VIDEO SELF-REFLECTION AND E-MENTORING

TO SUPPORT PROFICIENCY IN A HIGH-PERFORMING SCHOOL DISTRICT

by

Jen Lamia

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Abstract

Teachers new to a school district are not always equipped with the knowledge, attitudes, and beliefs necessary for expected teacher proficiency and, therefore, need support. The purpose of this concurrent mixed methods convergent design study was twofold: (1) to identify how teacher perceptions about their teaching and self-efficacy changed after content-focused e-mentoring using a teacher development framework and video self-reflection and (2) to investigate whether e-mentoring and video self-reflection supported goal setting, collaboration, and self-reflection. Nine teachers from grades 3-12, with 3-10 years of experience who were new to a high-performing district, met with mentors for an introductory session, four face-to-face sessions, engaged in content-focused asynchronous e-mentoring sessions, and completed video self-reflection. Additional data sources included the Teachers' Sense of Efficacy Scale and open-ended survey questions. The findings suggest that goal setting, collaboration, and self-reflection occurred and support increases in mentee teacher self-efficacy and professional growth. Furthermore, the findings support the use of a teacher development framework, the Framework for Teaching (Danielson et al., 2009; Danielson, 2011) to guide goal setting in e-mentoring. Most importantly, mentee teachers reflected on the critical incidents from watching a video of their teaching, and were able to identify goals for the future.

> *Keywords:* content-focused e-mentoring, video self-reflection, teacher evaluation
> framework, goal setting, collaboration, teacher self-efficacy

Dissertation Adviser: Dr. Sherri K. Prosser

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Student: **Jennifer Lamia**   Adviser: **Sherri Prosser**

Dissertation Title: Video Self-Reflection and E-Mentoring to Support Proficiency in a High-Performing School District

Date Approved: 06.18.18

Required Signatures:

Dissertation Adviser   **Sherri K Prosser**   Digitally signed by Sherri K Prosser
                                                      DN: cn=Sherri K Prosser, o=Johns Hopkins
                                                      University, email=sprosser1@jhu.edu, c=US
                                                      Date: 2018.06.18 10:47:40 -04'00'

Committee Member   **Carey Borkoski**   Carey Borkoski   Digitally signed by Carey Borkoski
                                                                  DN: cn=Carey Borkoski, o, ou,
                                                                  email=borkoski@jhu.edu, c=US
                                                                  Date: 2018.06.18 10:52:00 -04'00'

Committee Member   _Beth Kobett_

Committee Member   _____

Student   _Jennifer Lamia_

The Dissertation Adviser must submit the completed form to the Director(s) of the Doctor of Education Program for inclusion in student's doctoral folder.

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Dedication

This dissertation is dedicated to educational professionals who seek to guide teachers who are new to a school district. The expectations that teachers face must be met with carefully planned supports so that teachers may develop and students can learn.

My professional support system included Dr. H. Evan Powderly, who has been my professional mentor for decades. Dr. Powderly taught me the value of fidelity to teachers, students, and continuous learning. He remains a consummate professional and my friend.

My personal support system has included my husband Michael and my sons, J.P. and Michael. Thank you for recognizing how important this journey has been for me and for the sacrifices you have made so that I could learn and grow too.

Acknowledgements

The support of my doctoral committee has made this journey possible and truly enjoyable. I acknowledge the work and collaboration of Dr. Beth Kobett, Dr. Carey Borkoski, and my adviser, Dr. Sherri Prosser, who have all provided me with different lenses to approaching a problem of practice that was important to me as a school district administrator.

Dr. Beth Kobett shares my desire to support teachers in the difficult work that they do each day, and provided me with insight and resources. Although it was never required, Dr. Kobett would contact me at different times during the doctoral journey to support me as a learner and as an individual, which I will never forget. Dr. Carey Borkoski provided me with critical insight into the research methods and analysis necessary to study the problem of practice. Dr. Borkoski's knowledge of methods is so impressive that anyone would enjoy the intensity of collaborative research with her.

My adviser, Dr. Sherri Prosser, has been an incredible critical friend for my thinking, research, writing, and development. Dr. Prosser inspired me to broaden my mind and accept that my best could always be better. Her ability to attend to every intricate detail of my dissertation process has been impressive and has afforded me with a multitude of possibilities for my thinking and research. Dr. Prosser's support, constant communication, and attention to every detail pushed me, with confidence, to achieve so much. I am incredibly grateful for her support as my adviser.

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Executive Summary

The focus of this mixed-methods study was to support mentee teachers, or teachers with prior teaching experience who are new to the school district. The researcher developed a mentoring program based on empirical literature, which included e-mentoring and video self-reflection focused on a component for growth using a well-known teacher evaluation framework (Danielson et al., 2009; Danielson, 2011) as a developmental tool. The intervention incorporated goal setting, collaboration, and self-reflection and was examined through mentee teachers' perceived changes in their professional practices and self-efficacy.

Problem of Practice

Experienced teachers who are new to a school district are not always equipped with the knowledge, attitudes, and beliefs necessary for teacher proficiency. Nearly one third of all new teachers in the United States enter the profession without a 4-year degree in education (Zeichner & Bier, 2015). With increased state and national expectations for teacher performance, such as the New York State Annual Professional Performance Review regulations for teacher proficiency (New York State Education Department, NYSED, 2012, 2014) and the Common Core State Standards (National Governors Association for Best Practices, 2010) for student achievement, teachers are not always prepared to provide the quality of education required for a national curriculum (Porter, McMaken, Hwang, & Yang, 2011). Problems related to teacher proficiency are reflected in research focused on novice teacher quality and effectiveness (Goldhaber & Hansen, 2008), pedagogical content knowledge (Hong, 2010; Mecoli, 2013; Nuangchalerm & Prachagool, 2010), the role of inquiry in teacher development (Cochran-Smith, Barnatt, Friedman & Pine, 2009), and levels of self-efficacy (Skaalvik & Skaalvik, 2010;

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Tschannen-Moran & Woolfolk Hoy, 2001). Being hired into in a high-performing school district with robust accountability measures likely also contributes to challenges for mentees.

Theoretical and Conceptual Frameworks

This section reviews the major frameworks of the study: situated learning and self-directed learning, social cognitive theory, and the interconnected model of professional growth.

Self-Directed Learning and Situated Learning

Knowles (1975) posits that a self-directed learner can: (a) identify a learning need, (b) take initiative for one's own learning, (c) create goals based upon need, (d) identify resources, (e) choose a learning method or strategy, and (f) observe and evaluate the outcomes of the self-directed experience. The self-directed learner identifies a need and content, develops social interactions and collaborations, and reflects on learning (Knowles, 1975).

Self-directed learning aligns with the situated learning perspective. In 1988, Lave described situated learning, and purported that cognitive growth is the result of meaning constructed socially as people respond to new situations. Lave and Wenger (1991) extended the concept of situated learning to include cognitive apprenticeship, whereby people can learn socially in the context of the learning and working environment. Situated learning theory framed the examination of mentee teacher development.

Social Cognitive Theory

The social cognitive theory posits that individuals acquire knowledge through the observation of other individuals within shared experiences (Bandura, 1986, 2001). Based on a model of causation, known as triadic reciprocal determinism, the social cognitive theory identifies the influence of factors on cognition; the interaction among personal, environmental, and behavioral factors influences learning and future actions (Bandura, 1986). Social cognitive

theory was used to understand how the individual acquires knowledge through the observation of other individuals in experiences, such as preservice and induction programs and teacher efficacy. The social cognitive lens helped to identify how individual factors of teacher development, and broader factors of preservice, certification, and mentoring, influenced teacher proficiency.

Interconnected Model of Professional Growth

The interconnected model of professional growth, studied by Clarke and Hollingsworth (2002), describes "change sequences" and "growth pathways" to analyze teacher professional growth and four interrelated domains of change: external domain, personal domain, domain of practice, and domain of consequence. Change sequences are defined as two or more domains connected by reflection or enactment, whereby a change in one domain causes a change in another. Although the model focuses on professional growth through enactment and reflection (Clarke & Hollingsworth, 2002), the systems approach offers a lens to understanding how interconnected factors influence teacher proficiency.

<div align="center">Synthesis of Relevant Research Literature</div>

The synthesis of research includes literature on teacher development and the use of a teacher evaluation framework (Danielson et al., 2009; Danielson, 2011), teacher development through reflective practice, online learning and e-mentoring, teacher self-efficacy, and teacher reflection.

The Framework for Teaching

Support for the Framework for Teaching (Danielson, 2011) suggests its importance in schools as a reliable measure for analyzing teacher proficiency. Teaching frameworks have inspired empirical studies on the original intended use of frameworks as development tools (Evans, Wills, & Moretti, 2015). A case study by Evans et al. (2015) indicates that the

Framework for Teaching (Danielson, 2011) is effective in supporting teacher growth by describing performance and providing opportunities for professional dialogue because the Framework for Teaching (Danielson, 2011) provides rich descriptions of performance. Defining levels of proficiency using components of teaching provides an opportunity for teacher growth (Evans et al., 2015), supporting the Framework for Teaching (Danielson, 2011) as a viable tool for use in teacher mentoring.

Teacher Development Through Reflective Practice

In the *Reflective Practitioner*, David Schon (1983) supports the concept of reflective practice for teachers and its application for future learning. Reflection may be defined as the identification of perceived performance (Calandra, Brantley-Dias, Lee & Fox, 2009), whether through reflection-on-action, reflection-in-action (Schon, 1983), or self-directed learning (Knowles, 1975). Reflection-in-action occurs when teachers draw on knowledge and feelings to create a change during a teaching experience and reflection-on-action occurs when teachers think about why they did something and subsequently question their actions and practices (Schon, 1983). Through reflection, mentee teachers may identify areas needing support and consider, with a mentor, how to enhance teaching practices.

Reflection-on-action is possible when the lesson can be viewed or replayed as part of a discussion. A study examining the effectiveness of video self-reflections found that studying videotaped lessons in collaborative conferences enhances teacher reflection (Baecher, McCormack, & Kung, 2014). Videos for self-reflection have value for promoting self-reflective practice (Calandra et al., 2009; Wright, 2008), developing content knowledge (Johnson & Cotterman, 2015), and for promoting growth when used with a teaching framework (Mielke, 2012; Wright, 2008).

Online Learning

E-mentoring may be defined as "the infusion of electronic communication into the mentoring relationship" (Cothran et al., 2009, p. 553), potentially improving knowledge and skills in lesson development and implementation through, "emotional and affective engagement" (Farr & Riordan, 2014, p. 2). Referred to as "just-in-time" mentoring, e-mentoring is the "use of computer-mediated communications such as e-mail, discussion boards, chat rooms, blogs, web conferencing, and growing Internet-based solutions that are changing the way mentors and mentees interact" (Smith & Israel, 2010, p. 30). E-mentoring has the capability to take on a robust role in teacher development due to its capacity to: provide a platform to address timely concerns requiring an expert (Alsbury & Hackmann, 2006; Hansford & Ehrich, 2006), promote collaboration (Bang & Luft, 2013; Cothran et al., 2009; Hunt, Powell, Little, and Mike, 2013; Shrestha et al., 2009), promote lesson development (Bang, 2013; Bang & Luft, 2013; Simonsen, Luebeck, & Bice, 2009) and support reflection (Farr & Riorden, 2015).

Teacher Self-Efficacy

Klassen and Chiu (2010) studied self-efficacy related to instruction, classroom management, and student engagement for 1,430 teachers through a survey, and Skaalvik & Skaalvik (2010) studied self-efficacy of 244 teachers regarding instruction meeting individual student needs, motivating students, classroom management, and collaboration, using the Norwegian Teacher Sense of Efficacy Scale. Both studies concluded that a relationship exists between teacher performance and increased self-efficacy in particular domains, with greater self-efficacy resulting in greater proficiency. Lombardo-Graves (2014) used a pre- and postsurvey self-efficacy scale for 43 teachers over a 10-week mentoring intervention to reveal that teacher self-efficacy increased. LoCasale-Crouch, Davis, Wiens, and Pianta (2012) also found that

focused interactions between 11 mentors and 77 novice teachers over the course of two semesters supported increased novice teacher self-efficacy.

Research Purpose and Objective

This purpose of the study is to identify how teacher perceived ability and self-efficacy changed after an intervention focused on e-mentoring and video self-reflection, using the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001), Domain 3: Instruction of the Framework for Teaching (Danielson et al., 2009), e-mentoring dialogues, and video self-reflections.

Research Questions

The following research questions guided this study:

1. How do mentee teachers perceive their efficacy after content focused e-mentoring and video self-reflection?

2. What are mentee teacher experiences with the use of e-mentoring, video self-reflection, and Domain 3: Instruction in a mentoring program?

3. How have e-mentoring and video self-reflection supported goal setting, collaboration, and self-reflection?

Research Design

This study used a concurrent mixed methods convergent design (Creswell & Plano Clark, 2011). The research questions were aligned with the outputs, measures, and short-, medium-, and long-term outcomes of goal-setting, collaboration, and self-reflection. Process and outcome evaluation measures were used to assess the intervention and identify fidelity of implementation.

Intervention

The mentoring program was conducted from July to December 2017 with an introductory session, four face-to-face sessions, asynchronous e-mentoring sessions, and video self-reflection to support proficiency and efficacy of mentee teachers. Mentee teachers: (1) identified goals related to their instructional practice and development, (2) participated in content-focused e-mentoring for the codevelopment of a lesson, and (3) participated in video self-reflection. Mentee teachers and their assigned mentor teachers participated in an e-mentoring workshop, whereby norms for e-mentoring dialogue and guidelines for discussion were created. Mentee and mentor teachers were also introduced to an e-mentoring platform using a lesson development template to begin an electronic dialogue.

Each dyad used the e-mentoring platform to coconstruct a lesson over the course of 2 weeks based on an area of struggle identified using the Four Domains Self-Assessment (Danielson et al., 2009). Lesson collaboration included the development of the curriculum and topic of study, state standards and performance indicators, lesson objectives, instructional strategies, and assessment of student learning. The e-mentoring dialogue began as the mentee teacher completed the template for the lesson, and the mentor provided feedback in the form of questions, comments, and resources. Mentee teachers responded to mentor comments to support completion of the template in a dialog box. After the lesson was implemented, mentee teachers reviewed a videotape of the lesson and completed a self-reflection of the lesson using the Critical Incident Reflection Form (Calandra et al., 2009; see Appendices K and L).

Data Collection and Analysis

Measures consisted of a teacher efficacy survey, including the Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001), with demographic

questions that utilized both a Likert-type scale and closed questions, the Four Domains Self-Assessment (Danielson et al., 2009; see Appendix J), e-mentoring dialogues, and a reflection form that identified critical incidents in teaching, used during video self-reflection (Calandra et al., 2009).

Findings

The pre- and postsurvey means and modes from the TSES (Tschannen-Moran & Woolfolk Hoy, 2001) indicate a change in the mentee teachers' personal domain, which includes knowledge, beliefs, attitudes, and personal goals. Self-ratings using the Framework for Teaching (Danielson et al., 2009), reflect answers to an open-ended question from the survey, e-mentoring dialogues, and the Critical Incident Reflection Form (Calandra et al., 2009) responses indicate teacher enactment and reflection, which are key components in the model of professional growth (Clarke & Hollingsworth, 2002). The change from the presurvey results about teacher perceptions using the Danielson Framework for Teaching (Danielson et al., 2009) indicates that reflection occurred, similar to e-mentoring and the video self-reflections. Teacher development, indicated on the Critical Incident Reflection Form (Calandra et al., 2009) as changes for the future, is identified as a change pathway that supported growth in one domain based on reflection or enactment in another domain. The critical incident activity provided opportunities for reflection, illustrating that the domain of practice (e.g., lesson development) and external domain (e.g., mentoring sessions) influences the mentee teachers' personal domain (e.g., knowledge, beliefs, and attitudes). Finally, specific goals related to instruction by eight of the mentee teachers indicates that focusing on the component of instruction helped support higher order thinking (Participant 1), isolate areas of need for students (Participant 3), support focus (Participant 5), and support alignment (Participant 6).

Although there are indications that goal setting supported mentee teachers' professional growth, only four participants indicated a positive response to e-mentoring and video reflection (Participant 1, 2, 3, and 9). Positive responses include comments that e-mentoring allowed mentee teachers to see student and teacher behaviors and to share ideas. Three participants responded negatively, commenting on e-mentoring and video reflection being more work (Participant 5), challenging (Participant 6), or not changing perception (Participant 7); two participants did not respond at all. Overall, the professional experience of goal setting contributed to a change pathway influencing the personal domain, yet mentee teachers did not necessarily indicate e-mentoring as being supportive of their growth.

