcomes were attainable for the students. (The researcher) would ask, "how do you want your lesson to sound," and at first I truly didn't understand what this question meant but after I had time to think about it I wanted my lessons to sound like the students were reaching my goals and understanding the content. By analyzing this question of how I wanted my lesson to sound, I was truly impacted by this experience. By participating in this Cognitive Coaching experience, I now feel extremely comfortable with planning lessons that are beneficial not only for me but for the students as well. I am fully prepared to develop and plan comprehensive lesson plans.

Students C, G and F all discussed how the planning conversations had an impact on their abilities by helping them think more critically about lesson planning and resulting student outcomes from those planned lessons and thinking more in-depth.

Student C:

Cognitive coaching definitely helped with my planning of my lesson plans. I was asked what were my objectives and how I was going to meet the objectives. This made me think more in-depth about the lesson and what I wanted the students to get from the lesson. Hearing someone repeat my objectives for the lesson also gave me more insight on how the objectives were being viewed by others. During the conversation, I could visualize in my head how I wanted the lesson to go and how my students may have responded to the lesson. Having the cognitive coaching conversation was like a practice run for my lesson. I was able to see more clearly how my lesson may have gone just by talking out loud to someone else about my lesson and what I wanted to accomplish in the lesson.

Student F:

Cognitive Coaching has helped me with my planning capabilities because it has taught me to critically think more in depth about my planning. For example, through cognitive coaching I found myself anticipating situations in the classroom and how students will react to the lesson and or activities planned...The part of the planning conversation that most impacted my ability to plan effective lessons was when I was asked how I will know that students have met the objectives and goals set for that particular day. This question most impacted my planning because it made me double-check my work...but because of cognitive coaching my thought process has changed. Instead of having to go back and correct my work, I now am more aware when planning and do it the right way.

Student G:

Cognitive Coaching has helped with my planning capabilities because it helped reinforce what I had already planned by talking about it with someone else. It also helped because it challenged some of my thinking by asking certain questions that allowed me to think more in-depth about why I was planning a lesson a certain way.

Student B explained all the planning conversations had an impact on his lesson planning abilities by setting goals for the students by changing his thinking about planning a lesson from an objective focus to student focus:

Cognitive Coaching helped me in ways I never would have imagined. The things I



was asked during these sessions are things I never would have thought about when planning a meeting.....Prior to Cognitive Coaching, what I mainly focused on were the behavioral, affective, and cognitive objectives that I wanted to get out of the lesson and this was all I really thought was important for an effective lesson. After Cognitive Coaching, the way I plan lessons is totally different. Now I have a more comprehensive view of what I want to get out of the lesson, and because of this I think I am now able to plan lessons that benefit the students more holistically. As perceived by the participants, Cognitive Coaching<sup>SM</sup> helped their overall lesson planning capabilities by helping them plan lessons, think critically, set goals, and increase their confidence.

**Overall impact of *Cognitive Coaching*<sup>SM</sup> on lesson reflection.**

From the seven surveys, 13 points were extracted from the teacher candidates responses and the participants indicated that Cognitive Coaching<sup>SM</sup> helped their lesson reflection development overall. The themes that emerged from the survey for overall lesson reflection development was (a) self-development and (b) lesson reflection development.

From self-development, one category emerged, critical thinking. Overall, out of the 13 points extracted from the teacher candidates' responses, one response concerning critical thinking was identified as an overall impact of Cognitive Coaching<sup>SM</sup> on lesson reflection abilities perceived by the teacher candidates.

From lesson reflection development, one category emerged as well, lesson reflection for student development. Also, out of the 13 points extracted from the teacher candidates' responses, seven responses concerning lesson reflection for student success was identified as an overall impact of Cognitive Coaching<sup>SM</sup> on lesson reflection development perceived the teacher candidates.

Student G stated Cognitive Coaching<sup>SM</sup> impacted his lesson reflection abilities, "Cognitive Coaching has helped with my reflecting capabilities because it allowed me to

talk and think through my lesson verbally with someone else who could give me positive feedback and helpful suggestions through the strategized questioning.”

Student B discussed how Cognitive Coaching<sup>SM</sup> impacted his/her lesson reflection abilities as well as the impact on his/her critical thinking:

Cognitive Coaching has been a tremendous help in my reflecting abilities....I am guilty of teaching the lesson and thinking a little about how things went and what I could do better. I focused mainly on what objectives were met and stopped there. After Cognitive Coaching, my reflecting process has totally changed. The questions asked during the sessions made me think much more deep and critically than I ever had before. My reflections were more meaningful overall with Cognitive Coaching. This was extremely helpful for me as someone who is not very expressive or reflective. With the reflecting I did during Cognitive Coaching, I not only dissected the lesson in a more comprehensive way, but I also was able to make specific plans for my future planning and teaching.

Student A said Cognitive Coaching<sup>SM</sup> impacted her by helping her realize the importance of reflecting:

As I was reflecting, I realized that during my second week of teaching I needed to do a different unit because the kids were not enjoying playing whiffle ball. I feel that if I had never analyzed my lesson during reflecting that I would have continued to do whiffle ball even though it wasn't going well....During the reflecting conversations, I also realized that if something isn't going right it is one hundred percent ok to stop what is going on and start something new....Reflecting has definitely been an eye opener for me during this process, but now I truly feel that throughout my teaching career the more I reflect, the better teacher I will become. I can never stop reflecting.

Student C indicated the impact Cognitive Coaching<sup>SM</sup> had on her lesson reflection abilities and self-reflection abilities as well:

Through Cognitive Coaching, I was able to analyze more thoroughly the way I interacted with students and how they interacted with me. I was able to analyze why a particular student was not acting or participating in the way I necessarily wanted them to participate. Cognitive coaching allowed me to analyze this and think of ways I could get them more involved next time or address the student in a different way than I did the first time. Cognitive coaching made me reflect more in-depth with my lessons. I could visualize what needed to be changed and how I could change it if I were to do the lesson over. Cognitive Coaching improved my self-reflecting procedure tremendously.

Student E said Cognitive Coaching<sup>SM</sup> impacted his lesson reflection development as well as his continued use of Cognitive Coaching<sup>SM</sup>:

Not only is reflection important in teaching, it is how you grow in any component of life. These particular reflection conversations with (the researcher) were awesome because of the life situations and stories we got into spanning off of the actual questions. The topics discussed most impacting my ability to reflect on a taught lesson were the life applicable lessons involving interaction with students including things like their home life, mental/emotional state, and their enjoyment/participation....I think because of Cognitive Coaching I will self-coach throughout every school year.

As perceived by the participants, Cognitive Coaching<sup>SM</sup> helped their overall lesson reflecting abilities by helping them reflect on taught lessons and thinking critically. Below, Figure 12 outlines the findings for the intervention open-ended surveys lesson planning and lesson reflection questions.

Figure 12

*Intervention open-ended survey: Lesson Planning and Lesson Reflection Results*

<b>Overall Impact of Cognitive Coaching<sup>SM</sup> on Lesson Planning.</b>		<b>Overall Impact of Cognitive Coaching<sup>SM</sup> on Lesson Reflection.</b>	
<b>Theme 1: Self-Development</b>	<b>Theme 2: Lesson Plan Development</b>	<b>Theme 1: Self-Development</b>	<b>Theme 2: Lesson Reflection Development</b>
Category 1: Critical thinking and Confidence	Category 1: Lesson Planning for Student Success	Category 1: Critical thinking	Category 1: Lesson Reflection Development for Student Success

**Overall impact of Cognitive Coaching<sup>SM</sup>.** From the seven surveys, the participants indicated that Cognitive Coaching<sup>SM</sup> impacted their overall student teaching experience. The theme that emerged from the survey for overall impact on the student teaching experience was self-development. The participants indicated Cognitive Coaching<sup>SM</sup> helped them (a) professionally and (b) personally.

*Professional.* From the nine points extracted from the teacher candidates' responses, five responses concerned the professional impact of Cognitive Coaching<sup>SM</sup> on their overall student teaching experience. Student C indicated Cognitive Coaching<sup>SM</sup> impacted him professionally by helping him realize his actions impact student behavior and learning as well as the importance of being a teacher:

Cognitive coaching brought the big picture all together for me. I was so defeated at one point in the teaching process that I thought about quitting or giving up. Cognitive coaching made me reflect on why I may have felt this way. Cognitive coaching allowed me to realize that the way I was approaching teaching and the students was the problem....Through cognitive coaching I realized it was the way I taught the lesson and presented it to the students. The way I confronted the students and acted towards them that particular week kind of set them up for failure. Through cognitive coaching conversations, I realized that it was me that was the problem, not the students. Through these conversations it opened my eyes to the fact that all students are different and as a teacher we cannot expect one thing from one student and the same from the other....These conversations made me realize how special kids really are. It made me realize and appreciate the profession that I have chosen....Cognitive coaching definitely opened my eyes to more issues than just lesson planning and reflecting on my lessons. It opened my eyes to the bigger picture and made me not only realize the importance of teaching content, but the importance of being a teacher, and that is for the students. It is all about the students and reaching their full potential. It is all about their success, not ours.

Student D indicated Cognitive Coaching<sup>SM</sup> impacted her professionally by impacting her confidence in relation to teaching:

Overall, Cognitive Coaching had the biggest impact on my confidence. Just simply talking about the plan and reflecting on the outcome had an impact because it made me aware of my strengths and weaknesses. Now that I am aware, I can take action to improve. I am now more confident in my planning ability and reflecting ability, two crucial parts to teaching.

Student E indicated Cognitive Coaching<sup>SM</sup> impacted him professionally by making him think in different ways in relation to teaching:

Everything about Cognitive Coaching makes sense. I do not see why it is not a requirement for teachers to take part in each year. It would make sense to do a planning conversation prior to the year and reflect after. Just like marriage counseling works out the kinks of a relationship, just like a basketball coach improves the game

of players, just like a minister improves the spiritual component of health, this is what Cognitive Coaching allows for teachers. It will be especially helpful in beginning teachers and long time teachers who may be losing their motivation. In my personal experience, it helped me grow intellectually; making me think in ways I did not get the opportunity to in undergrad at (the university).

Student F indicated Cognitive Coaching<sup>SM</sup> impacted her professionally by helping her realize she can set goals in relation to teaching and the overall importance of reflecting:

Overall, I really enjoyed working with (the researcher) and answering the cognitive coaching questions. My favorite part was the conversations that took place a day before my lesson was taught. The planning conversations helped me pre-reflect about what I was going to teach the next day. Cognitive Coaching somewhat changed my thought process when planning, but for the better. One of the greatest things I will take away from cognitive coaching is setting personal goals for myself. Whether that may be a goal related to classroom management or sharing more personal stories with my students to connect with them on another level...I found the planning and reflecting conversations beneficial and I looked forward to them. The questions that were asked are questions that I will continue to ask myself before I teach and after I teach. Cognitive Coaching was another reminder that as a teacher, reflecting is so important. Reflecting is what will feed my growth of becoming the best teacher I can be. I look forward to applying what I have learned about myself and teaching and applying it during student teaching in the spring.

*Personal.* From the nine points extracted from the teacher candidates' responses, four responses concerned the personal impact of Cognitive Coaching<sup>SM</sup> on their overall student teaching experience. Intertwined with responses concerning a professional impact of Cognitive Coaching<sup>SM</sup>, the teacher candidates explained how Cognitive Coaching<sup>SM</sup> impacted them personally. Student A indicated Cognitive Coaching<sup>SM</sup> impacted her professionally by helping her realize she chose the correct profession and also personally by allowing her to analyze herself:

People go through life each and every day wondering if they are doing the career they truly want to be doing....Throughout my entire life I had always been unsure of things because of the life I grew up in. However, all of my uncertainty was clarified during this pre-service teaching experience with the assistance of Cognitive Coaching. I had an epiphany that I am in the right career choice and will truly love what I am going to be doing...what I realized is that I learn more from those students than I have ever

learned in my entire life. One of the questions asked to me during cognitive coaching was “what have you learned from this group of students?” Let me tell you, I have learned that these students are just kids, kids that want someone to care about them, love them, and push them more than any adult ever has. These kids in the schools need me and in all honesty I need them. So, this overall process has me more than ready for student teaching because I have realized that every child is beautiful and wonderful. If it weren’t for Cognitive Coaching I don’t think I would have analyzed myself, my lessons, or my students and I wouldn’t feel as comfortable as I do now about going into student teaching.

Student B indicated Cognitive Coaching<sup>SM</sup> impacted her professionally and personally by helping her realize her areas of improvement both career wise and in life:

I cannot express my gratitude for being able to be part of the Cognitive Coaching process. I never would have thought I would have made the amount of growth that I did in just this semester, and I know for a fact that I would not have made this growth without Cognitive Coaching. Plus, I was unaware that I had all this growth to make. Cognitive Coaching helped me really tap into my thoughts, wants, and needs for improvement. I feel so strongly about this that I suggested/asked (the researcher) to continue, time permitting, the Cognitive Coaching in the student teaching semester, even if it is only once. Going into this semester, I was happy with my choice to do the MAT program for health and physical education. Now, at the completion of this first semester, I am at a place I never would have imagined. I am way happier and have a clearer idea of what I want my future in education to look like and what all I want to accomplish. These accomplishments are not only professional, but I have also been able to gain insight to what goals I have for me as a person in my career. Cognitive Coaching has given me an outlet to express my thoughts and reflect on experiences that I would have never done on my own, nor would I have even thought to. Cognitive Coaching is something I wish to continue whether it is in groups with my peers, with a professional, with my supervising teachers, or even with myself. Overall Cognitive Coaching has helped me grow leaps and bounds within my future career and within myself.

As perceived by the participants, Cognitive Coaching<sup>SM</sup> had an overall impact of them professionally, in relation to teaching, and personally, in relation to the lives separate from teaching. Below, Figure 13 outlines the findings for the overall impact of Cognitive Coaching<sup>SM</sup>.

Figure 13

*Overall Impact of Cognitive Coaching<sup>SM</sup>*

<b>Overall Impact of Cognitive Coaching</b>	
<b>Professionally</b>	<b>Personally</b>
<ul style="list-style-type: none"> <li>• Chose correct profession</li> <li>• Identified important of being a teacher</li> <li>• Changed thought process</li> <li>• Helped with overall teaching</li> </ul>	<ul style="list-style-type: none"> <li>• Impacted aspects of life outside of teaching</li> <li>• Analyze themselves</li> <li>• Grow personally</li> </ul>

**Overall Qualitative Analysis**

The qualitative data collected provided insight into how the teacher candidates perceived Cognitive Coaching<sup>SM</sup>, the planning and reflecting conversations, impacted their lesson plan and reflection development as well as the overall impact of the mentoring tool on their student teaching experience. From the 21 semi-structured interviews 1 (planning conversation), the participants identified three areas of development, (a) student focused, (b) self, and (c) lesson planning. The teacher candidates perceived the interviews helped them become more aware of their students needs and ways to support those needs, helped them become critical thinkers, set realistic goals for themselves, and be more flexible, and helped them plan lessons and pre-reflect on those lessons. From the seven intervention open-ended survey responses concerning planning a lesson, the participants perceived all the planning conversations helped them plan lessons for student learning and think critically and increase their confidence.

From the 21 semi-structured interviews 2 (reflecting conversation), the participants identified two areas of development, (a) self and (d) lesson reflection. The participants perceived the interviews helped them become more aware of the importance of reflecting and cognizant of planning future lessons effectively while thinking critically

and setting realistic goals, which is similar to their perceived impact of the planning conversations. From the seven intervention open-ended survey responses concerning reflecting, the participants perceived all the reflecting conversations helped them realize the importance of reflecting and the need for student growth and helped them think critically.

Overall, the participants perceived Cognitive Coaching<sup>SM</sup> impacted their professional and personal lives. Professionally, the participants perceived Cognitive Coaching<sup>SM</sup> helped them realize they choose the correct profession, discovered the importance of being a teacher, and changed their thought process. Personally, the participants perceived Cognitive Coaching<sup>SM</sup> helped them analyze themselves and grow personally. Figure 14 outlines the impact of the semi-structured interviews 1 and 2 and the overall impact of Cognitive Coaching<sup>SM</sup> as perceived by the participants.

In analyzing the data, the participant in the treatment group began to internalize the important of planning a lesson and reflecting on a taught lesson for student development and they realize how their actions affected student learning. They also made numerous personal connections with Cognitive Coaching<sup>SM</sup> on their lives away from teaching. All of the participants identified a positive impact Cognitive Coaching<sup>SM</sup> had on their lesson planning abilities, lesson reflecting abilities, and overall student teaching experience.