Chapter 1

Teacher Development: Factors Affecting Teacher Proficiency

Teacher proficiency may be defined as teacher knowledge of content and pedagogy manifested in a teacher's ability to develop appropriate lessons and assessments that engage and motivate students (Danielson, 2011; Shulman, 1986). Teacher knowledge of content and pedagogy is developed through teacher preparation prior to teaching and inservice professional development thereafter. A typical teacher preparation program includes a four-year bachelor's degree with a core of education courses and an internship, or student teaching experience. Once a teacher is certified, professional development is required to retain certification. Teachers can, however, also receive initial certification after the completion of a bachelor's degree and an alternative certification path, consisting of an immersion into teaching, with limited or no undergraduate coursework in education (Zeichner & Bier, 2015).

Variations exist in the quality and quantity of teacher preparation, certification, and mentoring programs (Cardetti & Truxaw, 2014; Darling-Hammond, 2010; Rozelle & Wilson, 2012), which may contribute to the difficulty of some teachers to meet expected proficiency standards in individual schools. Mentoring programs, sometimes called induction programs, can last from 1 to 3 years and provide support for novice teachers. Mentoring programs that focus solely on the social acclimation of teachers may ignore content-based components necessary to attain expected teaching proficiency (Darling-Hammond, 2010). Teachers may also be influenced by contextual factors such as the transition from teacher preparation programs and alternative certification programs to the expectations of a classroom teaching experience (Rozelle & Wilson, 2012).

Teacher perceived success, proficiency, or development in the components of teaching may be attributed to pedagogical content knowledge (PCK), which includes knowledge of student engagement, instruction, classroom management, and student understanding (Hong, 2010; Mecoli, 2013; Nuangchalerm & Prachagool, 2010; Shulman, 1987; Van Driel & Berry, 2012). Teachers may not be provided with opportunities to develop PCK. For example, some preservice programs are subject-specific and focus on content with less focus on pedagogy (Rozelle & Wilson, 2012). Preservice experiences may not support teaching methodology or PCK (Cardetti & Truxaw, 2014), and mentoring programs may provide more emotional support than content and pedagogical mentoring (Darling-Hammond, 2010).

Teacher proficiency may also be influenced by teacher evaluation rubrics that are often only used as summative assessments instead of as formative tools for teacher development. Teacher evaluation rubrics are a standard part of a teacher's annual overall performance rating and may be used as a factor in teacher retention. Unlike summative assessments, evaluation rubrics used as formative assessments provide opportunities to track performance and help guide teacher improvement (Johnson, 2012; Marzano, 2012).

Another factor in teacher proficiency is self-efficacy, defined as teacher attitudes and beliefs about ability (Bandura, 1993), which can determine teacher action, engagement, and cognitive development (Salanova, Llorens, & Schaufeli, 2011). Low teacher self-efficacy has been correlated with teacher burnout, or attrition resulting from an inability to develop coping skills to manage stress and emotional exhaustion (Skaalvik & Skaalvik, 2010; Hong, 2010). Each year teachers leave the profession, resulting in high attrition rates. Of the over 3.3 million public school teachers employed in the 2011-2012 school year, 8%—or 259,000 teachers—left the

profession (Goldring, Taie, & Riddles, 2014). Teacher attrition has been correlated with personal and professional factors affecting teacher development (Borman & Dowling, 2008).

Teacher proficiency, therefore, may be influenced by how teachers are developed prior to teaching and during teaching, thereby making teacher preservice experiences, PCK, self-efficacy, the appropriate use of evaluation frameworks, and mentoring experiences the constructs by which the context of the problem is identified in my professional practice. Disparate systems that affect teacher proficiency may influence high teacher attrition rates and low student achievement (Borman & Dowling, 2008; Ingersoll, Merrill & May, 2014), further substantiating the need to understand the factors influencing teacher proficiency.

In my professional context, parents, students, and administrators are aware of and vocal about teachers new to the district and the influence a struggling teacher may have on student achievement. Teachers new to the school district typically have 3-10 years of experience, although issues with teacher proficiency and high attrition rates occur. The new teachers are not new to teaching, yet the, "concept of novice within the community" (Turniansky & Friling, 2006) exists. New teachers to the district, called mentees, are challenged with factors affecting teacher development and self-efficacy. Turniansky and Friling (2006) posit that a novice is not necessarily a new teacher, but is a state of mind which can help, through learning processes, to support teacher change. A need exists to identify factors influencing proficiency and self-efficacy for mentees with a novice state of mind to support teacher development toward proficiency.

Problem of Practice

Nearly one third of all new teachers in the United States enter the profession without a four-year degree in education (Zeichner & Bier, 2015). With increased state and national

expectations for teacher performance, such as the New York State Annual Professional

Performance Review regulations for teacher proficiency (NYSED, 2012, 2014) and the Common

Core State Standards (National Governors Association for Best Practices, 2010) for student

achievement, teachers are not always prepared to provide the quality of education required for a

national curriculum (Porter et al., 2011). The struggle teachers face may also be exacerbated by

teacher accountability models or evaluation frameworks that, "put teachers at great risk of unfair

evaluation" (Baker, Oluwole, & Green, 2013, p. 5). Problems related to teacher proficiency are

reflected in research focused on novice teacher quality and effectiveness (Goldhaber & Hansen,

2008), PCK (Hong, 2010; Mecoli, 2013; Nuangchalerm & Prachagool, 2010), the role of inquiry

in teacher development (Cochran-Smith et al., 2009), and levels of self-efficacy (Skaalvik &

Skaalvik, 2010; Tschannen-Moran & Woolfolk Hoy, 2001). Being hired into in a high-

performing school district with robust accountability measures likely also contributes to

challenges for mentees.

Conceptual and Theoretical Frameworks

Factors that contribute to teacher proficiency may be explored through the interconnected

model of professional growth (Teacher Professional Growth Consortium, 1994), a systems

approach to teacher change, as well as through the social cognitive theory of learning (Bandura,

1986).

Interconnected Model of Professional Growth

The interconnected model of professional growth, studied by Clarke and Hollingsworth

(2002), describes "change sequences" and "growth pathways" to analyze teacher professional

growth and four interrelated domains of change: external domain, personal domain, domain of

practice, and domain of consequence. Change sequences are defined as two or more domains

connected by reflection or enactment, whereby a change in one domain causes a temporary

change in another. Growth networks are more enduring change sequences that result in

professional growth that is not fleeting. The external domain includes outside stimulus and

support, and the personal domain includes what a teacher knows or believes. The domain of

practice is defined as the teacher's experimentation with ideas, and the domain of consequence

represents a change in the teacher's perception of the outcomes of practice and personal beliefs.

Although the model focuses on professional growth through enactment and reflection (Clarke &

Hollingsworth, 2002), the systems approach also offers a lens to understanding how

interconnected factors influence teacher proficiency. The interrelated domains of the

interconnected model of professional growth explain how contextual factors of teacher

development influence proficiency in practice (see Figure 1).
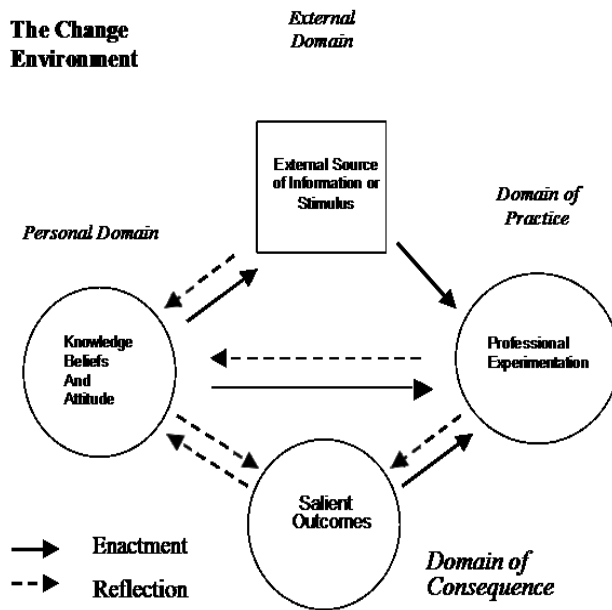
Figure 1. The interconnected model of professional growth. Change is identified through

reflection and enactment process, with enactment denoted by the solid arrow and reflection

denoted by the slotted arrow. Personal domain, domain of practice, and domain of consequence,
denoted by circles, and the external domain, denoted by a square are connected by arrows to
show the direction of change. Reprinted with permission from "Elaborating a Model of Teacher
Professional Growth," by D. Clarke and H. Hollingsworth. (2002). *Teaching and Teacher
Education*, *18*, p. 951.

The interconnected model of professional growth can be used to explain how the personal
domain of mentee teacher knowledge, beliefs, and attitude influences and is influenced by the
external domain, or factors such as preservice training, alternative certification, student teaching,
and mentoring experiences. The external domain may also influence the domain of practice, or a
mentee teacher's knowledge base to experiment with new ideas. Clarke and Hollingsworth
(2002) describe the school environment as either diminishing or promoting teacher growth.
Without opportunities in preservice programs or the school setting for development,
experimentation, and participation, mentee teachers may not be afforded the environment to
support professional growth.

Clarke and Hollingsworth (2002) identify six perspectives on teacher change, one of
which most resembles the experience of mentee teachers before teaching in the current context:
"change as training – change is something that is done to teachers, that is, teachers are
'changed'" (p. 948). It can be argued that the change that is done to teachers in preservice
programs, alternative certification programs, student teaching experiences, inservice mentoring,
and prior work experience does not always yield teacher proficiency within individual school
settings. According to Clarke and Hollingsworth, change may also include perspectives of
adaptation, personal development, local reform, or systems changes based on school policy. True

change, however, is growth or learning whereby teachers "change inevitably through professional activity" (p. 948).

Domains of change are connected by reflection and enactment (i.e., implementation), as growth pathways exist between each domain and domains are influenced by one another (Clarke and Hollingsworth, 2002). Before working in a particular school setting, it may be difficult for teachers to reflect on and implement understandings from external influences studied in preservice, student teaching, inservice, or prior work experiences, thus limiting the capacity for the reflection and enactment that can influence the personal domain, domain of practice, and the domain of consequence.

Anderson and Moore (2006) posit that the interconnected model of professional growth "establishes the need to consider teacher's knowledge, beliefs, practices and student outcomes as important variables when evaluating the impact of professional learning" (p. 5). The interconnected model of professional growth aligns with the social cognitive perspective as a lens with which to understand the factors of the problem of practice, as teacher growth can be linked to influential external stimuli.

Social Cognitive Theory

The foundation of social cognitive theory is how the individual acquires knowledge through the observation of other individuals within shared experiences (Bandura, 1986, 2001). Social cognitive theory is based on a model of causation, known as triadic reciprocal determinism, that identifies the influence of factors on cognition; the interaction among personal, environmental, and behavioral factors influences learning and future actions (Bandura, 1986). The concept of self-efficacy aligns with the social cognitive approach to teacher development in that the influence of personal factors, environmental factors, and behavior on cognition

(Bandura, 1986) may explain the influence of the interaction of factors on both current competencies and future action of mentee teachers. The concept of self-efficacy also aligns with the interconnected model of professional growth as training and experience influence the personal domain and the domain of practice.
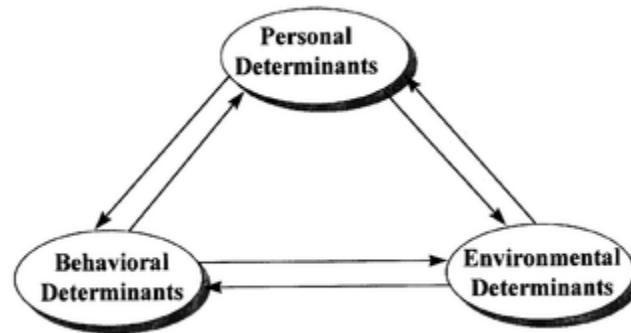
Figure 2. The model of triadic reciprocal determinism. Bandura's social cognitive theory and triadic reciprocal determinism explain how the influences of personal factors, behavior, and environmental factors influence learning and future actions. Reprinted with permission from "Social Cognitive Theory of Mass Communication," by A. Bandura (2001). *Media Psychology*, *3*, 266.

Teacher growth can be identified through developmental stages. Teachers learn from experiences they encounter and observations they reflect on and internalize (Choy & Oo, 2012; Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2011). Using cognitive processing and personal agency (i.e., a belief in one's ability to control events), self-conceptualization, or self-realization occurs through different experiences and observations (Bandura, 1986). In turn, one develops judgments (Bandura, 1986), which influence future thought, action, and perseverance (Meiklejohn et al., 2012; Robertson-Craft & Duckworth, 2014). Teacher developmental stages are similarly reflected in the concept of generative change identified by Franke, Carpenter, Levi,

and Fennema (2001). Franke and colleagues refer to generativity, or the ability of a teacher to connect knowledge and experiences and then perceive knowledge as one's own, as "learning with understanding" (p. 683). The social cognitive lens is useful in identifying how developmental stages may influence individual factors of teacher development and broader contextual factors of preservice, certification, mentoring, and prior teaching experiences which may influence mentee teacher proficiency.

Bandura (1993) explains how participants rely on past experiences and performance in determining future action. Ultimately, past experiences and observations affect future ability to influence motivation and approaches to goals and challenges (Holzberger, Phillip, & Kunter, 2013). The model of triadic reciprocal determinism is useful in understanding how problems with mentee teacher proficiency can occur and persist. Social cognitive theory, therefore, is a frame by which to examine factors influencing teacher proficiency, accounting for more than just the environmental influence on behavior and learning. Although learning occurs socially, mentee teachers are typically isolated in individual classrooms and are unable to observe other, more proficient, peers.

Factors Associated with Mentee Teacher Proficiency

Mentee teachers are typically assessed through formal or informal observations by administrators. Mentee teachers may be identified as *unsatisfactory* or *basic*, which consist of the two lowest levels of teaching proficiency and are aligned with rudimentary indicators of instruction (Danielson, 2011). Mentee teacher proficiency may be influenced by several broad contextual external factors, including: (a) preservice training, (b) alternative certification training, (c) student teaching experiences, (d) formal and informal mentoring programs, and (e) prior teaching experiences. Individual or personal domain factors, such as PCK, attitudes and

beliefs, self-efficacy, teaching experiences, and knowledge of planning, instruction, and assessment, may also influence mentee teacher development. In turn, teacher knowledge of instruction, student engagement, student understanding, and classroom management may influence teacher attitudes and beliefs about teaching and self-efficacy (Hong, 2010; Mecoli, 2013; Nuangchalerm & Prachagool, 2010; Shulman, 1987; Van Driel & Berry, 2012).

In addition to external and personal domain factors, teacher proficiency is shaped by even broader factors and influences, such as state and federal mandates for teachers and students (e.g., U.S. Department of Education [DOE], 2015). Legislative mandates affect teacher proficiency by providing an indirect influence on teachers and teaching. For example, state mandates may influence teacher motivation, teacher judgment, and subsequent decisions about teaching. Overall, individual factors, contextual factors, and external factors may be viewed through the interconnected model of professional growth and the social cognitive lens to identify how factors influence mentee teacher development toward proficiency.

Preservice Training: External Domain

The external domain includes a consideration of outside stimulus and support for teachers (Clarke & Hollingsworth, 2002). Preservice training, therefore, is an outside support influencing teacher proficiency, as it provides theoretical and clinical foundations for teachers who are certified through higher education programs. Preservice training typically consists of coursework in content and pedagogy, classroom observations, and at least one structured student teaching experience (e.g., internship) that includes mentoring, evaluation, and gradual, guided acquisition of instructional responsibilities. Teacher knowledge and beliefs, however, may be influenced by the disparate knowledge, beliefs, and practices of individual professors, supervising teachers, and cooperating teachers during student teaching experiences, which could reflect different teaching

strategies and pedagogies than those found during other preservice coursework (Rozelle &

Wilson, 2012). For example, student-centered teaching styles are currently taught in preservice

programs, but student teaching experiences and cooperating teachers' modeling tend to "move

teachers toward a more authoritative stance toward their students and toward traditional styles of

teaching" (Rozelle & Wilson, 2012, p. 1196). The traditional styles of teaching generally may be

referred to as teacher directed lessons with didactic instruction.

Positive feedback about traditional teaching that preservice, or student teachers, may

receive from cooperating teachers reinforces traditional teaching and detracts from pedagogies

studied in teacher education courses (Rozelle & Wilson, 2012). Different aspects of preservice

training, therefore, may not always yield improvements in instructional practices for teachers.