Figure 14

*Qualitative Theme and Category Analysis*

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Research Question: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

***Source: Semi-Structured Interviews 1 (Planning Conversation)***

**The teacher candidates perceived Cognitive Coaching<sup>SM</sup> helped them:**

**Theme One: Student Focused Development**

*Category One:* Become aware of student needs

**Theme Two: Self Development**

*Category One:* Think critically, set realistic expectations, and be flexible

**Theme Three: Lesson Planning Development**

*Category One:* Plan a lesson

*Category Two:* Pre-reflect

*Category Three:* Find the goal(s) of the lesson

***Source: Semi-Structured Interviews 2 (Reflecting Conversation)***

**The teacher candidates perceived Cognitive Coaching<sup>SM</sup> helped them:**

**Theme One: Self Development**

*Category One:* Think critically and set realistic expectations

**Theme Two: Lesson Reflection Development**

*Category One:* Reflect on a lesson

*Category Two:* Create lessons for future implementation

***Source: Interview Open-ended Survey***

**Through all planning conversations, the teacher candidates perceived Cognitive Coaching<sup>SM</sup> helped them:**

**Theme One: Self Development**

*Category One:* Think critically and increase their confidence

Figure 14 (continued)

*Qualitative Themes and Category Analysis*

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**Theme Two: Lesson Planning Development**

*Category One:* Plan lessons for student learning

**Through all reflecting conversations, the teacher candidates perceived Cognitive Coaching<sup>SM</sup> helped them:**

**Theme One: Lesson Reflection Development**

*Category One:* Reflect on a lesson for student learning

**Through Cognitive Coaching<sup>SM</sup>, the teacher candidates perceived the mentoring tool helped them:**

**Theme One: Professional**

**Supporting Factors:** Choose correct profession, identify importance of being a teacher, change their thought process, and develop their overall teaching skills

**Theme Two: Personal**

**Supporting Factors:** Impact aspects of life outside of teaching, analyze themselves, and grow personally

## CHAPTER V

### DISCUSSION

#### **Introduction**

This concluding chapter presents a summary of the study along with noteworthy findings and conclusions drawn from the results outlined in Chapter 4. The summary of the study includes the problem, purpose statement, research questions, methodology, and major findings in relation to the literature. This chapter closes with a discussion of implications for action and recommendations for further research.

#### **Summary of the Study and Problem**

Data indicated that 46% of beginning teachers leaving the profession within the first five years of their initial teaching experience (Smith & Ingersoll, 2004). What can be done to counteract these numbers? Mentoring has been suggested as a tool to support beginning teachers as well as teacher candidates as they embark on their careers (Ballinger & Bishop, 2011; Hobson, Ashby, Malderez, Tomlinson, 2009). Mentors provide support by increasing mentee' confidence and self-esteem, improving problem-solving skills, and decreasing feelings of isolation. Mentoring, therefore, has been cited as a beneficial professional development tool (Carter & Francis, 2001; Franke & Dahlgren, 1996; Marable & Raimondi, 2007; McIntyre & Hagger, 1996; Su, 1992). Liston and colleagues (2006) found beginning teachers need strong teacher efficacy to be successful during their early professional careers. Teacher efficacy is formed during

student teaching and the first years of teaching (Mulholland & Wallace, 2001). Cognitive Coaching<sup>SM</sup>, a mentoring tool, has shown the ability to aid in the development of teacher efficacy (Maskey, 2009). Specifically, Cognitive Coaching<sup>SM</sup> has been shown to (a) increase teacher efficacy (b) encourage professional dialogue, (c) support innovations in teaching, and (d) increase job satisfaction (Brooks, 2000; Edwards & Newton, 1995; McLymont & da Costa, 1998; Ray, 1998; as cited in Maskey, 2009).

The participants in this study, physical education teacher candidates, could potentially face unique obstacles during their early professional careers. From lack of respect, perceived lower status of the content area, to lack of accountability for student learning and resources (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; O'Sullivan, 1989; Placek, 1983; Smyth, 1992; Sparkes et. al., 1990, 1993; Stroot, Faucette, & Schwager, 1993; Templin, 1998a, 1989; Zajorik, 1980), physical education teachers potentially face challenging potentially teaching experiences. Although, Martin McCaughtry, Kulinna, and Cothran (2009), stated physical education teachers who have high teacher efficacy can overcome obstacles in the school setting, few studies have addressed the impact of mentoring on physical education teacher candidates (Martin et al., 2009; Tannehill & Coffin, 2000).

### **Purpose Statement and Research Questions**

Knowing the struggles physical education teachers face, examining the impact of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates can provide university teacher educators with valuable insights to better prepare preservice teacher candidates for potential barriers they may face during their first years of teaching. For physical education teacher candidates, meaningful and positive mentoring experiences that foster

the development of teacher efficacy could impact their overall teaching effectiveness.

The purpose of this study was to examine (a) the impact Cognitive Coaching<sup>SM</sup>, a mentoring tool, had on physical education teacher candidates' teacher efficacy and (b) physical education teacher candidates' perceptions of the impact Cognitive Coaching<sup>SM</sup> had on the lesson planning and lesson reflection abilities during a student teaching experience. The research questions were:

#### *Quantitative*

RQ<sub>1</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>2</sub>: Is there a significant effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy measured by the *Physical Education Teaching Efficacy Scale*?

RQ<sub>3</sub>: Is there a significant gender difference in self-efficacy measured by the *Ohio State Teacher Efficacy Scale*?

RQ<sub>4</sub>: Is there a significant gender difference in self-efficacy measured by the *Physical Education Teaching Efficacy Scale*?

#### *Qualitative*

RQ<sub>5</sub>: What are physical education teacher candidates' perceptions of the impact of Cognitive Coaching<sup>SM</sup> on their lesson planning and lesson reflection abilities?

### **Methods**

A quasi-experimental design using mixed methods, both quantitative and qualitative measures, was used to examine the impact of the intervention, Cognitive

Coaching<sup>SM</sup>, on physical education teacher candidates' teacher efficacy and their perceptions of the impact Cognitive Coaching<sup>SM</sup> had on their lesson planning and lesson reflection capabilities. For this study, the researcher utilized pre- and post-test measures, the *Ohio State Teacher Efficacy Scale (OSTES)*, and the *Physical Education Teaching Efficacy Scale (PETES)*, to determine the impact of the prescribed intervention. A split-plot analysis of variance, SPANOVA, or mixed two-factor ANOVA was utilized to distinguish differences between means scores of the pre-test and post-test measures with a significance level of  $p < .05$ . Also, an analysis of covariance, ANCOVA, was used to determine if there was a significant gender difference on self-efficacy measured by the *OSTES* and *PETES* with a significance level established at  $p < .05$ . Descriptive statistics, correlational analysis, and reliability analysis are reported as well.

Additionally, during the intervention phase, semi-structured interviews, planning and reflecting conversations, and an intervention open-ended survey were conducted and analyzed to delineate in what ways the intervention impacted physical education teacher candidates' efficacy and their perceptions. The semi-structured interviews were transcribed for easy identification of patterns and themes. Forty-two conversations were collected during three cycles of Cognitive Coaching<sup>SM</sup> over a six-week period. At the conclusion of the intervention, the participants completed the intervention open-ended survey via email. The intervention open-ended survey was read for patterns and themes as well.

### **Major Findings Related to the Literature**

The findings in the study for each research question are supported by past studies found in the literature. Additionally, connections to the National Standards for Initial

Physical Education Teacher Education are included (NASPE, 2008). The *PETES* (Humphries et al., 2012) was created based on the National Association for Sport and Physical Education (NASPE) standards for teacher certification titled the National Standards for Initial Physical Education Teacher Education (NASPE, 2008). These nationally recognized standards are designated for teacher education programs where teacher candidates earn initial teacher licensure in physical education upon graduation. The six standards: (a) scientific and theoretical knowledge, (b) skill-based and fitness-based competence, (c) planning and implementation, (d) instructional delivery and management, (e) impact on student learning, and (f) professionalism, are elements teacher candidates are assessed on during the course of their teacher preparation program. Similar to other physical education teacher programs, the teacher candidates in this study were earning initial teacher certification from a program that embeds the NASPE standards into the curriculum and dispositions for assessing student progress. For the university supervisors who instruct in the program, the findings provide a foundation for assessing the students' beliefs in their abilities to meet the standards.

### **Major Quantitative Research Findings**

The quantitative data provided insight on the effect of Cognitive Coaching<sup>SM</sup> on physical education teacher candidates' teacher efficacy. Data analysis concluded Cognitive Coaching<sup>SM</sup> had a statistically significant impact on physical education teacher efficacy measured by the *PETES* and *OSTES*. Overall, there was a significant interaction between time of the test, pre- and post-test, and the treatment on teacher efficacy. This means the effect of test on teacher efficacy depends on the treatment. While the treatment group exhibited a higher level of teacher efficacy than the treatment group, the pattern

reversed at the conclusion of the treatment with the treatment group exhibiting higher levels of teacher efficacy than the control group. The control groups teacher efficacy was significantly lower than their initial teacher efficacy levels while the treatment groups level of teacher efficacy was significantly higher then their initial levels of teacher efficacy. Cognitive Coaching<sup>SM</sup> had a profound, significant impact on teacher candidates' teacher efficacy and this finding is evident through the quantitative and qualitative data findings. The use of the semi-structured interviews aided in the teacher candidates' development and fostered the treatment group teacher efficacy over a six-week period. Clearly, the use of Cognitive Coaching<sup>SM</sup> as a mentoring tool significantly impacted teacher candidates' teacher efficacy.

From the literature, Cognitive Coaching<sup>SM</sup> is addressed in education widely (Brooks, 2000; Edwards & Newton, 1995; McLymont & da Costa, 1998; Ray, 1998; as cited in Maskey, 2009), but studies concerning physical education teachers, more specifically physical education teacher candidates, are not evident. The results of this study indicated Cognitive Coaching<sup>SM</sup> did impact teacher candidates' teacher efficacy and is the first study to examine mentoring in physical education teacher education candidates using Cognitive Coaching<sup>SM</sup> as a mentoring tool. Additionally, this study provides a foundation for future research concerning this topic. Further, this study adds to the literature that advises researchers to explore factors that contribute to the development of teacher efficacy (Tschannen-Moran et. al, 1998).

From the Cognitive Coaching<sup>SM</sup> literature, Maginnis (2009) found teacher candidates who received mentoring from mentors trained in Cognitive Coaching<sup>SM</sup> increased their teacher efficacy more compared to teacher candidates who received



mentoring from mentors who were not trained in Cognitive Coaching<sup>SM</sup>. Since Cognitive Coaching<sup>SM</sup> did have a statistically significant impact on teacher candidates' teacher efficacy measured by the *OSTES* and *PETES*, these findings are similar to the finding of Maginnis (2009), whereby teacher candidates increased teacher efficacy when mentored by a mentor trained in Cognitive Coaching<sup>SM</sup>.

Additionally, results of the ANCOVA indicated significant gender differences in post teacher efficacy scores measured by the *PETES*, controlling for pre-test scores, however, not on the *OSTES*. From the quantitative data in this study, females were more likely to have a greater sense of efficacy. From the literature, one existing study investigated the relationship between academic self-efficacy beliefs and teachers' sense of efficacy among teacher candidates. The results of that study indicated there was not a statistical significant difference between genders (Tabancali & Çelik, 2013). However, a study conducted by Gencay (2009) revealed a statistical significant difference between Turkish male and female physical education teachers using the Physical Education Teachers' Physical Activity Self-efficacy Scale (PETPAS), created by Martin and Kulinna (2003). Similarly, a study examined the math anxiety in pre-service teachers using the Mathematics Anxiety Scale-Revised (MARS-R) and after analysis, a significant **difference** between males and females was found (Malinsky, et. al., 2006). Results in the present study from both scales, *OSTES* and *PETES*, are consistent with findings in the literature but further research is needed to understand the complexities of gender and self-efficacy.

## Major Qualitative Research Findings

The qualitative data showed how the teacher candidates perceived the planning and reflecting conversations in Cognitive Coaching<sup>SM</sup> process impacted their lesson planning and lesson reflection abilities as well as the overall impact of the process on their student teaching experience. From the 42 semi-structured interviews and seven intervention open-ended surveys, the teacher candidates perceived Cognitive Coaching<sup>SM</sup> positively impacted their lesson planning, lesson reflection abilities, and overall student teaching experience. They stated Cognitive Coaching<sup>SM</sup> helped them become aware of student needs and ways to support them, become critical thinkers, set realistic goals for themselves, be more flexible, plan lessons and pre-reflect on those lessons, plan lessons for student learning, reflect on lessons, and discover the importance of being a teacher.

From the Cognitive Coaching<sup>SM</sup> literature, Moche (2001) found Cognitive Coaching<sup>SM</sup> improved the reflective skills of teachers in New York City through the three-phase cycle (planning conversation, observation, and reflecting conversation) developed by Costa and Garmston (2002). Cognitive Coaching<sup>SM</sup> was used as a means to improve teachers' performance by alerting their attention to assumptions and perceptions impacting the decisions they made while designing, planning, and implementing lessons (Costa & Garmston, 2002). The participants in the present study stated they improved their lesson reflection abilities through the Cognitive Coaching<sup>SM</sup> cycle(s), similar to the findings above. Also, the participants stated Cognitive Coaching<sup>SM</sup>, positively impacted their lesson planning abilities as well.

Eger (2006) and Newton (1994b) found similar results in relation to teacher thinking. Eger (2006) found teachers had "higher levels of thinking and more critical

analysis of goals, lesson plans, and teaching behavior, as well as evaluation of their own teaching and student performance” (p. 67) after training in Cognitive Coaching<sup>SM</sup>.

Newton (1994b) found novice teachers who were mentored using Cognitive Coaching<sup>SM</sup> stated the process helped them think more deeply concerning their teaching. The teacher candidates in this study stated Cognitive Coaching<sup>SM</sup> helped them think more critically in relation to lesson planning and lesson reflection abilities. The findings are consistent with the findings of Eger (2009) and Newton (1994b).

Lastly, according to Mulholland and Wallace (2001), mastery experiences (the teaching accomplishments a teacher has with students) embedded in teacher preparation programs are an important influence on teacher candidates’ teacher efficacy beliefs. Research focused on the development of those beliefs is critical because once efficacy beliefs are established they appear to remain consistent over time (Bandura, 1997; Hoy & Spero, 2005; Tschannen-Moran & Johnson, 2011). Previous studies found that the use of effective methods, strategies, and interventions enabled teacher preparation programs to foster growth in teacher efficacy among teacher candidates (Friedman, (2000); Hoy & Spero (2005); Mulholland & Wallace (2001); Tschannen-Moran & Johnson (2011); Tschannen-Moran et al. (1998). From the qualitative findings in this study, the teacher candidates perceived Cognitive Coaching<sup>SM</sup> impacted their teacher efficacy during their mastery experience, thus establishing the mentoring tool as an effective means of increasing teacher efficacy in this specific teacher education program. This study focused on the development of efficacy beliefs among physical education teacher candidates. Bandura (1997), Hoy and Spero (2005), and Tschannen-Moran and Johnson (2011) deemed research on the development of efficacy beliefs to be critical. This study took up

that charge, and applied it to a new population - physical education teacher candidates - where the development of teacher efficacy is critical, considering the barriers physical education teachers face because of lack of respect for their discipline. The findings suggest Cognitive Coaching<sup>SM</sup> is an effective strategy for fostering teacher efficacy among this particular group of teacher candidates.

Overall, physical education teacher candidates perceived Cognitive Coaching<sup>SM</sup> positively impacted on the lesson planning and reflection development during their student teaching experience. They stated Cognitive Coaching<sup>SM</sup> helped them become aware of student needs and ways to support them, become critical thinkers, set realistic goals for themselves, be more flexible, plan lessons and pre-reflect on those lessons, plan lessons for student learning, reflect on lessons, and discover the importance of being a teacher.

### **Unexpected Findings from the Study**

For this study, two major unexpected findings emerged from the qualitative data. First, through the planning and reflecting conversations, the participants discussed interactions they had with diverse populations during the student teaching experience. Second, the participants identified how Cognitive Coaching<sup>SM</sup> improved their professional careers and personal lives. These findings are not related to the literature presented in this study.

#### **Diverse Populations**

During data analysis, an interesting pattern emerged from the qualitative data. Five out of the seven teacher candidates spoke of interacting with diverse populations during the intervention phase. Specifically, the teacher candidates discussed their

interactions with African American students. These responses were unprompted as there was no specific discussion of working with diverse student populations during the Cognitive Coaching<sup>SM</sup> process.