Without the influence of higher education on the methodologies and instructional practices,

cooperating teacher practices that support a traditional view of teaching may unduly influence

novice teachers.

Results from a controlled field experience by Ingersoll, Jenkins, and Lux (2014) suggests

that pedagogical constructs, such as classroom management, were the first to emerge for a

preservice teacher, instead of content knowledge constructs that would be typical of teacher-

centered instruction. The preservice teacher only exhibited PCK, however, until the cooperating

teacher influenced him. Ingersoll, Jenkins et al. (2014) analyzed 36 observations of the teacher

during three semesters, which may have influenced the preservice teacher to adhere to the

pedagogical constructs learned in preservice training with the researchers, thus influencing the

finding that PCK emerges first. In other words, the consistent presence of the observers may

have influenced the preservice teacher to perform what had been instructed in preservice classes.

The repeated presence of the observers may have also influenced the cooperating teacher's role as a direct influence on the preservice teacher.

Despite the potential limitations of the Ingersoll, Jenkins et al. (2014) study, the fact that the preservice teacher revealed pedagogical constructs first is noteworthy when comparing the study with similar results of preservice teachers from two other studies (i.e., Cardetti & Truxaw, 2014; Chai, Koh, & Tsai, 2010). Ingersoll, Jenkins et al. (2014) identified classroom management as a pedagogical construct revealed first by the preservice teacher, as determined during the coding process for observations, field notes, and interviews. The preservice teachers in the Cardetti and Truxaw (2014) and Chai et al. (2010) studies similarly provided responses that were indicative of pedagogical knowledge when asked how preservice coursework supports greater novice teacher understanding. The three studies suggest that preservice teachers initially provide evidence of pedagogical constructs in teaching, despite other research (e.g., Rozelle & Wilson, 2012) that indicates the influence of traditional, teacher-centered instructional practices on preservice teachers.

Although preservice teachers may receive training in pedagogy and identify the value of PCK, the application of PCK is not always evident in the student teaching experience. Insufficient PCK, as reflected in knowledge of student engagement, instruction, classroom management, and student understanding, may lead to teachers who are not meeting success or proficiency in all teaching domains (Hong, 2010; Mecoli, 2013; Nuangchalerm & Prachagool, 2010).

Certification

Teachers can take different routes toward certification, which may also influence teacher proficiency. A prospective teacher in the United States may seek alternative teacher credentialing

that permits a non-education major to accept a teaching position and complete a teacher education program while working. Alternative certification pathways, sometimes referred to as early entry, fast track programs, or fellowships, can place novice teachers in the classroom with no substantial teacher training. Teachers who are certified through alternative certification paths do not traditionally experience the preservice training or student teaching experiences found in traditional certification programs. Despite the NCATE (2010) Panel on Clinical Preparation and Partnership's request for more clinical practice in teacher preparation programs, teacher education is regulated by individual states and can vary widely. Therefore, teacher preparation, induction, and certification are not standardized, which may also influence teacher proficiency.

Although it may be striking that nearly one third of all new teachers in the United States become certified through non-traditional routes (Zeichner & Bier, 2015), it is more striking that this is a national average. Certain states, therefore, may yield a larger percentage of new teachers who are not prepared through a typical university or college experience. These types of programs have increased in popularity. Teach for America, a nonprofit organization promoting teachers for educational excellence and equity, for example, has grown from 500 teachers and school leaders 25 years ago to over 50,000 teachers and school leaders (Clark, Isenberg, Makowsky, & Zukiewicz, 2015). In 2015, 4,100 students were enrolled in Teach for America, with 65% graduating as non-education majors and 35% teaching fulltime as a classroom teacher (Clark et al., 2015). Despite the increasing numbers of potential teachers entering the program, a recent study revealed that 87% of Teach for America graduates do not plan to stay in teaching (Clark, 2015).

Other alternative certification programs, such as the New York City Teaching Collaborative, provide the opportunity for teacher candidates to work alongside a mentor for a

semester before assuming full teaching responsibilities. Although success is heavily dependent on the quality of the cooperating teacher, this process provides some classroom experience with coursework for prospective teachers seeking an alternative certification path (NYC Teaching Collaborative, 2017). The implications for this type of pathway are that novice teacher experiences will differ, depending on the quality and duration of the support received. In the meantime, K-12 students are expected to learn while novice teachers are fully placed within the classroom and are just beginning to develop proficiency.

Although substantial research exists on the influence of alternative certification paths, including criticism of learning to teach through the practice of teaching (Ball & Forzani, 2009; Consuegra, Engels, & Struyven, 2014), it is difficult to make conclusions about the influence of different pathways from programs with varying components and requirements. Some programs provide intensive mentoring and preparation prior to classroom experiences, and others advocate for immersion with outside support. Instead of characterizing alternative certification pathways generally, some researchers (e.g., Cochran-Smith et al., 2009) call for examining specific parts of programs that "facilitate or obstruct professional development" (Consuegra et al., 2014, p. 80). The quality of support and teaching in alternative teacher preparation programs, therefore, may contribute to the underlying factors of PCK and self-efficacy, which ultimately influence proficiency.

Ironically, factors negatively affecting teacher proficiency have also been used as measurement tools for teacher quality and performance (Hinchey, 2010). Teacher quality has been rated using broad factors such as certification and accreditation requirements (No Child Left Behind Act [NCLB], 2002) and performance has been rated based on observations of a teacher's instruction in the classroom throughout a year (Hinchey, 2010). Teacher certification,

however, is not always correlated with effective teaching (Goldhaber & Anthony, 2007), as ineffective teachers are able to earn state certification. Also, observations of classroom instruction are only snapshots of a teacher's overall work with students (Darling-Hammond, Amrein-Beardsley, Haertel, & Rothstein, 2012).

Accountability

Increased accountability measures for teacher accreditation do not necessarily correlate with higher teacher proficiency. For example, the National Council for the Accreditation of Teacher Education (NCATE; 2010) reviewed preservice programs for teachers based on six preconditions and a site visit to provide NCATE certification, a credential that once enabled teacher accreditation through higher education programs. However, the six preconditions included more criteria about the management of the institutions themselves (e.g., criteria for acceptance into the program and completion of the program, direction and accountability measures for the program, policy guiding the program, state accreditation) and less about the institutions' fidelity in developing teachers. The Teacher Education Accreditation Council (TEAC, 2014) created an accreditation approach to identify institutions that have proven that graduates are competent teachers. Although this was a step toward certifying teachers, teacher proficiency in the classroom was not considered in the TEAC accreditation process either.

By 2013, NCATE and TEAC amalgamated into the Council for the Accreditation of Educator Preparation (CAEP), an accreditation unit that claims to target the development of effective knowledge and skills necessary for teaching in the accreditation review, and which now serves as the only accrediting body for education preparation programs. CAEP includes standards that differ from the aforementioned NCATE standards, as they target specific teaching proficiencies: content and pedagogical knowledge; clinical partnerships and practice; candidate

quality, recruitment, and selectivity; program impact and provider quality; and continuous improvement and capacity (Council for Accreditation of Teacher Preparation [CATP], 2013). Despite nationwide efforts to ensure more rigorous accreditation processes aligned with expectations for teaching, there may still be insufficient appropriate training to support teacher effectiveness (Darling-Hammond, 2010); rigorous accreditation does not ensure teacher proficiency in the classroom. One mandate of NCLB (2001), for example, was that a highly qualified teacher must teach every student. The NCLB designation of a highly qualified teacher only required that a teacher met certification requirements, but was not correlated with teacher proficiency demonstrated in the classroom. Certification, therefore, is not a valid approach to measure teacher effectiveness within the classroom (Hinchey, 2010).

Teacher proficiency has also been measured through student achievement, although measuring teachers through this *value added* method is also controversial (Darling-Hammond et al., 2012). Although some students with an effective teacher demonstrate greater achievement than students with ineffective teachers (Darling-Hammond, 2010; Metzler & Woessman, 2010; Sandholtz, 2011; Tucker, 2011; Ward, Kim, Ko, & Li, 2015), there are students who demonstrate growth despite having ineffective teachers (Darling-Hammond et al., 2012). Although "teacher quality is the most important schooling factor when it comes to improving student achievement" (Goldhaber & Hansen, 2008, p. 1), teacher quality should not be measured solely by student achievement, as some students learn regardless of the quality of the teacher (Darling-Hammond et al., 2012).

Teacher Mentoring Programs: External Domain

Mentoring teachers provides an opportunity for collaboration to support factors influencing teacher proficiency in the classroom. According to the New Teacher Center report

(Goldrick, 2016), however, teacher mentoring is only required in 29 states, and the duration and format for mentoring are either state- or district-specific. For example, Iowa requires all public schools to have a mentoring plan approved by the Iowa State Department of Education (DOE, 2015). The plan includes a fully-funded mentoring program of two years that is based on Iowa's eight teaching standards. After two successful years, the novice teacher is eligible for a standard license. New Jersey has also recently increased the rigor of mentoring programs to support teachers through mentoring and decrease attrition, as the New Jersey DOE enacted new legislation that supported greater mentoring support requirements for public and nonpublic teachers (New Jersey DOE, 2014). The new regulations require specified mentoring support for novice teachers new to teaching, teachers with experience who are new to the district, and teachers from alternative certification paths.

Other states, however, are much less prescriptive about mentoring requirements. Only 12 states require specific amounts of contact time between mentors and novice teachers, and only 24 states require induction and mentoring for professional certification (Goldrick, 2016). The new federal education law from the U.S. DOE, the Every Student Succeeds Act (2015), does not mandate consistency in mentoring programs and teacher oversight between states. Every Student Succeeds replaces the 2001 NCLB and provides both districts and states with the authority to review teacher quality, eliminating the highly qualified federal designation for teachers once required by NCLB. By eliminating the federal requirement for the highly qualified designation and teacher evaluations, states are left to implement plans to identify ineffective teachers, creating the potential for even greater discrepancies in teacher preparation and mentoring programs.

New York provides a guidance document for individual districts to develop mentoring programs at the local level and offers ten standards for effective mentoring programs (NYSED, 2011). Novice teachers must complete 1 year of mentoring, but a permissible mentor to novice teacher ratio is 1:10. Possible exemptions from mentoring requirements for NYS teachers include: (a) teachers new to the district with 2 years of prior experience in a non-public setting, (b) district-based decisions regarding pupil personnel services professionals, (c) non-public schools and charter schools, and (d) teachers working under an Internship Certificate, or a provisional certificate to teach while enrolled in a program of study. Most alarming is that one mentoring experience qualifies a multiple-certified novice NYS public teacher as having met the mentoring requirements for all professional teaching certificates. For example, a teacher who is certified in chemistry and K-12 special education who is mentored for an elementary special education position fulfills the NYS expectations for having been mentored in secondary special education and chemistry as well.

State-specific context helps to explain why mentoring may be a factor influencing teacher proficiency. The implication is that some teachers are better supported than others through mentoring, and have higher retention rates (Harris-McIntyre, 2015). Consistent with the findings, Hudson (2013) concludes that "mentors' articulation of pedagogical knowledge practices is variable" (p. 22). Mentor teachers, although experienced, are not equally prepared and do not equally support the PCK learning needs of novice teachers (Hudson, 2013). Support from mentors varies just as standards and support for mentoring in different states varies. Mentoring, therefore, is a factor that remains to be explored and continues to influence teacher proficiency.

Teacher Evaluation Frameworks: Domain of Practice

Teacher proficiency, also referred to as teacher quality, is largely affected by the preparation and support that teachers receive (Goldhaber & Hansen, 2008) and teacher development, once hired (Evans et al., 2015; Marzano, 2012). Teacher evaluation elicits debates about the focus on outcomes for teachers and students, and the absence of focus on frameworks as developmental tools for teachers (Johnson, 2012; Marzano, 2012). Teacher evaluation frameworks are primarily utilized for both planned and unplanned observations to establish teacher performance as summative evaluations. Teacher evaluation frameworks are used as evaluation instruments based on snapshots, or brief observations of teaching (Evans et al., 2015). To become an effective teacher, teacher development and growth toward proficiency must be supported (Danielson, 2011), but frameworks are not necessarily being used to identify struggling teachers or to support the remediation of ineffective teachers (Marzano, 2012; Weisberg, Sexton, Mulhern, & Keeling, 2009). Researchers with the New Teacher Project also focused on the inaccuracy of frameworks to assess teachers, concluded that teacher ratings are inflated, and that students may be instructed by ineffective teachers who are being rated as proficient using evaluation frameworks (Weisberg et al., 2009). Struggling teachers may not be identified or supported, and teacher proficiency may be difficult to measure (Evans et al., 2015).

While frameworks are mostly used for evaluating teachers and can reflect inflated scores, and the responsibility of accrediting agencies and state departments of education end after credentialing and certifying teachers, districts must find a way to identify struggling teachers and support them to avoid attrition and negative influences on student achievement. Individual schools may expect varying levels of knowledge of content, pedagogy, students, community, colleagues, school systems, and procedures. Without clarity regarding areas of need for

individual teacher development toward proficiency, school reform initiatives for student achievement cannot be met (Jennings, 2012; Wiseman, 2012).

One of the most heavily cited and widely used frameworks for identifying a teacher's success or areas of need is the Framework for Teaching, which includes 22 components in four domains (i.e., planning and preparation, classroom environment, instruction, professional responsibilities; Danielson, 2011). The Framework for Teaching (Danielson, 2011) was adopted as an accepted teacher assessment tool by more than 20 states as of 2013 (Pritchett, 2013). The Framework for Teaching was originally designed as a tool for mentoring, professional development, coaching, and assessing teachers, with the underlying goal of helping teachers to reflect on their work and development (Danielson, 2011).

The more prevalent use for the Framework for Teaching (Danielson, 2011), however, is as a summative evaluation tool and not as a tool for continuous improvement (Pritchett, 2013), invoking empirical studies on its effective use in teacher development (Evans et al., 2015). As a development tool, the Framework for Teaching (Danielson, 2011), which identifies teacher proficiency using the terms unsatisfactory, basic, proficient, and distinguished, may be considered an effective framework to define and identify levels of teacher proficiency (Pritchett, 2013). Indicators of teacher proficiency include lesson development, classroom management, student engagement and motivation, and knowledge of student assessment (Danielson, 2011). Insufficient knowledge of pedagogy or content, for example, may hinder effective teaching and influence efficacy or beliefs, student engagement, instruction, classroom management, student understanding, and assessment (Hong, 2010; Mecoli, 2013; Nuangchalerm & Prachagool, 2010).

Despite the wide use of the Framework for Teaching (Danielson, 2011), an agreed-upon measure of teacher proficiency is not present in the literature, given the various criteria, models,

and terms used to describe teacher performance. A teacher's proficiency may be measured differently by different evaluation frameworks (e.g., Danielson, 2012; Marzano & Toth, 2013) and mandated evaluation requirements that vary from state to state (Hallgren, James-Burdumy, & Perez-Johnson, 2014; NYSED, 2012, 2014). Likewise, teacher proficiency is identified using a number of different terms and evaluation ratings: *unsatisfactory*, *basic, developing, proficient, effective, distinguished,* and *highly effective*.

For a teacher to be rated as *proficient*, which may incorporate ratings such as *effective, distinguished*, and *highly effective*, the teacher must provide evidence of ability in all aspects of instruction that enhance student learning. This means that a teacher rated as *proficient* is an educator who can identify how to develop and shift instructional practices to meet different learning needs and outcomes for students (Danielson, 2011). Measuring and defining teacher proficiency is difficult, considering some evaluators are not well trained to use frameworks, and districts vary regarding expectations. Considering the complexity of measuring and defining teacher proficiency, a common framework and understanding of teacher proficiency are necessary for studying and measuring mentee teacher development, such as pedagogical approaches to lessons, instructional practices, and assessment.

Pedagogical Content Knowledge: Personal Domain

PCK includes the combination of content knowledge and knowledge of pedagogy to better present content, identify student understanding and difficulty, and adjust content to meet the needs of different learners (Aydin, Demirdogen, Nur Akin, Uzuntiryaki-Kondakci, & Tarkin, 2015). Adequate PCK has been described as a teacher's ability to identify how students learn content through different approaches to teaching (Van Driel & Berry, 2012). Studies demonstrating the need for novice teacher PCK development focus on the need for: PCK

development for teachers who transition to teaching different content (Appleton, 2008), specific PCK development activities for teachers (Appleton, 2008; Rozenszajn & Yarden, 2014), subject-specific PCK mentoring (Achinstein & Athanses, 2006; Achinstein & Davis, 2014; Ball, Thames and Phelps, 2008; Luft, Neakrase, Adams, Firestone, & Bang, 2010), a more collaborative approach to PCK development (Aydin et al., 2015; DeJong, Van Driel & Verloop, 2005), and PCK proficiency to enhance student understanding (Ward et al., 2015).