During the course of the initial teacher certification program, the physical education teacher candidates have been placed in numerous diverse school settings. The schools where teacher candidates were placed for their student teaching experiences had high percentages of minority students. Specifically, the percentage for African American students the teacher candidates interacted with during this study ranged from 20% to 48.5% of the total student body population (Jefferson County Public School, 2013). Additionally, before these teacher candidates are admitted into the teacher certification program, they are required to observe and teach a variety of lessons at numerous diverse schools, a requirement in their home unit at the university. Also throughout the physical education teacher candidates teacher certification program, an emphasis is placed on the awareness of diverse populations and potential considerations they may need to make when designing and implementing age appropriate lesson plans. For example, when a lesson plan concerning student use of technology is created, teacher candidates need to be aware all students do not have access to a computer or other devices outside of the school setting, so they need to be aware of those differences among students. Discussions surrounding the awareness of diverse populations are embedded in all content specific courses the teacher candidates complete before and during their teacher certification program. Overall, awareness of diverse populations is integrated in the program. Even knowing this, however, the teacher candidates responses concerning diverse population

were surprising because the questions posed were general in nature and did not ask the teacher candidates to reflect on a specific group of students.

For example, in the planning conversation, the teacher candidates spoke of diverse populations when asked a certain question posed by the researcher, “What might you learn from this group of students?” The teacher candidates described new knowledge they gained from the students. Student A discussed the new knowledge she gained from teaching a diverse group of students during the first planning conversation:

Today, I would say 97% of disruptions were the African American students and then any other school I’ve been in for like a long time.... So, I guess just learning how to deal with that because I know they mean well. They aren’t bad people. It’s just learning how to focus their energy. Not just focusing on wanting all the attention. Focusing their energy on doing the task with other students. I think I’ll learn a lot about that.

For the second planning conversation, Student A discussed how she has used the new learning in preparing inclusive lesson plans:

Well, I’ve already learned a lot from them. And it’s the same thing I’ve said 400 million times, be open-minded. Just know that they are not all going to be on the same level because they are all different and they all come from different place. They all have different backgrounds at home and even with their physical abilities. So, knowing how to do a lesson that is inclusive for all of them and while still benefiting everybody, that is what I have learned.

Further, Student B discussed how her thinking changed as a result of working with a diverse group of students:

I’ve already learned so much from this group of kids. In all honesty, I was absolutely terrified to come to this school... and I know that’s it not in the best part of town and they are really just kids. They just want to be loved and they just want to be cared about.

Concerning the reflecting conversation, two teacher candidates spoke of diverse populations when reflecting on the new knowledge they gained from the students. One

candidate discussed the interactions she believed were needed for student growth. Student A said:

Just continue to be enthusiastic which there are some days that I know I won't want to, but just being focused know that students out there, that come from various backgrounds whether it be good or bad and know that all they need sometimes is a smile... which is what I try to do.

Further, Student B made a connection between her past experiences and the experiences of her students:

I just can't have any prejudice about anybody. I have to give all the students a chance. And just to be open and I have to be able to adjust to anything... I went to private schools so I was not exposed to some of the things these kids are exposed to. I was kind of in this little box and being at this school... I realize not everybody had it like I did. They have it a lot tougher than I ever did. Those are the kids that you can't judge you have to give them a chance... You have to be open-minded.

Overall, the unprompted responses from the teacher candidates concerning diverse populations were eye opening. During the data collection process, the questions posed in the planning and reflecting conversations in Cognitive Coaching<sup>SM</sup> (Appendices A & B) were open-end, allowing the teacher candidates to answer them in any manner they chose. The high number of participants, five out of seven, in the study that spoke of diverse populations was surprising since they were not specifically asked to discuss specifics of a student population. This specific finding could reveal a new benefit of Cognitive Coaching<sup>SM</sup> - helping teacher candidates become more aware of diverse student populations and their needs. Further research is needed to explore this potential impact.

### **Professional and Personal Impact of Cognitive Coaching<sup>SM</sup>**

Another interesting finding showed the impact of Cognitive Coaching<sup>SM</sup> on the teacher candidates both personally and professionally. Cognitive Coaching<sup>SM</sup> is a

mentoring tool that can be used in physical education teacher education programs to increase teacher candidates' teacher efficacy, which is evident from the findings. Teacher candidates explained the impact Cognitive Coaching<sup>SM</sup> had on them professionally and personally and one candidate expressed, "gratitude for being able to be part of the Cognitive Coaching process." Cognitive Coaching<sup>SM</sup> helped the teacher candidates internalize the importance of being a teacher.

One teacher candidate said, "I had an epiphany that I am in the right career choice and will truly love what I am going to be doing...what I realized is that I learn more from those students than I have ever learned in my entire life." The goal of any teacher preparation program should not be simply teach student how to write lesson plan but to love and appreciate what they will do for a living and more importantly, love and appreciate all of their potential students. Through Cognitive Coaching<sup>SM</sup>, that goal was more than accomplished.

### **Implications**

The results of this study contribute to the literature on mentoring physical education teacher candidates by illustrating an approach to increase teacher candidates' teacher efficacy. In particular, this study focused on the use of Cognitive Coaching<sup>SM</sup>, a mentoring tool, to support physical education teacher candidates during their student teaching experience. Also, the results of this study have implications for physical education teacher candidates and physical education teacher educators.

### **Benefits for Practitioners**

Both physical education teacher candidates and physical education teacher educators benefit from the results of the study. The results illustrate the positive impact



Cognitive Coaching<sup>SM</sup>, a mentoring tool, has on teacher candidates' teacher efficacy, lesson planning and lesson reflection capabilities, and student teaching experience. Cognitive Coaching<sup>SM</sup> can be used in teacher certification programs between a teacher educator (mentor) and a physical education teacher candidate (mentee) as an avenue for increasing teacher efficacy before the teacher candidates enter the workforce. Having increased efficacy beliefs before teachers enter the workforce could decrease the likelihood they leave the profession within their first years of teaching. In other words, a hoped long-term benefit is increased retention rates of physical education teachers.

The results of the study are valuable because physical education teacher candidates' often face unique struggles during their first years of teaching. Researchers indicate teacher candidates need dedicated support early in their professional teaching preparation to increase teacher efficacy. From this study, Cognitive Coaching<sup>SM</sup> used as a mentoring tool is a form of support to increase physical education teacher candidate teacher efficacy and can be used in teacher education programs to increase a teacher candidate teacher efficacy before they start their professional teaching careers.

### **Recommendations for Further Research**

In terms of physical education teacher candidates' teacher efficacy, the use of Cognitive Coaching<sup>SM</sup> as a mentoring tool needs to be studied further over a longer period of time to better understand the impact on their teacher efficacy. This study was a six-week study and only consisted of three cycles of Cognitive Coaching<sup>SM</sup>. Longitudinal studies, consisting of more cycles, across teacher education programs are needed to paint a clearer picture of the development of efficacy beliefs among teacher candidates (Hoy & Spero, 2005). Also, examining the impact of Cognitive Coaching<sup>SM</sup> on teacher in other

grade level settings would be interesting. For this study, the teacher candidates were in the secondary physical education classroom. How would Cognitive Coaching<sup>SM</sup> impact physical education teacher candidates in the elementary physical education classroom? Further, how would Cognitive Coaching<sup>SM</sup> impact teacher candidates in other content areas such as, social studies, mathematics, language arts, etc.? Additionally, does Cognitive Coaching<sup>SM</sup> have different results, if any, on teacher candidates in different content areas? These findings from this study could inform other teacher preparation programs in other content areas concerning the positive impact on teacher candidates' teacher efficacy. More studies are needed to identify any content specific difference between teacher candidates in different content areas and grade levels.

Furthermore, this study focused on physical education teacher candidates' teacher efficacy exclusively. From the literature, beginning teachers who completed a training in Cognitive Coaching<sup>SM</sup> scored significantly higher on a teacher efficacy scale (Gusky & Passaro, 1993) compared to a control group (Krpan, 1997; Smith, 1997). Would Cognitive Coaching<sup>SM</sup> impact beginning teachers teacher efficacy, specifically beginning physical education teachers? Research focused on the impact of Cognitive Coaching<sup>SM</sup> on beginning physical education teachers is need to determine potential benefits since these teachers face unique struggles during their early professional careers (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; O'Sullivan, 1989; Placek, 1983; Smyth, 1992; Sparkes et al., 1990, 1993; Stroot et al., 1993; Templin, 1998a, 1989; Zajorik, 1980). Overall, more longitudinal studies are needed to examine the impact of Cognitive Coaching<sup>SM</sup> on teacher candidates across

grade levels and content areas as well as beginning teacher, specifically beginning physical education teachers.

Lastly, the National Association for Sport and Physical Education (NASPE) standards for teacher certification titled the National Standards for Initial Physical Education Teacher Education (NASPE, 2008) are nationally recognized standards designated for teacher education programs where teacher candidates earn initial teacher licensure in physical education upon graduation. Similar to other physical education teacher programs, the teacher candidates in this study were earning initial teacher certification from a program that embeds the NASPE standards into the curriculum and dispositions for assessing student progress. Does Cognitive Coaching<sup>SM</sup> impact teacher candidates' teacher efficacy when meeting the National Standards for Initial Physical Education Teacher Education (NASPE, 2008)? If so, how? Further research is necessary to better understand the possible implications of using Cognitive Coaching<sup>SM</sup> to impact teacher candidates' teacher efficacy in physical education teacher preparation programs.

### **Concluding Remarks**

This study contributes to the literature on mentoring physical education teacher candidates' in order to support an increase in their teacher efficacy because of the unique struggles they face during their first years of teaching (Earls, 1981; Evans & Davis, 1988; Griffin, 1985; Jackson, 1968; McCormack & Thomas, 2003b; O'Sullivan, 1989; Placek, 1983; Schempp et al., 1993; Smyth, 1992; Sparkes et al., 1990, 1993; Stroot et al., 1993; Templin, 1998a, 1989; Zajorik, 1980). In particular, this study focused on the use of Cognitive Coaching<sup>SM</sup>, a mentoring tool, to support physical education teacher candidates during their student teaching experience. From the qualitative findings, the use of

Cognitive Coaching<sup>SM</sup> as a mentoring tool had a positive impact on the participants lesson planning, lesson reflection, and overall student teaching experience from the semi-structured interviews and intervention open-ended surveys. Through analysis of the quantitative data, teacher candidates had an increase in teacher efficacy measured by the *OSTES* and *PETES*. Meaning, Cognitive Coaching<sup>SM</sup> had a statistically significant impact on physical education teacher candidates' teacher efficacy. From these findings, a recommendation can be made to incorporate Cognitive Coaching<sup>SM</sup>, a mentoring tool, into physical education teacher education programs to foster growth in teacher efficacy among physical education teacher candidates.

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APPENDIX A  
**Semi-structured Interview 1: Planning Conservation**

**Clarify Goals** (*Intent is to decide what purposes or outcomes one wants for the event that is planned*)

1. What are you hoping to accomplish with this lesson?
2. What might be your goals with this lesson?
3. What are your objectives?

**Specify Success Indicators** (*Intent is to describe those strategies or activities that are intended to achieve the outcomes*)

1. How might you know you have reached the goal?
2. What might be some pieces of evidence you can collect?
3. What might you see that will let you know you have reached your goal?

**Anticipate Approaches** (*Intent is to envision and specify those observable indicators of success*)

1. What might you need to be the best prepared you can be for this lesson?
2. As you rehearse this lesson in your mind, what does it sound like?
3. What might be some strategies you have used before that were effective?
4. What might be some of your choices?
5. How might your actions enhance student learning?
6. Which factors might you have control over?
7. How might these strategies support student learning in other settings?
8. What might be the primary value of this lesson to your students?

**Establish Personal Learning Focus** (*Intent is to establish a basis for self-directed learning*)

1. What might you want to be sure to do well during the lesson? How might you know you are doing it?
2. If you could videotape this lesson, what might you want to see/hear in yourself when you replay it?
3. What might you learn from this group of students? How might you know you have learned this?
4. What key indicators might be most critical to your goals as a teacher?



**Reflect on Coaching Process** (*Intent is to invite the mentee to reflect on the coaching conversation*)

1. How has our conversation supported your thinking?
2. How has this conversation been helpful to you?
3. Where are you in your thinking now compared to where you were when we started?
4. What are some of the specific things about this conversation that helped you?

Costa, A., & Garmston, R. (1994). *Cognitive Coaching: A foundation for renaissance schools*. Norwood, MA: Christopher-Gordon Publishers.

APPENDIX B  
**Semi-structured Interview 2: Reflecting Conservation**

**Summarize Impressions** (*Intent to revisit the experience or event*)

1. How do you think the lesson went?
2. How are you feeling about the lesson?
3. What exactly did the class accomplish?

**Analyze Casual Factors** (*Intent to compare the planned event with what actually happened, identify and interpret casual factors that produced results, explain and give reasons for the “in action” decisions that were made, and to make inferences from the information that has been recalled*)

1. What might be some comparisons you can make between the lesson you planned and the lesson you taught?
2. What might be some effect your decisions have on the results you achieved?
3. What are some of your hunches about what caused the lesson to go the way it did?
4. What are some of the things you did to make it go so well?
5. Which of your skills seemed most useful?
6. How did you know you could handle teaching this lesson?

**Construct New Learning** (*Intent is to make meaning from analysis, to draw insights, and to synthesize the personal learning that were described in the planning conference*)

1. What learning(s) do you want to take with you to future lessons?
2. What do you want to stay mindful of from now on?

**Commit to Application** (*Intent is to make applications of the learning to future events, to bridge other life situations, to transfer such learning’s, and to self-prescribe modifications in personal behaviors*)

1. So how might you apply your new learning?
2. How might you ensure that you maintain that focus?

**Reflect on Coaching Process** (*Intent is to reflect on the entire conservation, explore its effects on thinking and decision making, and to recommend modifications that could enhance future reflecting conservations*)

1. As you reflect on this conversation, how has it supported your learning?
2. How might you incorporate this process into your own thinking?

Costa, A., & Garmston, R. (1994). *Cognitive Coaching: A foundation for renaissance schools*. Norwood, MA: Christopher-Gordon Publishers.

## APPENDIX C

### **Intervention Open-ended Survey 1**

1. Explain how Cognitive Coaching has helped you with your planning capabilities. (ie. What part(s) of the planning conversation most impacted your ability to plan effective lessons?)
  
2. Explain how Cognitive Coaching has helped you with your reflecting capabilities. . (ie. What part(s) of the reflecting conversation most impacted your ability to reflect on a taught lesson?)
  
3. Explain how the overall process has impacted your overall student teaching experience. (ie. What part(s) of Cognitive Coaching most impacted your student teaching experience?)

APPENDIX D  
**Ohio State Teacher Efficacy Scale**

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education* 17(7), 783-805.

# Teacher Beliefs - TSES

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

**Directions:** Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

**Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.**

	None at all	Very Little	Some Degree	Quite A Bit	A Great Deal				
1. How much can you do to get through to the most difficult students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2. How much can you do to help your students think critically?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3. How much can you do to control disruptive behavior in the classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4. How much can you do to motivate students who show low interest in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5. To what extent can you make your expectations clear about student behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6. How much can you do to get students to believe they can do well in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7. How well can you respond to difficult questions from your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8. How well can you establish routines to keep activities running smoothly?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9. How much can you do to help your students value learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10. How much can you gauge student comprehension of what you have taught?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11. To what extent can you craft good questions for your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. How much can you do to foster student creativity?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
13. How much can you do to get children to follow classroom rules?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
14. How much can you do to improve the understanding of a student who is failing?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
15. How much can you do to calm a student who is disruptive or noisy?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
16. How well can you establish a classroom management system with each group of students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
17. How much can you do to adjust your lessons to the proper level for individual students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
18. How much can you use a variety of assessment strategies?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
19. How well can you keep a few problem students from ruining an entire lesson?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
20. To what extent can you provide an alternative explanation or example when students are confused?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
21. How well can you respond to defiant students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
22. How much can you assist families in helping their children do well in school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
23. How well can you implement alternative strategies in your classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
24. How well can you provide appropriate challenges for very capable students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

## APPENDIX E

### **Physical Education Teacher Efficacy Scale**

**Please complete the sections for name, sex, and birth date on the answer sheet.**

**The rest of this questionnaire should be completed beginning with item 1 on the answer sheet. Answers are the 1-10 inside the bubbles, rather than A-J.**

**1. Which best describes your status?**

1	I am an undergraduate physical education major who has not started teaching field experiences yet.
2	I am an undergraduate physical education major, who has had at least one class involving teaching in schools.
3	I am an undergraduate physical education major who is student teaching or will student teach next semester.
4	I have a degree and am in an alternate certification/MAT program, and have not yet started field experiences.
5	I have a degree and am in an alternate certification/MAT program, and have had at least one field experience.
6	I have a degree and am in an alternate certification/MAT program, and am in the final full-time field experience or internship.
7	I am in my first three years as a certified teacher.
8	I have completed at least three years experience as a full-time, certified teacher.