Research on novice teacher development has shifted from an emphasis on emotional support to pedagogical support in the past few decades, resulting in the emergence of inservice, mentoring, and professional development programs that are focused on PCK. Achinstein and Davis (2014) sought to determine the role of the mentor in the content-focused development of novice teachers and found that 88% of mentor teachers surveyed identified PCK as most important, which suggests PCK development as a component necessary to support teacher proficiency. Despite the shift in research, many school districts still do not address novice teacher PCK (Aydin et al., 2015). Novice teacher collaboration is needed to increase teacher proficiency (Aydin et al., 2015*;* DeJong et al., 2005) and to support novice teacher PCK development (Achinstein & Davis, 2014).

As stated earlier, few teacher evaluation frameworks are used as developmental tools to support novice teacher development (Marzano, 2012). PCK development may also be hindered by the limited opportunities to collaborate and reflect with colleagues to support PCK development (Aydin et al., 2015; DeJong, Van Driel & Verloop, 2005). Through the lens of the social cognitive theory, insufficient opportunities to plan, observe, and reflect together influences the personal and behavioral factors important to teacher learning that may be necessary for development.

Attitudes, Beliefs, and Self-efficacy: Personal Domain

Attitudes and beliefs are personal factors that can affect future action (Bandura, 1986), so teachers' attitudes and beliefs about teaching may influence teacher behavior and action (Collie, Shapka, & Berry, 2012; Loreman, Sharma, & Forlin, 2013; Ozder, 2011). Using Korthagen's (2001) theory of a link between teacher behaviors and teacher identity (i.e., beliefs in teaching), Rozelle and Wilson (2012) conclude that a "teacher's beliefs about teaching might influence the competencies she chooses to develop and, consequently, the practice (behavior) she employs in the classroom" (p. 1197). Teacher professional identity is defined as a teacher's perception of individual subject matter, didactical, and pedagogical expertise (Beijaard, Verloop, & Vermunt, 2000). A subject matter expert is a teacher who considers subject matter knowledge and skills as the basis for professional work, a didactical expert is a teacher who considers planning and implementation of teaching and learning as the basis for professional work, and a pedagogical expert is a teacher who considers supporting students' social, emotional, and moral development as the basis of professional work (Beijaard et al., 2000).

In addition to attitudes and beliefs about teaching, self-efficacy also influences teacher proficiency. Feelings of self-efficacy are related to the expected effort and persistence in addressing new experiences (Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hoffman, 2012). Tschannen-Moran and Woolfolk Hoy (2001) created the Teachers' Sense of Efficacy Scale, which focuses on pedagogy, student engagement, and classroom management to identify teacher beliefs about performance and may be used to identify areas in which teachers perceive needed support for proficiency. Teacher self-efficacy may be correlated with factors contributing to proficiency in novice teachers, such as the absence of student teaching, mentoring (LoCasale-Crouch et al., 2012), or PCK development (Swackhamer, Koellner, Basile, & Kimbraugh, 2009).

The social cognitive theory provides a basis for how teacher self-efficacy develops and how efficacy influences future actions. The relationship between self-efficacy and triadic reciprocal determinism is important to explain the achievements or challenges mentee teachers experience, which affects future ability to act in a given situation (Bandura, 1986). High self-efficacy is conceptualized in Bandura's (1986) idea of triadic reciprocal determinism, whereby three influences interact to determine the causes of action. Personal factors (e.g., efficacy), behavior (e.g., feedback on behavior) and environment (e.g., experiences conducive to success) influence how teachers will respond to future situations. High self-efficacy results in teachers who are more willing to approach situations as challenges, while low self-efficacy may result in greater anxiety for teachers when approaching difficult situations (Skaalvik & Skaalvik, 2010). Therefore, self-efficacy is integral in affecting teacher engagement necessary for future teacher action and cognitive development (Salanova et al., 2011).

Teachers may demonstrate greater perseverance in areas in which they have greater self-efficacy (Meiklejohn et al., 2012; Robertson-Craft & Duckworth, 2014). Teacher inability or unwillingness to persevere through difficult situations may be attributed to an inability to cope due to "judgments of personal in-efficacy to exercise control over risky situations" (Bandura, 1986, p. 366). Teachers' weak sense of self-efficacy has been correlated with the inability to act, or with anxiety in approaching different situations (Bandura, 1986). Self-efficacy, therefore, is an important factor related to teacher proficiency, as self-efficacy can be used to evaluate what influences a teacher's ability to be effective (Klassen & Tze, 2014; Skaalvik & Skaalvik, 2010). An assessment of a teacher's self-efficacy may identify areas in which teachers excel or struggle, and may help to identify how mastery experiences affect teacher proficiency (Skaalvik & Skaalvik, 2010; Tschannen-Moran & Woolfolk Hoy, 2001).

A correlation exists between self-efficacy and professional development focused on PCK. Swackhamer et al. (2009) surveyed 88 middle school science teachers. The researchers used independent sample *t* tests to identify a correlation between the number of inservice courses taken and self-efficacy. The authors determined that teacher self-efficacy is greater for those who participate in content and pedagogy courses. It may be argued, based on Swackhamer et al's. results (2009), that an intervention focused on content and pedagogy could increase mentee teacher self-efficacy.

Summary

A problem exists whereby schools are provided with teachers who experience inconsistent or ineffective approaches to teacher preservice training, thus influencing teacher attrition (Borman & Dowling, 2008; Hong, 2010; Ingersoll, Merrill et al., 2014) and student achievement (Darling-Hammond, 2010; Hinchey, 2010). Inconsistencies exist in state requirements for mandated teacher preparation (NYSED, 2012, 2014), certification, and mentoring (Goldrick, 2016) and the federal government has relinquished rights to states for school governance. States and districts, therefore, are left to ensure that teachers develop the required proficiency to support student learning. Teacher proficiency is influenced by teacher PCK (Achinstein & Davis, 2014; Harris & Hofer, 2011), self-efficacy (Klassen & Tze, 2014) and teacher professional identity (Canrinus et al., 2012). The factors discussed above led to a rationale for identifying specific areas of self-efficacy and development in which mentee teachers struggle.

Chapter 2

Teacher Development: Needs Assessment

Teachers are not always prepared to meet the teaching expectations of specific grade levels, content areas, or individual school districts and may struggle to develop the knowledge, attitudes, and beliefs necessary to meet expected proficiency levels. This may be due to: (a) inconsistencies between teacher preparation and alternative certification programs and what is needed for novice teachers (Cardetti & Truxaw, 2014; Darling-Hammond, 2010), (b) the transition from teacher training to the classroom experience (Rozelle & Wilson, 2012), (c) the level of support (Cardetti & Truxaw, 2014), and (d) level of PCK (Achinstein & Davis, 2014; Harris & Hofer, 2011). Likewise, school expectations vary regarding teacher proficiency and knowledge of content, pedagogy, and student achievement (Darling-Hammond, 2010; Metzler & Woessman, 2010; Sandholtz, 2011; Tucker, 2011; Ward et al., 2015). Teachers may be placed in classrooms without the skills or support necessary to meet individual school district expectations, potentially influencing teacher attrition rates and student achievement.

It is important to identify the components of teaching that teachers indicate as areas of need. Studies show that weaknesses in teacher proficiency regarding instruction, student engagement, and classroom management affect teacher attrition (Goldring et al., 2014). A needs assessment was used to identify mentee teachers': (a) efficacy in the areas of instruction, student engagement, and classroom management (Tschannen-Moran & Woolfolk Hoy, 2001); (b) professional teaching identity related to their perception as a subject matter expert, didactical expert, or a pedagogical expert (Beijaard et al., 2000); and (c) areas of concern using the Framework for Teaching components (Danielson et al., 2009).

Context of the Study

The context of the study is a suburban northeastern United States school district of four schools with over 2,300 students. There are two elementary schools, one middle school, and one high school. The district is unique in that at least 99% of graduates enroll in college, with the majority of students accepted to top-tiered colleges and universities. The school district is also unique in that teachers newly hired typically have 3-10 years of prior teaching experience. Once teachers are tenured, which occurs after three to four years of experience and observations in the district, they rarely leave; the majority of the teachers have 15 years or more of experience. The district rarely hires teachers who would be considered true novices, with less than three years of experience, yet teachers new to the district still need support to develop expected proficiency.

Mentee teacher effectiveness in the professional practice includes adapting to high district-wide expectations and being rated as *proficient* or *distinguished* on the district-adopted Framework for Teaching rubric (Danielson, 2011). A percentage of mentee teachers do not meet proficiency standards, however, despite evidence of established proficiency in other school districts as indicated through employer recommendations. Teachers who are rated as *basic* or *unsatisfactory* teachers (e.g., teachers who need to develop PCK) have been identified through observations, discussions with other administrators, and through observations and discussions in a yearlong teacher mentoring program, which mostly consisted of social support for mentee teachers. Although the rating of *basic* may be acceptable in other districts, it is not acceptable in the professional context associated with the problem of practice. The designation of *proficient* on evaluation rubrics with additional negative comments by the administrator may likewise lead to teachers who are not asked to return to the district. Despite exhibiting proficiency on evaluation rubrics, which have been argued to produce inflated ratings for teachers (Weisberg et al., 2009),

mentee teacher attrition has been 20% or higher for the past 3 years, accounting for teachers who are not asked to return and teachers who resign. The percentage is noteworthy when compared to the overall teacher attrition rate of 7.3% identified by the National Center for Education Statistics (Goldring et al., 2014).

In the role of assistant superintendent, it became apparent that mentee teachers required support to bridge the gap between teacher preparation programs, former teaching positions, and the reality of working in a high-performing school. Mentee teachers are defined as teachers new to the district, typically with 3 to 10 years of teaching experience. Although some mentee teachers have adequate ratings from previous supervisors, meeting the expectations of this district is a common challenge during the first few years of employment.

Expectations for mentee teacher performance are high, as approximately 50% of the faculty has achieved 60 graduate credits beyond a master's degree and are motivated to learn and adapt instruction for student success. More than half of the faculty members attend voluntary summer workshops. During the school year, close to one third of teachers participate in investigators of practice, collaborators of practice, or the participator of practice models, which are voluntary teacher evaluation options that involve a substantial review and refinement of teaching practice. Although school administrators, mentors, and other teachers support mentee teachers, parents and students have high expectations and have voiced concerns when mentee teacher instruction is not commensurate with veteran teacher instruction.

Family's expectations for the district's 2,370 students are also high, as over 60% of the students attend top-tiered colleges upon graduation. According to the U.S. Census Bureau report of 2014, 66.3% of persons residing in the city had a bachelor's degree or higher, the median income was $183,036 and the median home value was $905,900. This is noteworthy, as the

overall state census data indicated that only 33.7% of residents held a bachelor's degree or higher, $58,687 was the median income, and $283,700 was the median home value.

Teachers who do not meet proficiency expectations are identified through formal and informal observations of performance, using the Danielson (2011) Framework for Teaching evaluation rubric. In other districts, a Danielson (2011) rating of basic might be expected or acceptable for mentee teachers who are new to teaching or new to a district. In this high-performing school district, however, a teacher who is rated by supervisors as a basic teacher, or a teacher who is considered to be developing, is considered to be performing below the standard. On the contrary, the expectation is for all teachers to be rated without reservation as proficient. Parents and students are critical of—and vocal about—new teachers and the influence a teacher may have on student achievement.

Although professional development and a formal mentoring program were provided in the current context, mentee teachers continued to be rated as basic or proficient, and attrition rates remained consistently above the national average. The problem of practice in my professional context, therefore, is that mentee teachers are not prepared to meet the expectations of proficiency in a high-performing school district.

Statement of Purpose

The purpose of this needs assessment was to identify areas of difficulty for mentee teachers and to guide a literature review on potential interventions. Factors influencing teacher proficiency include: a) teacher self-efficacy regarding instruction, engagement, and student management; b) teacher professional identity; and c) teacher perceived areas of difficulty regarding content and pedagogy. Participants were asked to identify: (a) perceived areas of difficulty regarding the performance the teacher feels likely to achieve; (b) individual teacher

professional identity as a subject matter expert, a didactical expert, or a pedagogical expert; and (c) the most challenging components of the evaluation rubric (Danielson et al., 2009). Most notably, the needs assessment aimed to identify which Danielson et al. (2009) domains the mentee teachers found most challenging. The information was collected and analyzed to enable the district to develop an approach to supporting teachers beyond the traditional observation processes.

Research Questions

The following research questions guided the needs assessment and sought to identify the contributing factors influencing mentee teacher development:

1. What is mentee teacher self-efficacy about student engagement, instruction, and classroom management?

2. What is the relationship between mentee teachers' beliefs about their pedagogical content knowledge (PCK) and self-efficacy regarding student engagement, instruction, and management?

3. To what degree do mentee teachers identify with the teacher professional identity of subject matter expert, didactical expert, and pedagogical expert?

4. Which Danielson et al. (2009) components do mentee teachers perceive as areas of continued need?

5. What is the perceived influence of preservice and mentoring experiences on mentee teachers' preparedness to teach?

Method

The method described in this section includes a mixed methods approach using a survey of teachers with 1 to 5 years of experience in the district. The survey mostly comprised the short form of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001), with additional open-ended questions about teaching identity (Beijaard et al., 2000), professional practice (Danielson, 2011), and demographic information.

Participants

All 36 full-time teachers employed for less than five years in the district were asked to participate in the survey. Of the 33 that responded, 48% had more than five years of cumulative teaching experience. Respondents were between 21 and 45 years old, with 45.45% between the ages of 26 and 30. Respondents were 27% Grades K-5 teachers, 18% Grades 6-8 teachers, and 55% Grades 9-12 teachers and consisted of 76% female teachers and 24% male teachers. All respondents were certified and considered highly qualified teachers by state standards.

Measures

A survey was created that combined (a) questions about teacher efficacy from the 12-question short form Likert survey, Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001); (b) one closed- and one open-ended question to assess teaching professional identity as subject matter, didactical, or pedagogical expert (Beijaard et al., 2000); (c) questions indicating beliefs about strengths and weaknesses regarding components of teaching in professional practice (Danielson et al., 2009); and (d) 13 closed-ended questions on demographics to identify the influence of preservice and mentoring programs on teacher preparation.

Teachers' Sense of Efficacy Scale. The TSES (Tschannen-Moran & Woolfolk Hoy, 2001) included four questions from each of the following three subfactors: (a) Efficacy in

Classroom Management, (b) Efficacy in Instructional Strategies, and (c) Efficacy in Student

Engagement. A Likert-type scale was used with response choices rated from 1-9, with 1

indicating *nothing,* 3 indicating *very little,* 5 indicating *some influence,* 7 indicating *quite a bit,*

and 9 indicating *a great deal* to identify how much a teacher feels he or she can do in a given

situation. Tschannen-Moran and Woolfolk Hoy (2001) assessed the construct validity of the

scale by examining the correlation of the measurement tool to other seminal efficacy scales, and

determined that scores were positively related. The authors posited that the results indicate the

efficacy scale is "reasonably valid and reliable" (Tschannen-Moran & Woolfolk Hoy, 2001, p.

801). Reliability for the 12-item scale was 0.90, thus permitting the subscale score or the total

score as a reliable measurement of efficacy.

The 12 questions were:

1. How much can you do to control disruptive behavior in the classroom?

2. How much can you do to motivate students who show low interest in schoolwork?

3. How much can you do to get students to believe they can do well in schoolwork?

4. How much can you do to help your students value learning?

5. To what extent can you craft good questions for your students?

6. How much can you do to get children to follow classroom rules?

7. How much can you do to calm a student who is disruptive or noisy?

8. How well can you establish a classroom management system with each group of
   students?

9. How much can you use a variety of assessment strategies?

10. To what extent can you provide an alternative explanation or example when students are
    confused?

11. How much can you assist families in helping their children do well in school?

12. How well can you implement alternative strategies in your classroom?

Teacher professional identity. Teacher professional identity and beliefs about professional practice were assessed by having teachers identify: (a) how they would represent their professional teaching identity when awarding a total of 100 points to three aspects of teaching identity: subject matter expertise, didactical expertise, and pedagogical expertise (Beijaard et al., 2000); and (b) why they awarded points the way they did. Participants were also asked which three Framework for Teaching components they would identify as having the greatest influence on future teaching, which component was the most difficult to meet expected proficiency standards, and why (Danielson et al., 2009).

The variables in the needs assessment survey represented teacher self-efficacy (Bandura, 1977; Korthagen, 2001; Tschannen-Moran & Woolfolk Hoy, 2001), teacher beliefs about PCK (Rozelle & Wilson, 2012), teacher attitudes and beliefs about teaching identity (Beijaard et al., 2000), professional practice (Danielson et al., 2009), and demographic variables such as age, preservice experience, mentoring experience, years of teaching, the level of teaching experience, and gender. PCK is defined as a knowledge base for teacher effectiveness (Shulman, 1986, 1987), which includes seven categories of teacher knowledge to support student understanding: knowledge of content, pedagogy, curriculum, PCK, learners, educational contexts, and educational purpose.

Demographics. Thirteen closed-ended items sought information on demographic variables of student teaching duration, school setting, student demographics, mentoring, years of teaching, grade level, and age.

Procedures

This section will describe the procedures for the needs assessment study. Mentee teachers completed surveys, which were analyzed qualitatively and quantitatively. The researcher used email to request survey information.

Data collection. Data were collected using SurveyMonkey, a web-based tool for customizing survey questions that permits anonymity for the participants. Respondents received the survey (see Appendix A) through an email through the district account, after an informal verbal request, describing the rationale for the survey, the process to complete the survey electronically, and the consent required (see Appendix B). Respondents were given 1 week to respond to the survey and 92% of participants responded. Data from the survey were stored anonymously and electronically in a secure file on a home computer.

Data analysis. Quantitative data were downloaded from SurveyMonkey, and imported into SPSS software to identify subscale scores, modes, and means. Data run through SPSS software further protected the anonymity of individual participants.

Quantitative analysis. A quantitative approach was used to analyze the first 12 questions on the survey, which are from the TSES (Tschannen-Moran & Woolfolk Hoy, 2001) short form. Subscales of three correlated factors within the questions are (a) Efficacy in Student Engagement, (b) Efficacy in Instructional Strategies, and (c) Efficacy in Classroom Management (Tschannen-Moran & Woolfolk-Hoy, 2001). The subscale scores were determined in the needs assessment by computing the means of the items corresponding to each factor.

Mode and mean were used for all closed-ended responses. Analysis of other closed-ended questions included identifying student teaching duration and mentoring, as independent variables, to make comparisons to the dependent variables of efficacy, teacher professional

identity, and professional practice. Participant responses were also analyzed from a closed-ended question about professional teaching identity. Aspects of teacher professional identity were analyzed through mode and mean scores using SPSS. Similarly, participant responses were analyzed from a closed-ended question regarding beliefs about professional practice to identify the Danielson (2011) component with which mentee teachers struggle with most.

Qualitative analysis. Participant responses were analyzed from an open-ended question seeking to understand how teachers identify themselves as subject matter experts, didactical experts, or pedagogical experts (Beijaard et al., 2000). Quotations supported the findings from the closed-ended question about teacher professional identity, identified from open-ended responses, which were hand-selected and corresponded with mentee teacher professional identity, as defined by Beijaard et al. (2000) as subject matter expert, didactical expert, or pedagogical expert.

A qualitative approach was used to analyze an open-ended question seeking to identify why teachers have difficulty with one component of teaching more than others. The most frequently selected components were identified quantitatively first by counting the most commonly chosen items. Then, quotations from open-ended responses were used to support quantitative results by coding responses based upon Danielson et al.'s (2009) labels for components, and then aligning the components with the most frequently selected responses.

Findings and Discussion

Findings indicated that mentee teachers did not have high levels of self-efficacy regarding student engagement, identified least with the identity of a didactical expert, and identified instruction as the domain of teaching that needed to be explored further (see Appendix C).

Self-efficacy

Self-efficacy was divided into the following three subfactors: Efficacy in Classroom Management, Efficacy in Instructional Strategies, and Efficacy in Student Engagement. Responses indicated the highest mean for the subfactors was Efficacy in Instructional Strategies ($M = 7.58$) and the lowest mean was Efficacy in Student Engagement ($M = 6.87$; see Table C1). The overall mean score on the TSES for all subfactors was $M = 7.25$ ($SD = 0.94$) out of 9. The mean indicates that, overall, respondents believed that they had quite a bit of influence regarding management, instruction, and student engagement. Given the Likert scale options, respondents indicated that they had more than some influence but less than quite a bit regarding Efficacy in Student Engagement. The mean scores supported the need for mentee teacher development that could address student engagement.

The mean for individual questions within the subfactor Efficacy in Student Engagement and the mode (see Figure G1) indicated that respondents believed they could have more than some influence on student engagement, but less than quite a bit for motivating students who show low interest or in helping students value learning. The mean scores below 7 (see Table C2) for Efficacy in Student Engagement address the research question regarding mentee teacher attitudes and beliefs about student engagement by indicating that less self-efficacy exists for teachers.

The mean score above 7 (see Table C1) regarding Efficacy in Classroom Management ($M = 7.58$; $M = 7.29$) indicates a greater sense of self-efficacy than student engagement, although the mean scores do not indicate teacher belief that he or she can do a great deal to influence instruction or management. Therefore, results of the TSES do not identify very high self-efficacy for any subfactor.

Teacher Professional Identity

In addition to self-efficacy, teacher professional identity was analyzed quantitatively to determine how teachers identify themselves as didactical experts, subject matter experts, and pedagogical experts (see Table C3). The mean for didactical expert was $M = 29.7$, subject matter expert was $M = 35.5$, and pedagogical expert was $M = 33.9$. Didactical expert is defined as a teacher whose profession is based on "knowledge and skills regarding the planning, execution, and evaluation of teaching and learning processes" (Beijaard et al., 2000, p. 754). A subject matter expert is a teacher whose identity is based on knowing subject matter, and a pedagogical expert is one who bases his identity on skills to support students socially, emotionally, and morally.

Quotations from an open-ended question explain why mentee teachers awarded points toward specific aspects of teacher professional identity. Some of the respondents with few points in the didactical expert category stated a recognition of the progression of teaching growth, such as, "I am growing and will hopefully have my didactical and pedagogical expertise surpass my subject matter expertise" (Participant 30). Other responses related to the acquisition of a minimal number of points were attributed to teacher development through preservice or certification programs, such as:

> My BA and two Masters degrees have been content degrees. I did not major or
> minor in education; I only did the minimum number of seminars necessary for
> certification, totaling 75 hours. I feel as though I know very little
> didactical/pedagogical theory, and that what I know came mostly from trial and
> error, and from mentoring. (Participant 6)

Other responses describing the scarcity of points attributed to didactical expert indicated the need for more didactical expertise, such as:

> I also feel that I have come to place a much greater emphasis on being a "didactical expert" (although I have never used that phrase!) because I now recognize that without a lesson plan that is scaffolded and executed well, and assessed in an effective manner that allows for feedback and assessment of skill, nothing I teach regarding content truly matters since it is done in an ineffective manner. (Participant 8)

Finally, teachers attributed having few points to what they found most important for teaching, such as, "I find that I identify equally as a subject matter expert and pedagogical expert because I strive to use my subject area to support the social, emotional, and moral development of my students" (Participant 10); "My content area is my tool for helping students to understand themselves better and to better themselves" (Participant 12); and, "I scored myself slightly lower as a didactical expert as I do not view it of the ultimate importance in my teaching" (Participant 20). The quotations may explain why teachers scored themselves lower as a didactical expert, in that some mentee teachers focused on subject matter skills and supporting the social and emotional development of students within the first few years, rather than the planning and execution of teaching.

The lower mean for didactical expert ($M = 29.7$) indicates that teachers identified the least as a teacher with knowledge and skills in planning and evaluating teaching and learning, which should be considered with the lower mean ($M = 6.87$) within the TSES subfactor of Efficacy of Student Engagement. Both means and the open-ended question answered the research question: To what degree do mentee teachers identify with the teacher professional

identity of subject matter expert, didactical expert, and pedagogical expert? Mentee teachers identified the least with planning and evaluating teaching and learning, and also indicated lower efficacy regarding student engagement.

Danielson Components

The survey asked each mentee teacher to identify three Danielson (Danielson et al., 2009) components that would have the greatest influence on individual teaching if mastered. Out of the 22 possible components, the three most frequently selected were (a) 3d, Using Assessment in Instruction (*n* = 8); (b) 3b, Using Questioning and Discussion Techniques (*n* = 3); and (c) 3c, Engaging Students in Learning (*n* = 3).

An open-ended question asked why each teacher had difficulty meeting expected proficiency standards with the particular component identified. Teachers who reported 3d, Using Assessment in Instruction (*n* = 8), supported the selection of the component and demonstrated the need for further development of assessments to identify student needs, including student self-assessments, such as:

> I need to spend more time showing the students what meaningful self-assessment
> looks like. It can also be difficult to readjust the lesson plans when various
> students struggle with different concepts. I need to build more lesson plans that
> allow students to work on different skills within the same class period. Building
> these kinds of lessons can be tedious, but I do think they are necessary
> (Participant 31).

> While I always use informal assessment to guide my lessons as they go, I struggle
> to find ways for my students to self-assess their own work. Abstract concepts are
> difficult for my students who typically require structure and visuals for most

activities. We work hard to self-correct with minimal prompting and keep our

students aware of their individual progress (Participant 26).

While I do give assessments within my classroom, I do believe I need to change

up the type of assessments given. In addition, I believe that I need to give more

feedback on their work. Since I have 100+ students, I give back feedback (for

example - on writing) but I rarely have them rewrite their papers, make changes,

and then look over the papers again (Participant 3).

I often find it difficult to incorporate a variety of methods that fairly assess not only a

student's current performance but their overall growth (Participant 32).

Component 3d, Using Assessment in Instruction, is the Instructional Domain (Danielson,

2011). The selection of Component 3d and the quotations supported the TSES mean score

regarding attitudes and beliefs about instruction ($M = 7.58$), indicating teacher belief that he or

she could do *quite a bit*, but not *a great deal* to influence instruction. The selection of

Component 3d and the quotations also supported the results of the lower mean for Didactical

Expert ($M = 29.7$). Overall, the results for the Danielson et al. (2009) research question indicated

mentee teacher needs regarding assessment, instruction, and student engagement.

Preservice Preparation and Inservice Mentoring

Most teachers (see Figure E3) had a student teaching experience (91%), although a

majority of student teaching experiences did not take place in a similar socioeconomic grouping

(see Figure E4). Most teachers had a mentoring experience (76%), however, teachers provided

varied responses as to whether the student teaching or mentoring experience helped to prepare

them for their current position (see Figures E5, E6, and E7). Of the 33 respondents, one third of

teachers believed that student teaching only prepared them somewhat or less for their current teaching position; likewise, one third of respondents indicated that mentoring prepared them for their current position very little to somewhat.

Given that 33% of teachers felt only somewhat prepared, or less, by student teaching and by mentoring experiences, this provided a rationale for why mentee teachers may have scored less than proficient. Teacher preparation programs and mentoring support that were inconsistent with district expectations may also have influenced teacher readiness.

Only 30% of teachers mentored indicated that mentoring helped them a great deal with their current teaching position, yet nearly the same number of total respondents indicated that mentoring prepared them only very little to somewhat. The results might indicate mentoring as an area in which teachers could be better prepared to meet the expectations for teaching.

Data from the needs assessment helped to identify mentee teacher proficiency needs by operationalizing teacher self-efficacy to identify mentee teacher areas of perceived difficulty, operationalizing teacher perception of professional teaching identity, and identifying areas of difficulty based on the Danielson et al. (2009) components. Through the lens of the interconnected model of professional growth, the influence of the external domain of preservice teaching, certification, and mentoring on the personal domain and the domain of practice are explored. Through the lens of the social cognitive theory (Bandura, 1986), the influence of personal, environmental, and behavioral factors is identified to determine how teacher learning influences future teacher actions. Without an examination of the influence of factors through both lenses, an understanding of how to develop mentee teacher proficiency may remain elusive.

Chapter 3

Mentoring for Development of Teacher Proficiency

The problem of practice, supported by needs assessment findings in a high-performing suburban district in the northeastern United States, is that mentee teachers do not always meet expected proficiency standards. Teacher evaluation rubrics are only snapshots of teacher performance and are often inflated assessments of a teacher's ability (Weisberg et al., 2009), which may not support teacher development. Teacher self-efficacy (Klassen & Tze, 2014; Skaalvik & Skaalvik, 2010), and teacher professional identity (Canrinus et al., 2012), and perceived areas of difficulty can be addressed to support teacher proficiency.

Teachers in the needs assessment identified that (a) teacher self-efficacy was rated lowest regarding student engagement, (b) teacher professional identity was rated lowest regarding the planning, execution, and evaluation of teaching and learning, and (c) teachers were most interested in mastering the domain of instruction. When given three options, didactical expert was chosen least, which is defined as a teacher who considers him or herself as a teacher with "knowledge and skills regarding the planning, execution, and evaluation of teaching and learning processes" (Beijaard et al., 2000, p. 754). Teachers also identified three components from the Danielson et al. (2009) rubric that would have the greatest influence on individual teaching, if mastered: (a) 3d, Using Assessment in Instruction; (b) 3b, Using Questioning and Discussion Techniques; and (c) 3c, Engaging Students in Learning.

Teachers do not always meet expected proficiency standards in the first few years of teaching despite various preservice and induction programs, meeting certification requirements, and having required knowledge of content (Cardetti & Truxaw, 2014; Darling-Hammond, 2010; Rozelle & Wilson, 2012). Teacher preparation programs, certification requirements, and prior

teaching experiences vary and may not always prepare teachers for the needs of specific schools. For example, teachers may be placed in challenging classroom settings with student academic and behavioral problems for which the teacher is unprepared. To ameliorate the disparities between teacher preparation, experience, and practice, teacher mentoring programs can serve as a transitional support for teacher development within individual school settings. By focusing on supporting and implementing instruction, mentors can collaborate and reflect with mentee teachers, potentially influencing teacher self-efficacy. Meeting the expectations of different teacher needs in different school settings may influence teacher proficiency, potentially influencing student achievement (Darling-Hammond, 2010).

The findings provide a rationale for an intervention related to self-efficacy and development to support mentee teachers regarding teaching and learning processes. The review of literature for the intervention begins with theoretical and systems approaches to teacher development. Three additional sections inform the design of a intervention targeting mentee teacher development through a mentoring program focused on: a component for growth as a context for mentee teacher development, development through reflective practice (i.e., video reflection and electronic, or e-mentoring), and teacher self-efficacy as influenced by e-mentoring and reflection. Finally, I will summarize the mentoring intervention.

Theoretical Frameworks

In Chapter 1, the social cognitive theory was used to explain how the individual acquires knowledge through the observation of other individuals in experiences (Bandura, 1986, 2001), such as preservice and induction programs, and for studying teacher efficacy (Pajares, 2002). Based on a model of causation, the interaction between the individual, environmental, and behavioral factors influence knowledge and future decisions. The social cognitive theory was

valuable in conceptualizing teacher self-efficacy, personal agency, and self-identity (Bandura, 1986) in face-to-face preservice experiences. The social cognitive lens helps identify how individual factors of teacher development, and broader factors of preservice, certification, and mentoring, influence teacher proficiency.

Self-Directed Learning

The situated learning perspective also supports self-directed learning. Knowles (1975) posits that a self-directed learner can: (a) identify a learning need, (b) take initiative for one's own learning, (c) create goals based upon need, (d) identify resources, (e) choose a learning method or strategy, and (f) observe and evaluate the outcomes of the self-directed experience. Self-directed learning is still relevant today, nearly half a decade later, as mentee teachers adapt to new technologies. Recent studies indicate the importance of self-directed learning for students (Chou, 2013; Lee, 2014), preservice teachers (Bullock, 2013), and all learners in self-directed, online learning environments (Kop, 2011). The studies support the theory of the self-directed learner, who self-identifies need and content, develops social interactions and collaborations, and reflects on learning (Knowles, 1975).

Situated Learning

Situated learning was made popular by Lave (1988), who purported that cognitive growth is the result of meaning constructed socially as people respond to new situations. Lave and Wenger (1991) extended the concept of situated learning to include apprenticeship, whereby people can learn socially in the context of the learning and working environment. This learning can occur peripherally, at first, then collaboratively as knowledge becomes coconstructed (Lave & Wenger, 1991).

Situated learning theory is a frame by which to examine mentee teacher development. In educational contexts, the situated learning theory was used to describe the potential development of teachers in situated activities, such as in case-based learning activities (Putnam & Borko, 2000), and pedagogy development (Korthagen, 2010). Putnam and Borko (2000) theorize that teachers in case-based learning activities explore pedagogy through shared opportunities involving reflection that occurs outside the classroom. Korthagan (2010) posits that teachers involved in situated learning activities may identify experiences they wish to develop as a focus on practice. Situated learning theory was used to analyze the induction of a 12-participant community of practice cohort over one year (Cuddapah & Clayton, 2011). The cohort focused on discussions of teaching practice in 16 2-hour sessions. Results revealed that a community of practice model supported novice teachers (Cuddapah & Clayton, 2011). The results suggest that situated learning provides a frame for teachers to develop through a shared focus on teaching practices in a school.