**2. At the start of this semester, how many college credit hours had you completed?**

1	0-15
2	16-30
3	31-59
4	60-89
5	90+

**3. I am a student at:**

1	Baylor University	6	Montana State University
2	Georgia State University	7	Oregon State University
3	University of Mary Hardin-Baylor	8	Sam Houston State University

4	South Florida	9	Southeastern Louisiana University
5	Wayne State University	10	Other

**4. Which best describes your race/nationality?**

1	American Indian or Alaskan Native	5	Native Hawaiian or other Pacific Islander
2	Asian	6	White
3	Black or African American	7	Other
4	Hispanic or Latino		

**5. My age is:**

1	18 years	6	23 years
2	19 years	7	24 years
3	20 years	8	25-29 years
4	21 years	9	30-39 years
5	22 years	10	40 or more years

	<b>For each of these items, rate how confident you are that you can do them now, or the extent to which you agree with each statement, on this 1-to-10 scale. Consider your abilities as of.</b>									
	Cannot do			Moderately certain I can do				Highly certain I can do		
	1	2	3	4	5	6	7	8	9	10
	Disagree			Neutral/moderate				Agree		
6.	I know a lot about racquet/net games such as badminton and tennis, and can teach them effectively.									
7.	I know a lot about lifetime/recreational games (such as horseshoes, croquet, disc games, cooperative and challenge activities), and can teach them									



	effectively.
8.	I know a lot about swimming and water safety, and could teach it effectively.
9.	I know a lot about outdoor recreation activities (such as camping, canoeing, biking, orienteering), and can teach them effectively.
10.	I know a lot about fitness and can teach it effectively.

11.	I know a lot about fundamental motor skills (manipulative and locomotor) and can teach them effectively.
12.	I have a good grasp of exercise science concepts (from Exercise Physiology, Biomechanics, Motor Learning, and Sport Psychology) and can apply them to teaching PE.
13.	I know what the NASPE standards are, and can plan and teach toward them.
14.	I know how first graders are different from fourth graders physically, cognitively, socially and emotionally.

15.	I can plan skill sequences so that tasks go from easier to harder in small steps.
16.	When I watch someone perform a skill, I can see if they are doing it right or what they need to correct.
17.	If someone is having trouble performing a skill, I can tell and show them what to do to get better.
18.	If one of my students were having trouble with a drill, I know ways to change it to make it easier for them.
19.	If a drill was too easy for a highly skilled student, I can easily change it to make it more challenging.

20.	If I had a student with vision problems in one of my PE classes, I can find ways for the student to participate with the rest of the class successfully.
21.	I know how to include a student with cerebral palsy in a regular PE class.
22.	I know what to do with a student with mental retardation in my regular PE class.
23.	I know how to effectively teach students with emotional or behavioral problems who were in my PE class.
24.	I know how to effectively teach a student with ADHD (attention deficit hyperactivity disorder) in my PE class.
25.	I am able to help children from poverty backgrounds have a successful PE experience.
26.	I can get my students to respect and cooperate with each other.
27.	I can organize and run active classes safely so that students are not likely to get hurt.
28.	I can demonstrate and explain a skill/drill so that the class understands what to do.
29.	I can use questions or activities to get kids to think critically or solve problems.

30.	I can use clear teaching cues that help students remember and understand how to do a skill correctly.
31.	I understand assessment concepts (such as validity, reliability, and authentic assessment) and can use them in teaching PE.
32.	I can use assessments both for grading my classes and to help me plan.
33.	I can make up rubrics to assess student learning of skills or game play.
34.	My grades reflect how well students have learned what I wanted them to learn.
35.	I can change a lesson as the day goes on based on how the lesson is working.
36.	I can use the internet to plan lessons.
37.	I can integrate technology if I have it (such as video and sound systems) into my teaching.
38.	If my principal wants to see me use technology such as computer programs or audiovisual equipment in PE, I can do it.
39.	I often use e-mail and the internet to find or share ideas about PE.
40.	I am aware of technology-based equipment and computer programs for PE, even if I don't have it.

Humphries, C. A., Hebert, E., Daigle, K., & Martin, J. (2012). Development of a physical education teaching efficacy scale. *Measurement in Physical Education and Exercise Science, 16*, 284-29.

## CURRICULUM VITAE

### Stefanie Wooten Burnett

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#### **WORK**

University of Louisville  
College of Education and Human Development  
Department: Health and Sport Sciences  
Crawford Gym  
stefanie.wooten@hotmail.com  
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#### **HOME**

6709 Liberty Dr.  
Charlestown, IN. 47111  
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#### **EDUCATION**

##### **PhD**

**University of Louisville (Projected date: May 2014)**  
Major Area: Curriculum and Instruction Specialization:  
Physical Education  
**Dissertation:** Cognitive Coaching<sup>SM</sup>: The Impact on  
Teacher Candidates' Teacher Efficacy

##### **MAT**

**2004**

**University of Louisville**  
Major Area: Master of Arts in Teaching Specialization:  
Physical Education and Health Education

##### **B.S.**

**2003**

**University of Louisville**  
Major Area: Health & Human Performance Concentration:  
Skill Acquisition  
Minor: Exercise Science and Sports Medicine  
Minor: Health Education

#### **RESEARCH INTERESTS**

Primary research interests are: (1) the preparation of teacher candidates in physical education, (2) teacher candidates' perceptions of diversity in K-12 school settings, (3) Cognitive Coaching<sup>SM</sup> and the benefits on teacher candidates' teacher efficacy, and (4) physical activity in the K-12 educational setting.

## CERTIFICATION AREAS

Physical Education and Health: K-12

Kentucky

## ACADEMIC AND PROFESSIONAL POSITIONS

**University of Louisville, Louisville, Kentucky** **July 2005 to present**  
Physical Education Program, Department of Health and Sport Sciences

**Physical Education and School Health Program Director** **January 2012 to present**

- Manage all components of the physical education teacher education program. Advise approximately 15 graduate students. Schedule all course taught within the department for a calendar. Complete program reports and align program with state and national guidelines.

**Master of the Arts in Teaching Coordinator** **January 2012 to present**

- Manage all components of the Master's program while completing program reports, providing LiveText support to teacher candidates, solve teacher candidate issues, scheduling of student teaching placements, course alignment with college, state, and national guidelines and expectations, and completing Student Learning Outcomes (SLO) at the graduate level.

**Instructor** **July 2005 to present**

- Design and implement instruction for graduate teacher candidates in the subject area of secondary physical education and health education content areas. Advise approximately 40 undergraduate students. Supervise approximately 15 graduate teacher candidates for physical education and health. Supervise approximately 25 undergraduate students for school fieldwork placements.

### **Courses taught:**

#### **Undergraduate**

- HSS 270: History and Foundation of Health and Sport Science
- HSS 320: Human Growth and Motor Development Across the Lifespan
- HSS 410: Theory of Sport Pedagogy
- HSS 411: Theory and Analysis of Team Sport Skills:
- HSS 412: Theory and Analysis of Individual Sport Skills
- HSS 492: Cooperative Internship/Practicum (Physical Education and Health)

#### **Graduate**

- HSS 606: Teaching and Learning for Secondary Physical Education
- HSS 609: Teaching and Learning for Secondary Health Educators
- HSS 611: Seminar in Student Teaching in Physical Education
- HSS 613: Student Teaching in Secondary Physical Education
- HSS 614: Action Research

**Physical Education and Health Teacher**

- Designed and implemented age appropriate curriculum for 400, 6<sup>th</sup>-8<sup>th</sup> grade students in the physical education and health classrooms. Responsible for budgeting and purchasing age appropriate equipment and classroom materials. Coordinator of after-school activities for all students. Coached girls' basketball, volleyball, and track and field coach.

**RESEARCH AND SCHOLARLY ACTIVITIES****Abstract**

King, K. M., **Wooten-Burnett, S.**, Larimore, K., & Ha, J. (2012). Multi-site, physical activity and nutrition interventions for rural, low-socioeconomic children. *Research Quarterly in Exercise and Sport*, 83(Supplement), A17-18.

Erwin, H., Beighle, A., Benton, D., Scanlan, T., & **Wooten, S.** (2012, October). Physical activity in physical education: one district's move to improve. Poster presented at the annual National Physical Education Teacher Education Conference, Las Vegas, Nevada.

**National Presentations**

Vidoni, C., Hanaki-Martin, S., Carter, K., **Wooten-Burnett, S. C.**, & Terson de Paleville, D. *Incorporating a Movement Skill Program Into a Preschool Daily Schedule*. Poster presented at the annual Research Consortium session of American Association for Health, Physical Education, Recreation and Dance (AAHPERD), St. Louis, MO.

Thomas, M. S., & **Wooten Burnett, S. C.** (2014). "Do I react? To What?" *Preservice Teachers' Explorations of Race*," Paper presented at the annual conference for the American Educational Research Association (AERA), Philadelphia, Pennsylvania.

**Wooten-Burnett, S.** & Thomas, M. (2012, November). I don't have to listen to no White Lady: Pre-service students engagement with Vivian Paley's, *White Teacher*. Presented at the annual conference for National Association for Multicultural Education, Philadelphia, Pennsylvania.

Erwin, H., Beighle, A., Benton, D., Scanlan, T., & **Wooten, S.** (2012, October). Physical activity in physical education: one district's move to improve. Poster presented at the annual National Physical Education Teacher Education Conference, Las Vegas, Nevada.

King, K. M., **Wooten-Burnett, S.**, Larimore, K., & Ha, J. (2012, April). *Multi-site, physical activity and nutrition interventions for rural, low-socioeconomic children*. Poster presented at the annual Research Consortium session of American Association for Health, Physical Education, Recreation and Dance (AAHPERD), Boston, MA.

Weinberg, W., **Wooten-Burnett, S.**, Lund, J., & Ha, J. (2011). *Teacher candidates' perceptions of their abilities to meet beginning standards*. Presented at the annual conference of the American Association of Health, Physical Education, Recreation and Dance (AAHPERD), San Diego, CA.

Kolander, C., Mercer, B., S., Benson, P. & Demling-Castelluzzo, K. (2006, April) *Assessing candidates and student learner outcomes: An NCATE requirement*. Presented at the annual conference of the American Association of Health, Physical Education, Recreation, and Dance, Salt Lake City, UT.

### **State Presentations**

Hinton, C. & **Wooten Burnett, S. C.** (2014, March). *Activities and Assessment in Physical Education*. Presented at the annual conference for Southern District/Kentucky Association for Health, Physical Education, Recreation, and Dance in Lexington, KY.

**Wooten-Burnett, S.C.**, & Hinton, C. (2012, November). *Activities and Assessments in Physical Education*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Lexington, KY.

**Wooten-Burnett, S.C.**, & MAT Students. (2011, November). *Secondary Physical Education Activities*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Lexington, KY.

**Wooten-Burnett, S.C.**, & MAT Students. (2010, November). *Secondary Physical Education Activities*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Lexington, KY.

Keiffner, P., **Wooten-Burnett, S.C.**, & MAT Students. (2009, November). *Secondary Physical Education Activities*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Lexington, KY.

Keiffner, P., **Wooten-Burnett, S.C.**, & MAT Students. (2008, October). *Secondary Physical Education Activities*. Presented at the annual

conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Louisville, KY.

**Wooten-Burnett, S.C.,** Keiffner, P., & MAT Students. (2007, October). *Activities and Assessments in Physical Education*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Louisville, KY.

**Wooten-Burnett, S. C.,** Keiffner, P., & MAT Students. (2006, October). *Activities and Assessments in Physical Education*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Lexington, KY.

Moore, J., & **Wooten-Burnett, S. C.** (2006, October). *Marion County Data on Physical Readiness*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance, Lexington, KY.

#### **Professional Developments**

**Wooten-Burnett, S.** (2011, June). *JCPS Summer Workshop: Secondary Physical Education Curriculum Design*. A presentation for Jefferson County Public School teachers, Louisville, KY.

**Wooten-Burnett, S.,** Scanlan, T., & Keiffner, P. (2011, June). *JCPS Summer Workshop: Physical Education Curriculum Design*. A presentation for Jefferson County Public School teachers, Louisville, KY.

**Wooten-Burnett, S. &** Scanlan, T. (2010, May). *JCPS Professional Development Workshop: Physical Education Curriculum Design*. A presentation for Jefferson County Public School teachers, Louisville, KY.

**Wooten-Burnett, S. C.,** Keiffner, P., & Hamilton, K. (2008, June). *Summer Workshop: Integrated Activities in Physical Education*. Presented at the annual conference of the Kentucky Association of Health, Physical Education, Recreation, and Dance summer workshop at Highland Middle School, Louisville, KY.

**Wooten-Burnett, S. C., &** Keiffner, P. (2006, June). *Kentucky Core Content Version 4.1: Hardin County Professional Development*. A presentation for the Hardin County elementary and secondary physical education and health teachers, Elizabethtown, KY.

**Wooten-Burnett, S. C.,** Keiffner, P., & MAT Students. (2006, November). *JCPS Professional Development Gold Day Professional Development: Fitness and Dance Activities with Assessments*. A presentation for the Jefferson

County Public School elementary and secondary physical education and health teachers, Louisville, KY.

## **GRANTS, CONTRACTS, AND TRAININGS**

### **Grants (Funded)**

King, K. M. (2010). *Project BALANCE: Beneficial Activity Levels and Nutritional Choices Everyday*. Carol M. White Physical Education Program (PEP) award CFDA# 84.215F. Award amount: \$1,100,000 for 3-years.

### **Contracts**

Jefferson County Public Schools: SOFIT. Physical Education Consultant. Award amount: \$20 hr.

### **Trainings**

- System for Observing Fitness Instruction Time (SOFIT): Measures physical activity levels of K-12 students.
- Cognitive Coaching (CC): Training focuses on the maps and tools needed to mediate another's thinking in a dynamic, individualized way.

## **SERVICE, MEMBERSHIP, AND LEADERSHIP**

### **State**

Teacher Educator, Kentucky Teacher Internship Program 2005 – present

At-Large West Coordinator for KAHPERD: Kentucky Association of Health, Physical Education, Recreation, and Dance. 2008 - 2010

### **College**

Committee Member: Field and Clinical Placement (Ad Hoc) 2012- present

Committee Member: Unit Assessment Committee 2010- present

Committee Member: Diversity Committee 2008 – present

Committee Member: Standards and Admissions 2008 – 2010

### **Department**

HSS Teacher Preparation Club 2013- present

Committee Member: HHP Evaluation Committee (Ad Hoc) 2011 – present

Director: School Health Physical Education Program Committee 2011 - present

### **Memberships**

Member: National Multicultural Association for Multicultural Education (NAME) 2012 - present

Member: American Educational Research Association (AERA) 2012-present

Member: Kentucky Association for Health, Physical Education, Recreation and Dance (KAHPERD) 2004 - present



Member: American Association for Health, Physical Education,  
Recreation and Dance (AAHPERD)

2010 - present

### **HONORS AND RECOGNITIONS**

KAHPERD College/University PE Teacher of the Year	2013
Red & Black Student- Athlete Faculty Mentor: University of Louisville	2013
Red & Black Student-Athlete Faculty Mentor: University of Louisville	2012
Red & Black Student-Athlete Faculty Mentor: University of Louisville	2011
Top 9 Faculty Favorite Award Winner	2011
Red & Black Student-Athlete Faculty Mentor, University of Louisville	2010
Red & Black Student-Athlete Faculty Mentor, University of Louisville	2009
Red & Black Student-Athlete Faculty Mentor, University of Louisville	2007
Faculty Favorite Nominee, University of Louisville	2007

### **STUDENT EVALUATION OF TEACHING**

Evaluations are based on student evaluation of instruction, 5.0 maximum.

2005 Calendar Year:	<b>4.45</b>	University of Louisville
2006 Calendar Year:	<b>4.63</b>	University of Louisville
2007 Calendar Year:	<b>4.57</b>	University of Louisville
2008 Calendar Year:	<b>4.48</b>	University of Louisville
2009 Calendar Year:	<b>4.37</b>	University of Louisville
2010 Calendar Year:	<b>4.44</b>	University of Louisville
2011 Calendar Year:	<b>4.64</b>	University of Louisville
2012 Calendar Year:	<b>4.65</b>	University of Louisville
2013 Calendar Year:	<b>4.58</b>	University of Louisville