Brown, Collins, and Duguid (1989) support the situated learning perspective, posit that knowledge development is situation dependent, and identify situated cognition through the cognitive apprenticeship model. The cognitive apprenticeship model is an approach that aims to "embed learning in activity and make deliberate use of the social and physical context" (Brown et al., 1989). The model was developed to ameliorate the gap that exists between instruction about teaching and what occurs while teaching (Brown et al., 1989). In other words, a connection to learning occurs through a process of actions in specific situations (Brown et al., 1989). Mentoring dyads address tasks through modeling, coaching, articulating, reflecting, and exploring, thus enabling teachers to develop collaboratively.

Brown and colleagues (1989) stress the significance of culture on situated cognition and that "activities of a domain are framed by its culture" (Brown et al., 1989). By expressing the interdependency of conceptual ideas, the activities for learning, and the culture for learning, the authors support the importance of situated learning using the cognitive apprenticeship model (Brown et al., 1989). Each school culture is different, thereby making each learning activity and the context for that learning particular to specific schools and student populations. The culture for learning explains how situated learning in the intervention site, a high-performing suburban northeastern United States school district, may develop mentee teacher proficiency for that school setting.

Teacher Knowledge: A Context for Mentee Teacher Development

Mentee teacher knowledge and development can be understood through Shulman's (1986, 1987) conceptualization of a knowledge base for teaching. Although important as a conceptual approach that includes seven categories of knowledge for teachers (Shulman, 1987), described below, the approach may be limited in its practical application, possibly due to the generality of the categories. The Framework for Teaching, which supports Shulman's (1986) categories, was constructed as a development tool for teachers but is most often utilized as an evaluation tool (Danielson, 2011). Shulman's conceptualization serves as a conceptual framework for mentoring and the Framework for Teaching (Danielson, 2011) serves as a practical framework for mentee teacher development. The limitations of both will be explored.

Teacher Knowledge as a Conceptualization for Mentoring

Shulman's (1986, 1987) seminal work provides a historical lens to the knowledge structures for effective teaching. Shulman (1986) defined the relationship between content knowledge and pedagogical knowledge as "the most useful forms of representation of those

ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations - in a word, the ways of representing and formulating the subject that make it comprehensible to others" (p. 9). Shulman's (1987) seven categories of knowledge for teachers to support student understanding include:

1. content knowledge;

2. general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter;

3. curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers;

4. pedagogical content knowledge, that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding;

5. knowledge of learners and their characteristics;

6. knowledge of educational contexts, ranging from the workings of the group or classroom, the governance and financing of school districts, to the character of communities and cultures; and

7. knowledge of educational ends, purposes, and values, and their philosophical and historical grounds. (p. 8)

Shulman (1987) described how "pedagogical reasoning and action involve a cycle through the activities of comprehension, transformation, instruction, evaluation, and reflection" (p. 14). Using Shulman's conceptualization, teacher proficiency may be strengthened by a

teacher's ability to select ideas or content and represent, adapt, instruct, evaluate, and reflect on the teaching of those ideas or content.

Through the lens of situated cognition, teachers must have opportunities to construct knowledge collaboratively for proficiency (Lave & Wenger, 1991). This can be difficult considering the absence of mentee teacher opportunities to collaborate with veteran teachers in the first few years of teaching. Shulman's conceptualization of development, through the lens of the situated learning perspective, should include opportunities for teachers to develop in the context of the work environment and for teachers to construct knowledge collaboratively. The Framework for Teaching (Danielson, 2011) components address Shulman's contextualization (1987) regarding both content knowledge and instructional strategies, as described below, and is a practical tool for teacher development.

The Framework for Teaching

The Framework for Teaching model includes four domains as indicated in Table 1: planning and preparation, classroom environment, instruction, and professional responsibilities (Danielson, 2011), and is utilized by over 20 states for teacher evaluation (Pritchett, 2013). Danielson (2010) purports that there are two purposes for teacher evaluation: to ensure teacher quality and to provide development. Danielson describes the continuum of teacher progress for teacher growth as using the ratings *unsatisfactory, basic, proficient,* and *distinguished* and supports the continuum with specific exemplars for teaching in the 22 components (Danielson, 2011). Professional conversations occurring between teachers are attributed to professional learning, which is also integral to supporting teacher growth and is explored further in the next section (Evans et al., 2015).

Table 1

The Framework for Teaching

Domain	Components
1. Planning and Preparation	1a: Demonstrating Knowledge of Content and Pedagogy 1b: Demonstrating Knowledge of Students 1c: Setting Instructional Outcomes 1d: Demonstrating Knowledge of Resources 1e: Designing Coherent Instruction 1f: Designing Student Assessments
2. The Classroom Environment	2a: Creating an Environment of Respect and Rapport 2b: Establishing a Culture for Learning 2c: Managing Classroom Procedures 2d: Managing Student Behavior 2e: Organizing Physical Space
3. Instruction	3a: Communicating with Students 3b: Using Questioning and Discussion Techniques 3c: Engaging Students in Learning 3d: Using Assessment in Instruction 3e: Demonstrating Flexibility and Responsiveness
4. Professional Responsibilities	4a: Reflecting on Teaching 4b: Maintaining Accurate Records 4c: Communicating with Families 4d: Participating in a Professional Community 4e: Growing and Developing Professionally 4f: Showing Professionalism

Note. The Framework for Teaching includes 22 components in four domains that may be used as a teacher development tool and an evaluation instrument. Adapted from *Enhancing Professional Practice: A Framework for Teaching,* by C. Danielson, 2011, pp. 8-18. Copyright 2011 by the Association for Supervision and Curriculum Development.

"Support for the Framework for Teaching" (Danielson, 2011) suggests its importance in schools as a reliable measure for analyzing teacher proficiency. Correlations exist between teacher evaluations using the Framework for Teaching (Danielson, 2011) and student test score gains and interrater reliability (Sartain, Stoelinga, & Brown, 2011). Teaching frameworks have also recently inspired empirical studies on the original intended use of frameworks as

development tools (Evans et al., 2015). A case study by Evans et al. (2015) indicates that the Framework for Teaching (Danielson, 2011) is effective in developing teacher performance by describing performance and providing opportunities for professional dialogue because the Framework for Teaching (Danielson, 2011) provides rich descriptions of performance. Defining levels of proficiency using components of teaching provides an opportunity for teacher growth (Evans et al., 2015), supporting the Framework for Teaching (Danielson, 2011) as a viable tool for use in teacher mentoring.

Danielson (2012) provides an example of how levels of proficiency help to define the potential for development. Danielson describes the proficiency level in 3c: Engaging Students in Learning as "learning tasks and activities are designed to challenge student thinking, inviting students to make their thinking visible" and the basic level as "learning tasks and activities require only minimal thinking by students and little opportunity for them to explain their thinking" (Danielson, 2012, p. 34). This distinction in language indicates a trajectory for teacher growth. Opportunities for students to explain their thinking in activities, for example, indicates greater teacher proficiency regarding student engagement.

Teacher development and the Framework for Teaching. Hudson and Bird (2015) argue that the Framework for Teaching (Danielson, 2011) aligns with Shulman's (1987) seven categories of knowledge for teachers to support teacher proficiency and student understanding. By including standards focused on teaching competencies, the Framework for Teaching (Danielson, 2011) guides the alignment of teaching strategies and instructional goals with the delivery of content for students (Hudson & Bird, 2015). Shulman's (1987) categories of teacher knowledge, knowledge of learners and their characteristics, and knowledge of educational purpose, for example, may be found in Danielson's (2011) Domain 3: Instruction. Domain 3

includes components regarding directions, procedures, explanation of content, quality of questions and discussions, activities, grouping, structure, and pacing (see Table 1). The components in Domain 3 reflect Shulman's knowledge base (1987), thereby supporting the use of the Framework for Teaching (Danielson, 2011) as a developmental tool to promote teacher proficiency.

Teacher knowledge, Framework for Teaching, and mentoring. Despite the applicability of the Framework for Teaching (Danielson, 2011) to Shulman's knowledge base for teaching, the Framework for Teaching has had a limited role in empirical studies on PCK development in mentoring. The Framework for Teaching (Danielson, 2011) is mostly cited as an evaluation tool in mentoring (Bradley-Levine, Lee, & Mosier, 2016; Israel, Kamman, McCray, & Sindelar, 2014). PCK development, however, was identified in empirical studies on mentoring in the context of (a) mentoring that focuses on learning-while-doing (Aydin et al., 2015; Barnett & Friedrichsen, 2015; Bradbury, 2010); (b) content-based mentoring that supports the construction of knowledge collaboratively (Achinstein & Davis, 2014; Simonsen et al., 2009); and (c) technology-supported mentoring (Bang, 2013). Results indicate that PCK was integrated during mentoring (Aydin et al., 2015), the collaborative construction of knowledge occurred and supported the development of PCK (Simonsen et al., 2009), and PCK development using technology improved teacher confidence (Bang, 2013). The studies on PCK development inform a intervention using the Framework for Teaching (Danielson, 2011) that includes learning through collaboration, learning-while-doing (i.e., situated learning), and learning supported by technology.

E-mentoring may support the active learning specified by Danielson (2010) as integral to professional growth, Shulman's cycle of "comprehension, transformation, instruction, evaluation

and reflection" (1987, p. 14), and Brown and colleagues' (1989) concept of collaboration through cognitive apprenticeship. Using the Framework for Teaching (Danielson, 2011) during e-mentoring may address the findings of the needs assessment that indicated planning, instruction, assessment, and student engagement as areas of perceived difficulty for mentee teachers. Studies about teacher development in mentoring exist, as does development through reflective practice. Research on the use of the Framework for Teaching (Danielson, 2011) in PCK development through mentoring, however, does not exist, which indicates a need for research.

Teacher Development Through Reflective Practice

Reflection may be defined as the identification of perceived performance (Calandra et al., 2009), whether through reflection-on-action, reflection-in-action (Schon, 1983), or self-directed learning (Knowles, 1975). In the *Reflective Practitioner*, David Schon (1983) supports the concept of reflective practice for teachers and its application for future learning. Schon describes *reflection-in-action*, whereby teachers draw on knowledge and feelings to create a change during a teaching experience, and *reflection-on-action*, whereby teachers think about why they did something and subsequently question their actions and practices. Through reflection, mentee teachers may identify areas needing support and consider, with a mentor, how to enhance teaching practices. Reflection-in-action aligns with the interconnected model of professional growth (Clarke & Hollingsworth, 2002) in that the personal domain (i.e., knowledge, beliefs, and attitudes) may be influenced by reflection, thus influencing the domain of practice by increasing teacher knowledge.

Schon (1983) was critiqued for the way he "neglects the situatedness of practitioner experience" (Usher, Bryant, & Johnston, 1997, p. 168) or learning-while-doing. More recent

studies on reflective practice and PCK development reveal that reflection-on-action and reflection-in-action result in greater PCK development as the teacher is situated in the learning process (Chan & Yung, 2016; Park & Oliver, 2008). Chan and Yung (2016) sought to identify reflection-in-action of four teachers who implemented new strategies while teaching, thus demonstrating the importance of reflection on PCK to informing instruction. Park and Oliver (2008) focused on both reflection-in-action and reflection-on-action and identified that teachers, through reflective practice, can adjust PCK in teaching to meet the needs of different teaching situations. Reflective practice can occur that supports teacher development (Yost, 2006) through video reflection.

Video reflection. Studies focused on the effectiveness of reflection have identified that preservice teachers demonstrated expertise in reflection based on the measurement of reflective thinking in teacher portfolios (Ogan-Bekiroglu, 2015) and that reflection enabled preservice teachers to identify areas of strength and areas for growth in teaching (Chamoso, Caceres, & Azcarate, 2012). It is possible that teachers can reflect-on-action (Schon, 1983) easily when the lesson can be viewed or replayed during the discussion. A study examining the effectiveness of video self-reflections found that studying videotaped lessons in collaborative conferences enhances teacher reflection (Baecher et al., 2014). Baecher et al. (2014) posit that collaborative discussions are much different after a videotaped lesson than after a standard observation because teachers are able to contribute more to the discussions based on what they can observe. Without video, it may be challenging for a mentee teacher to recall certain aspects of the lesson, such as student engagement or teacher-directed questions. Through video self-reflection and follow-up discussion with a mentor, specific areas of PCK can be developed.

Reflection-on-action using a videotaped lesson approach could assist with teacher self-directed learning, as areas of inquiry could be specifically identified and discussed with the mentor. The video could be an important tool to enhance self-reflection for mentee teacher development if analyzed by the mentor and the mentee using the Framework for Teaching (Danielson, 2011). Reflection-on-action (Schon, 1983) using the cognitive apprenticeship model (Brown et al., 1989), therefore, is an appropriate intervention to support teacher proficiency.

The use of video self-reflection supports mentee teacher development as teachers may assess the implementation of codeveloped lessons with a mentor. Reflection-on-action (Schon, 1983) is integral for realizing the implementation and effectiveness of goals in teaching, and is the connection between the external domain, personal domain, domain of practice, and domain of consequence found in the interconnected model of professional growth model (Clarke & Hollingsworth, 2002).

Studies of the use of video for self-reflection indicate its value for promoting self-reflective practice (Calandra et al., 2009; Wright, 2008), developing content knowledge (Johnson & Cotterman, 2015), and for promoting growth when used with a teaching framework (Mielke, 2012; Wright, 2008). In a study of 44 preservice teachers' self-assessments using video during a 15-week intervention, Calandra et al. (2009) identify the benefits of self-assessment through participant vignettes of videotaped lessons to support an activity after the lesson using a reflection guide. Calandra et al. conclude that the video reflective process resulted in "more pedagogically connected reflective pieces" (p. 81) and less about interpersonal relationships or classroom management, and that reflections showed changes in teacher perspectives about their teaching. The conclusion was determined based on 144 video clips of meaningful teaching incidents, audiotaped conferences with the cooperating teacher, full videotapes of the teaching, a

debriefing session, and a final interview. The authors developed themes through open coding and identified reflective language using the framework for reflective pedagogical thinking by Sparks-Langer, Simmons, Pasch, Colton, and Starko (1990). Overall, the self-assessments using video promoted self-reflective practice, resulting in teachers who "actively construct meaning" from their teaching experiences (Calandra et al., 2009, p. 81).

In another study focused on video self-assessment, Wright (2008) suggests that video reflection influences teacher reflection-for-action. Reflection-for-action, originally coined by Dewey (1933), is reflection focused on a particular goal. Similar to reflection of a specific activity, posed by Schon (1983) as reflection-on-action, reflection focused on a goal or action leads to growth targeted at particular areas of teaching. Using Dewey's (1933) three stages of the reflective process (i.e., description, analysis, and action), Wright sought to study the benefits of teachers (a) describing a teaching situation using video, (b) critiquing or analyzing an identified issue, and (c) implementing action, that includes the evaluation of new thinking. In a comparative case study of five untenured elementary teachers with data collection over the course of four months, Wright (2008) found that when teachers initially identified a teaching standard for improvement and then reviewed the implementation of the standard on video, written evaluations resulted in goals for improvement and consultation about teaching with the school administrator. Through self-assessments using video, untenured teachers were able to analyze their own performance and develop an action goal using teaching standards as a framework.

Similar to the findings of Wright (2008), Mielke (2012) promotes the use of a framework in video reflection for directed reflection. Mielke (2012) states that "now is the time to identify a process that can create self-monitoring and reflective teachers that focuses on teacher

development of specific skills that enhance teacher effectiveness" (p. 4). Mielke posits that the use of video, peer collaboration, and a framework for teaching influences teacher metacognition and proficiency by helping teachers to self-monitor and "facilitate the self-management, self-monitoring and self-modification of their own teaching" (p. 313). The author used interviews, document review of reflective peer observations, and focus group discussions over 4 months. Using a qualitative case study approach, Mielke (2012) found that to improve teacher proficiency, teaching development must derive from self-assessment, identification, and a focus on specific needed skills.

In addition to self-assessments, group video assessments have also been noted in the literature as having an influence on teacher development, particularly on the development of content knowledge. Johnson and Cotterman (2015) studied video clubs and determined that collaborative viewing of a preservice teacher's lesson resulted in the development of science teacher knowledge. Five preservice teachers met weekly during one semester for a video seminar, in which each participant shared a video clip of teaching related specifically to goals for instruction and student engagement. Data analysis included participant responses when viewing video clips, or what the authors referred to as episodes of pedagogical reasoning. Johnson and Cotterman coded teacher responses to video based upon: (a) understanding content, (b) interpreting student thinking, (c) analyzing instructional resources and pedagogical moves, and (d) integrating horizon content knowledge. The results of the coding indicated that preservice teachers initiated pedagogical conversations about content-focused episodes of student thinking and content-focused pedagogy (Johnson & Cotterman, 2015).

An intervention supporting reflection-on-action (Schon, 1983), guided by the Framework for Teaching (Danielson, 2011) to support teacher proficiency, therefore, may enable mentee

teachers to reflect about what they observe in their teaching. The use of video self-reflections could support reflective practice and target areas for mentee teacher growth. Overall, video self-reflection promotes pedagogical growth in a situated learning experience when teachers are provided with frameworks to target video reflection (Mielke, 2012; Wright, 2008). Use of a framework for self-assessment also provides opportunities for self-directed learning (Knowles, 1975; Mielke, 2012; Wright, 2008), as mentee teachers can self-select components within the Framework for Teaching (Danielson, 2011) to assess. Overall, pedagogical conversations (Johnson & Cotterman, 2015), reflection-on-action (Schon, 1983), and frameworks to target video reflection (Mielke, 2012; Wright, 2008) may support mentee teacher development in an online learning environment.

Online Learning

Online learning opportunities support novice teachers (Smith & Israel, 2010). Online learning has been defined as the

> use of the Internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience.
> (Ally, 2011, p. 17)

E-mentoring may be defined as "the infusion of electronic communication into the mentoring relationship" (Cothran et al., 2009, p. 553), potentially improving knowledge and skills in lesson development and implementation through, "emotional and affective engagement" (Farr & Riordan, 2014, p. 2). Referred to as "just-in-time" mentoring, e-mentoring is the "use of computer-mediated communications such as e-mail, discussion boards, chat rooms, blogs, web

conferencing, and growing Internet-based solutions that are changing the way mentors and mentees interact" (Smith & Israel, 2010, p. 30).

Technology, the learner, and the learning process must be considered when designing online learning experiences (Ally, 2011), along with approaches for online instructional design. Regarding e-mentoring, the changing online environment has inhibited the development of a singular theory for online learning (Simonson, Smaldino, Albright, & Zvacek, 2012). Behaviorism and social cognitivism are theoretical approaches used to describe processes of learning and personalizing learning, but connectivism and self-directed learning have emerged to describe the changing online landscape (Kop & Fournier, 2011).

Within the past decade, connectivism (Siemens, 2004) was proposed as a theory of online learning to account for the "information explosion" (Ally, 2011, p. 19) that now requires the online learner to identify, interpret, and contextualize a vast quantity of information. Connectivism is aligned with situated learning, whereby the learner is situated within the complex learning environment (Lave, 1988), as well as self-directed learning, whereby the learner identifies and interprets a path for learning (Knowles, 1975). Connectivism is an appropriate lens by which to examine access, interaction, support for knowledge acquisition, and personal meaning as implications of online learning development.

Online learning theory is important for identifying learner-learner, learner-content, learner-teacher, teacher-teacher, and teacher-content interactions (Anderson, 2011). Connectivism considers learner experiences and interactions in online and blended formats (Siemens, 2004). The learner's experience includes distinguishing relevant information and discarding irrelevant information (Siemens, 2004) to remain current, while the learner's

interactions with broader information and others help to develop the networked concepts necessary in online learning (Anderson, 2011).

Connectivism defines the transfer of information to the individual in the context of his or her work through online learning and interactions, which was described as the "cycle of knowledge development," in which learners use personal-to-network-to-organization connections to remain current (Siemens, 2004, p. 4). The teacher's knowledge base, therefore, is developed through the connection to information and the use of online communication networks to support collaboration (Harasim, 2012).

The development of online mentoring support may include a consideration of the four connectivist principles for developing a teacher's knowledge base: "aggregation, relation, creation, and sharing" (Thota, 2015, p. 12). Mentee teachers, therefore, should have online opportunities to identify data (i.e., aggregation), connect data to their learning (i.e., relation), use data for development (i.e., creation), and collaborate with others (i.e., sharing). An online mentoring design may include identifying learning outcomes and tasks (i.e., aggregation), aligning outcomes and tasks with technology (i.e., relation), and using technology to collaborate and reflect with others (i.e., creation and sharing; Thota, 2015).

Recent studies extend the concept of the self-directed learner in online learning to consider the learning design and types of software that give students control over their own learning. McLoughlin and Lee (2010) support the use of social software such as social networking, for collaborative learning. Social software includes online collaborative opportunities through conversation, synchronously or asynchronously. Through "conversationally driven designs," learning becomes less static, with the needs of different learners addressed (McLoughlin & Lee, 2010, p. 29). The use of social software in mentoring,

therefore, supports mentee teacher interactions with mentors to collaborate about specific mentee teacher needs.

Online learners need more than the availability of online tools and resources to support self-directed learning, which must be scaffolded to support the acquisition of knowledge (McLoughlin & Lee, 2010). Although it is important to have active experiences and self-direction, learning technologies should still promote knowledge sharing, collaboration, and feedback (McLoughlin & Lee, 2010). Using e-mentoring, mentor teachers can support the development of a lesson with the mentee teacher by supporting the identification of goals, sharing in lesson design and assessment, and by sharing materials to support understanding.

E-mentoring. The use of electronic communication, or e-mentoring, using a learning management system such as Google Classroom, supports face-to-face teacher mentoring dyads by providing connections between mentors and mentee teachers at any time, which may provide more opportunities for reflective practice. E-mentoring has the capability to take on a robust role in teacher development due to its capacity to: provide a platform to address timely concerns requiring an expert (Alsbury & Hackmann, 2006; Hansford & Ehrich, 2006), promote collaboration (Bang & Luft, 2013; Cothran et al., 2009; Hunt et al., 2013; Shrestha et al., 2009), promote lesson development (Bang, 2013; Bang & Luft, 2013; Simonsen et al., 2009) and support reflection (Farr & Riorden, 2015).

E-mentoring for collaboration. E-mentoring provides opportunities for mentee teacher collaboration with a mentor. Shrestha et al. (2009) sought to evaluate the outcome of e-mentoring and the benefits of online communication for mentors and novices. Participants were given a choice of using email, discussion boards, or synchronous chats. The researchers collected group discussions at the end of each semester and conducted semi-structured interviews of 21

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participants twice over two years to describe the two-year mentoring experience in detail. Using NVIVO software, categories were developed and a coding scheme was created using the grounded theory approach (Corbin & Strauss, 1990). The benefits of the electronic dimensions of mentoring on collaboration were identified as the, "development of organizational and communication skills, greater opportunities to network and socialize, an incentive to reflection," (Shrestha et al., 2009, p.122) which the authors describe as leading to "improvements in their own practice and performance, and a sense of personal satisfaction" (Shrestha et al., 2009, p.122). The results indicated that email was used most often, with infrequent use of discussion boards, and no use of synchronous chat rooms. Shrestha et al. (2009) concluded that opportunities for networking and the development of both communication and organizational skills were identified through e-mentoring. The results inform an e-mentoring intervention in that the construction of knowledge during the development of specific assignments or coursework encouraged collaboration through email.

Contrary to the findings of Shrestha et al. (2009), Hunt et al. (2013) conducted a study that identified the absence of collaboration during e-mentoring, and sought to determine if e-mentoring could increase collaboration time, reduce isolation, and increase self-efficacy for new teachers. Using a mixed methods design, the authors sought to answer research questions regarding whether there was a statistically significant difference in teacher preparedness before and after the e-mentoring program, called Electronic Mentoring for Student Success (eMSS), and how participants perceived their "knowledge, teaching practices, and professional growth" (Hunt et al., 2013, p. 288) after the eMSS intervention?. Quantitative data were collected, using a questionnaire, from 22 novice special education teachers in the first three years of teaching to evaluate the influence of the program on teacher knowledge and skills pre- and postintervention.

Qualitative data were collected from a focus group that participated in semistructured interviews. Data collection occurred over the course of a semester.

Surprisingly, the results indicated that eMSS had "no effects on teachers' perceived basic or advanced teaching knowledge" (Hunt et al., 2013, p. 294). The qualitative analysis showed that, despite the plethora of special education resources in the e-mentoring platform, additional help was needed for novice teachers to make decisions about organizing lessons that was not included in the intervention, unlike the study by Shrestha et al. (2009). Hunt et al. (2013) recommended that future research include professional learning cohorts with case-based interactive discussions, as Shrestha et al. (2009) found that email within the e-mentoring platform contributed to collaboration. Both studies inform mentee teacher development in that the case-based discussions could include the codevelopment of a lesson between the mentor and mentee teacher using an e-mentoring platform. Both studies, however, identified that structures are needed in e-mentoring to promote collaboration. Shrestha et al. (2009) stated that a focus on coursework resulted in structure, but the absence of structure for conversations in Hunt et al.'s (2013) study led to ineffective e-mentoring. The implications for an intervention are that structured conversations need to be designed to guide the e-mentoring design through the codevelopment of a lesson.

The findings of Cothran et al. (2009) are similar to those of Hunt et al. (2013) in that mentor and novice teachers had a low rate of e-mentoring collaboration. Although the findings do not indicate that e-mentoring promoted collaboration, the recommendations by the authors inform a structure for collaboration in other e-mentoring platforms that is important. Cothran et al. (2009) also attribute the limited success in helping teachers implement curriculum to a need for more training regarding the expectations for collaboration in e-mentoring. Both studies

inform the use of e-mentoring for collaboration during the codevelopment of a lesson in two ways. First, the frequency of postings collected was not identified as important as the quality of postings examined. Next, it is important that e-mentoring be structured so that mentee teachers and mentors have a reason and framework to guide their communications. Both studies by Hunt et al. (2013) and Cothran et al. (2009) support the need for specified collaborations between mentor and mentee teachers using an e-mentoring platform, thus informing the intervention through the development of shared expectations for e-mentoring between the mentor and the mentee teachers in a workshop prior to e-mentoring. Collaboration through e-mentoring encourages knowledge sharing and promotes lesson development. E-mentoring for lesson development and reflection, indicated below, includes additional studies supporting structured e-mentoring.

E-mentoring for lesson development and reflection. Simonsen et al. (2009) sought to understand the collaborative construction of knowledge for lesson development by analyzing more than 1,600 messages between 19 mentor and novice pairs in an electronic discussion platform for more than two years. Of those coded messages, 719 contained evidence of pedagogical knowledge sharing, and 520 contained knowledge of PCK sharing. The initial focus of the messages was pedagogical, such as classroom management, yet Simonsen et al. (2009) determined that the focus of the messages shifted from pedagogy to PCK for the mentoring dyads as the novice teachers developed more confidence in the classroom. Results indicated that online program curriculum and online discussion groups were the computer mediated supports that helped teachers focus their interactions with the mentor on PCK after initial interactions of a pedagogical nature. The shift in teacher dialogue reflects teacher growth in lesson development using an e-mentoring support system.

Bang and Luft (2013) used a case study approach to explore patterns and topics of electronic communication between two mentor-mentee pairs. Bang and Luft (2013) sought to identify "new realities created in the mentees' classrooms as a result of the online mentoring process" (p. 25) and determined electronic communication to be an effective dialogic tool for constructing knowledge between participants and "expediting the professional induction and growth of new science teachers" (p. 26). First, dialogue between the pair was observed in a private asynchronous electronic platform. Next, the mentor and mentee codeveloped a lesson using the platform, the mentee implemented the lesson, and then the pair reflected about it.

Bang and Luft (2013) collected data from five sources over 1 year: online dialogues consisting of 290 postings, four classroom observations, phone interviews, an online application, and a demographics survey. The authors used a computer-mediated discourse analysis approach, focusing on Herring's (2003) domains of participation patterns, interaction, and social behavior. Dialogues were arranged on a spreadsheet, by subject, and then calculated by volume and characteristics using Miles and Huberman's (1994) time-ordered display to describe the data. Bang and Luft (2013) found that new realities were discovered when new topics were introduced and became realities, or long-term changes in the lessons observed. The importance of this study extends beyond the findings of Simonsen et al. (2009), in that electronic exchanges between a mentor and novice, when directed at lesson development, resulted in long-term changes within demonstrated lessons with students. The results of both Bang and Luft (2013) and Simonsen et al. (2009) indicate the role of e-mentoring includes lesson development to support teacher PCK. Both studies include the recommendations for e-mentoring using case-based activities and lesson development, as identified in studies described above (Hunt et al., 2013; Cothran et al., 2009).

An earlier case study by Bang (2013) further supports that novice and mentor interactions in computer-mediated mentoring programs led to PCK development. Using a virtual reality environment, three mentoring groups interacted through avatars, a wiki platform, or video conferencing. Bang identified that evidence of novice teacher PCK was found in each of the three platforms when novice teachers interacted with their mentors. Data were collected from written dialogues, avatar interactions, questionnaires, weekly reflections, lesson plans, field notes, and video-recorded classroom lessons over a 5-month period. The results, similar to those of a case study conducted by Bang and Luft (2013) of two novice secondary science teachers, indicated that inquiry-based teaching resulted in an effective e-mentoring dialogue between novice and mentor pairs. Inquiry-based teaching included lesson development based on specific goals. E-mentoring, therefore, can be viewed as a dialogue tool for content specific support and "interactive reflection" (Bang & Luft, 2013, p. 26; Simonsen et al., 2009) and should include a targeted goal for online discussions (Cothran et al., 2009; Hunt et al., 2013).

Online platforms support novice teachers in "online social learning and communication/collaboration" (Liu, Macintyre, & Ferguson, 2012, p. 1). Situated learning theory applied to e-mentoring supports active learning to "allow learners to contextualize information" (Ally, 2011, p. 30). The focus of situated learning, however, is less about socialization, and more about "inquiry [that] is meant to take place at a very fine-grained level of minutely observed activities, inextricably embedded in a particular situation" (Nardi, 1996, p. 36). By constructing knowledge, applying learning, and reflecting, the mentee teacher creates and personalizes online learning. Interactive, collaborative, and personalized online learning approaches emphasize authentic tasks and contexts for learning (Anderson, 2011). The reaction to the situation determines action for the novice teacher and the mentor (Nardi, 1996). An e-mentoring platform,

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therefore, can be used to create and share resources and dialogue to develop strategies that address components of teaching.

Teacher Self-efficacy, E-mentoring, and Reflection

The social cognitive theory provides a foundation for understanding teacher self-efficacy (Bandura, 1986; Pajares, 2002), yet identifying teacher self-efficacy in teachers is also important for supporting the context of e-mentoring through the situated learning perspective (Lave & Wenger, 1991). Teachers with low self-efficacy in specific teaching domains may target those areas with a mentor during both the coconstruction of lessons and reflection upon those lessons. Identifying areas where teachers are less efficacious provides target areas for mentor and mentee collaboration, thus supporting situated cognition.

Self-efficacy concerns one's perception of ability, not one's actual ability or skill (Bandura, 1986). Bandura posits that performance is partly dependent upon, "beliefs about how well they will be able to orchestrate the subskills and cognitive resources they possess, and about how much effort they will be able to mount and sustain in a given endeavor (Bandura, 1986, pp. 367-8). Self-efficacy scales do not measure skill, therefore, but measure perceived abilities about different circumstances or tasks. By operationalizing teacher perceived ability, self-efficacy scales can be used to identify areas in which teachers may exhibit difficulty **(**Loreman et al., 2013; Pendergast, Garvis, & Keogh, 2011; Swan, Wolf, & Cano, 2011).

Belief in specific areas of ability, or domains, helps to identify some level of individual perceived competence (Bandura, 1986). For example, Bandura's 30-item Instrument Teacher Self-Efficacy Scale is designed to identify categories or domains for teacher opinions (Bandura, 1977). The domains include: (a) self-efficacy to influence decision-making, (b) self-efficacy to influence school resources, (c) instructional self-efficacy, (d) disciplinary self-efficacy, (e) self-

efficacy to enlist parental involvement, (f) self-efficacy to enlist community involvement, and (g) self-efficacy to create a positive school climate (Bandura, 1977). The survey intends to measure perceived competence, yet low self-efficacy in the core domains of a teacher's role could indicate novice teacher perceived needs (Bandura, 1977).

Tschannen-Moran and Woolfolk-Hoy (2001) also sought to identify teacher efficacy in specific domains and posit that teachers with a high sense of teacher efficacy in domains greatly affect particular instructional practices. Tschannen-Moran and Woolfolk Hoy, like Bandura (1977), correlated low self-efficacy in particular domains with low expectations of performance. The focus on self-efficacy in particular domains is a common theme in current research on teacher development as well. Klassen and Chiu (2010) studied self-efficacy related to instruction, classroom management, and student engagement for 1,430 teachers through a survey, and Skaalvik and Skaalvik (2010) studied self-efficacy in 244 teachers regarding instruction meeting individual student needs, motivating students, classroom management, and collaboration, using the Norwegian Teacher Sense of Efficacy Scale. Both studies concluded that a relationship exists between teacher performance and increased self-efficacy in particular domains, with greater self-efficacy resulting in greater proficiency. Lombardo-Graves (2014) used a pre- and postsurvey self-efficacy scale for 43 teachers over a 10-week mentoring intervention to reveal that teacher self-efficacy increased. LoCasale-Crouch et al. (2012) also found that focused interactions between 11 mentors and 77 novice teachers over the course of two semesters supported increased novice teacher self-efficacy.

This study seeks to identify teacher perceived ability using the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) and to assess areas for mentee teacher development using Domain 3: Instruction of the Framework for Teaching (Danielson et

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al., 2009). The focus of the study will be mentee teacher self-efficacy in the areas of:

communicating with students, using questioning and discussion techniques, engaging students in

learning, using assessment in instruction, and demonstrating flexibility and responsiveness

(Danielson, 2011). A self-efficacy analysis of the domain of instruction is intended to identify

areas for mentee teacher support. Ultimately, it is hoped that mentoring focused on targeted areas

for growth will influence self-efficacy.

Summary

The goal of the intervention is to enhance mentee teacher proficiency through self-

efficacy, e-mentoring, and video reflection to support mentee teacher development. The literature

suggests that by identifying teacher self-efficacy, teacher perceived performance in areas of

teaching might be identified (Tschannen-Moran & Woolfolk-Hoy, 2001). Perception of

performance may be an indicator of areas not meeting expected proficiency standards for

teachers. Teacher proficiency may be supported by the coconstruction of knowledge situated in a

particular school setting (Lave & Wenger, 1991). Content-based mentoring of specific lessons

(Achinstein & Davis, 2014) and using e-mentoring and self-reflection (Baecher et al., 2014;

Chan & Yung, 2016; Park & Oliver, 2008; Schon, 1983) may target mentee teacher areas not

meeting expected proficiency standards and increase proficiency, thus potentially influencing

teacher self-efficacy.

A mentoring program focused on mentee development through lesson design and

reflection could target areas in which teachers have low self-efficacy. Specifically, e-mentoring

may address the particular problems noted in the needs assessment of lower self-efficacy

regarding student engagement and the planning, execution, and evaluation of teaching and

learning, identified in Domain 3: Instruction of the Framework for Teaching (Danielson et al., 2009).

Grounded in a review of the literature, e-mentoring, based on teacher perception of areas of difficulty (i.e., self-efficacy), should (a) incorporate the Framework for Teaching (Danielson, 2011) to identify areas of need and progress; (b) support the coconstruction of knowledge in lesson planning; and (c) incorporate reflection to identify progress and additional areas for growth. This intervention can be individualized and will include opportunities for mentee teachers in different disciplines with different areas of need to use the Framework for Teaching (Danielson et al., 2009) as a development tool.

The intervention will ask mentee teachers to self-identify areas for growth in Domain 3 (Danielson et al., 2009), collaborate through e-mentoring on lesson development focused on a perceived area for growth, and conduct a video self-reflection. The study seeks to determine to what extent teacher e-mentoring and video reflection, through the lens of the situated learning perspective (Lave & Wenger, 1991) and self-directed learning (Knowles, 1975), can support mentee teacher proficiency and self-efficacy.

There are many challenges to consider in developing an intervention to support mentee teacher proficiency through e-mentoring and reflection. First, the goal of e-mentoring must be established to develop a focus for the mentoring dyad interactions (Hunt et al., 2013; Cothran et al., 2009) and online dialogues should be content-focused (Bang & Luft, 2013; Simonsen et al., 2009). Next, computer literacy training and support structures may be necessary to aid the development of the e-mentoring relationship by familiarizing participants with the technology (Shrestha et al., 2009). Bandura (1977) notes "changes in self-efficacy and behavior can best be achieved by participant methods using powerful induction procedures" (p. 202).

Chapter 4

Intervention Methodology: E-mentoring and Video Reflection

The emphasis on efficacy in teaching domains is a common theme in research on teacher

development; teachers with a high sense of efficacy in areas of teaching positively affect

particular instructional practices (Tschannen-Moran & Woolfolk Hoy, 2001). An intervention

that focused on teacher development indicated that teacher self-efficacy increased (Lombardo-

Graves, 2014). Likewise, interactions between mentors and novice teachers supports increased

teacher efficacy when focused on specific development (LoCasale-Crouch et al., 2012). Studies

on efficacy concerning instruction, classroom management, and student engagement (e.g.,

Klassen & Chiu, 2010) and studies concerning instruction meeting individual student needs,

motivating students, classroom management, and collaboration (e.g., Skaalvik & Skaalvik, 2010)

conclude that a relationship exists between teacher performance and increased efficacy.

Teacher proficiency, or quality, is largely affected by the preparation and support that

teachers receive (Evans et al., 2015; Goldhaber & Hansen, 2008; Marzano, 2012). Proficiency

may be developed through content-focused e-mentoring as teachers: recognize areas needing

support, collaborate on lesson development, and reflect on progress (Bang & Luft, 2013;

Achinstein & Davis, 2014). Additionally, the Framework for Teaching (Danielson et al., 2009)

may be utilized as a teacher development tool to provide opportunities for professional dialogue

supporting teacher proficiency (Evans et al., 2015). Reflection about teaching using videos also

promotes teacher proficiency. Videotaped lessons have been identified as enhancing teacher

reflection in collaborative conferences (Baecher et al., 2014). Video used for self-reflection was

found to promote self-reflective practice (Calandra et al., 2009; Wright, 2008), the development

of content knowledge (Johnson & Cotterman, 2015), and professional growth when used with a

teaching framework (Mielke, 2012; Wright, 2008). Through video self-assessments, PCK was

developed (Calandra et al., 2009; Wright, 2008).

Findings from empirical studies support the identification and development of mentee

teacher areas for growth. The intervention activities were also informed by theoretical

approaches such as the situated learning theory (Lave & Wenger, 1988) and self-directed

learning (Knowles, 1975). The purpose of this chapter is to describe the intervention procedure

and program evaluation methodology. This chapter includes the research design aligned with

the logic model (see Appendix D), the method (i.e., participants and measures), procedures

(i.e., intervention, data collection, data analysis), and a summary matrix (see Appendix E) to

show the alignment between the research questions, measures, data collection, and analysis.

Purpose of the Study

Mentee teachers are not always equipped with the development, knowledge, attitudes,

and beliefs necessary for expected teacher proficiency and, therefore, need support to develop

proficiency and self-efficacy. The purpose of the study is to understand how e-mentoring and

video self-reflection contribute to mentee teacher development. The intervention includes

content-focused e-mentoring for the mentee teacher through the codevelopment of a lesson based

on an identified component for growth, and self-reflection of the component based on a

videotaped lesson. The study also aims to understand the implications of using the Framework

for Teaching (Danielson et al., 2009) in guiding mentee teacher development.

Domain 3: Instruction of the Framework for Teaching (Danielson, 2011) was used to

codevelop a lesson. The components for growth within Domain 3 include communicating with

students (Component 3a), using questioning and discussion techniques (Component 3b),

engaging students in learning (Component 3c), using assessment in instruction (Component 3d),

and demonstrating flexibility and responsiveness (Component 3e). Domain 3 (Danielson et al., 2009; Danielson, 2011) provided mentee teachers with a framework for self-assessment, lesson development, reflection, and future goal setting, which aligned with the results of a needs assessment regarding mentee teacher support needed for student engagement, instruction, and classroom management. An intervention targeting mentee teacher development through a focus on Domain 3 (Danielson, 2011) aimed to produce short-term outcomes of increased efficacy, goal setting, collaboration, and reflection, and long-term outcomes of teacher development, teacher retention, and a collaborative culture for teacher proficiency.

The following research questions guided this study:

4. How do mentee teachers perceive their efficacy after content focused e-mentoring and video self-reflection?

5. What are mentee teacher experiences with the use of e-mentoring, video self-reflection, and Domain 3: Instruction in a mentoring program?

6. How have e-mentoring and video self-reflection supported goal setting, collaboration, and self-reflection?

Research Design

The current mixed-methods convergent design research study (Creswell & Plano Clark, 2011) was conducted during the 2017-2018 school year. The concurrent stages of the design included quantitative data collection and analysis and qualitative data collection and analysis. Connections between quantitative and qualitative data were determined to answer the research questions based on an adaptation of the visual model for mixed methods procedures (Ivankova, Creswell, & Stick, 2006). The model includes a visual depiction of phases for data collection, analysis, and integration with a focus on procedures and products in the design (see Appendix F).

The research questions were aligned with the outputs, measures, and short-, medium-, and long-term outcomes, which are identified in the logic model. Process and outcome evaluation measures were used to assess the intervention and identify fidelity of implementation.

Process Evaluation

Fidelity criteria guided the fidelity of implementation to examine the structure and processes of implementation (O'Donnell, 2008). The five measurements of fidelity described by Dusenbury, Brannigan, Falco, and Hansen (2003) are adherence, dose, quality of delivery, participant responsiveness, and program differentiation. Of these, adherence and participant responsiveness were most relevant for conducting a process evaluation of e-mentoring and video self-reflection, with data collected from e-mentoring dialogues and the Critical Incident Reflection Form (Calandra et al., 2009; see Appendix G). Adherence to the elements of the intervention (Dusenbury et al., 2003) included mentors and mentee teachers codeveloping a lesson and the mentee reviewing a videotape of the lesson. The researcher also determined the existence of e-mentoring exchanges between the mentor and the mentee and the completion of a Critical Incident Reflection Form (Calandra et al., 2009). Participant responsiveness constituted the extent of mentor and mentee collaboration, and was measured by the number of exchanges in the e-mentoring dialogue that indicated pedagogical knowledge (PK) and PCK, the PK and PCK noted by the mentee in the Critical Incident Reflection Form (Calandra et al., 2009), and the choice of a new component for growth from Domain 3: Instruction (Danielson et al., 2009). High fidelity for the intervention existed if implementation of e-mentoring and video self-reflection was completed and there was evidence of PK and PCK in the e-mentoring dialogue and the video reflection.

Researcher's checklists were used to assess adherence and responsiveness. The checklists indicated (a) inclusion of a goal, (b) inclusion of a lesson, (c) number of e-mentoring exchanges used to complete the lesson template, (d) evidence of PK and PCK in e-mentoring exchanges, (e) completed Critical Incident Reflection Form (Calandra et al., 2009), (f) evidence of PK and PCK in critical incident reflection, and (g) existence of a new component for growth.

Outcome Evaluation

The outcome evaluation plan included a non-experimental design using a one group pre- and posttest design, which lacked random assignment or a control group (Shadish, Cook, & Campbell, 2002). The outcomes for the program, identified in the logic model, were goal setting, collaboration, and self-reflection, which support development, and ultimately, teacher proficiency and self-efficacy. Outcomes, such as efficacy or perceived teacher proficiency, were identified to determine the effectiveness of the e-mentoring and video self-reflection program. The outcome evaluation plan sought to examine changes in perceived efficacy and proficiency for mentee teachers as supported by mentors in an e-mentoring dyad and through video self-reflection; the pre- and postsurvey results were used to show that the variables are aligned with the short- and long-term outcomes.

<div align="center">

Method

</div>

This section describes the participants, measures, and instrumentation. Four instruments were used to collect mentee data aligned with the research questions, as indicated in the summary matrix.

Participants

The target population was mentee teachers. The sample included newly hired probationary teachers in the school district in which the researcher was employed. New teachers

in the district, according to state law, are probationary for 3 to 4 years until tenured. Criteria for inclusion were newly hired, full-time classroom teachers that were evaluated using the Danielson (2011) rubric and had a mentor provided by the district; non-classroom teachers were excluded. Nine mentee teachers participated, which comprised the new hires for the 2017-2018 school year. Participant characteristics varied by years of teaching, previous mentoring experiences, student teaching experience, grade level taught, subject area certification, age, gender, and level of education.

Participants included two Grades K-5 teachers, three Grades 6-8 teachers, and four Grades 9-12 teachers, consisting of eight female teachers and one male teacher. All participants were state certified and met the state designation of being highly qualified. Mentors taught in the same content area and worked in the same building as the mentee teachers, although they may have taught a different grade level. Mentors received compensation from the district, and although some may have mentored before, prior mentoring programs had mostly consisted of social support.

Mentee teachers were recruited by the researcher through an email that included the purpose, procedures, location of the study, a statement that the study was research being conducted through the Johns Hopkins School of Education, other information about eligibility, a contact person, and the name and address of the principal investigator (see Appendix H). Participants were also provided with an informed consent form and were informed of their right to withdraw at any time (see Appendix I). Language was included to indicate that participation was voluntary and participants were not compensated, thereby limiting undue influence.

Eight of the nine mentee teachers had a student teaching experience, which lasted a semester or more for six of them. Seven of the eight mentee teachers had a student teaching

experience at the same level in which they currently taught (i.e., elementary, middle school, high school). Only five of the eight teachers taught in a similar setting (i.e., rural, urban, suburban) and only one of the eight teachers taught in a similar socioeconomic grouping. Four of the eight teachers said they were prepared quite a bit to a great deal for the current teaching position. Every mentee teacher, although new to the district, had three or more years of teaching experience prior to being hired; six of the nine teachers had 7-10 years of experience. Mentee teachers ranged in age from 26 to 40, with three teachers in the 26-30 age range, two in the 31-35 range, and four in the 36-40 range.

Only one of the nine participants did not have a mentoring experience in his or her first year of teaching. Three of the teachers said that mentoring prior to this mentoring experience prepared them not at all for their current teaching position, four of the teachers said they were prepared somewhat, and two of the mentee teachers said that the first year of mentoring prior to this year prepared them quite a bit for their current teaching position. At the time of the presurvey in September, all mentee teachers had already participated in a premeeting with the mentor, professional development, three superintendent conference days, which are part of the mandatory district orientation, and a week of classes.

Measures and Data Sources

Measures consisted of a teacher efficacy questionnaire, including the TSES (Tschannen-Moran & Woolfolk Hoy, 2001), with demographic questions that utilized both a Likert-type scale and closed questions, and the Four Domains Self-Assessment (Danielson et al., 2009; see Appendix J). Additional data sources consisted of e-mentoring dialogues and a reflection form that identified critical incidents in teaching, used during video self-reflection (Calandra et al., 2009).

Teacher efficacy questionnaire. The first instrument included quantitative data from a pre- and postsurvey using the TSES (Tschannen-Moran & Woolfolk Hoy, 2001), with four questions within each of the following three subfactors (a) Efficacy in Classroom Management, (b) Efficacy in Instructional Strategies, and (c) Efficacy in Student Engagement, and demographic questions utilizing both a scale, and closed questions. A Likert-type scale was used with a range of responses from 1-9, with 1 indicating *nothing,* 3 indicating *very little,* 5 indicating *some influence,* 7 indicating *quite a bit,* and 9 indicating *a great deal* to identify how much a teacher feels he or she can do in a given situation. Sample questions included: (a) How much can you do to motivate students who show low interest in schoolwork? and (b) How much can you use a variety of assessment strategies? The TSES has 12 items, and the reliability for the 12-item scale is 0.90 (Tschannen-Moran & Woolfolk Hoy, 2001). Variables included self-efficacy to identify beliefs about teaching and demographics such as gender, age, preservice experience, years of teaching experience, level of teaching experience, and education.

Four Domains Self-Assessment. The second instrument included quantitative data from a pre- and postsurvey from the Four Domains Self-Assessment (Danielson et al., 2009), which included a rubric about perceived ability in Domain 3: Instruction to identify components for growth in that domain. The Four Domains assessment (Danielson et al., 2009) has been used as an indicator of novice teacher self-assessment of teaching (Meilke, 2012; Moss, 2016). The measure enabled mentee teachers to determine specific needs by examining descriptions of performance within domains, and self-assessing perceptions of teaching. Mentee teachers were asked to rate themselves as unsatisfactory, basic, proficient, or distinguished in five areas to identify what is challenging them and where they see the greatest opportunity for growth: (a) communication with students, (b) using questions and discussion techniques, (c) engaging

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students in learning, (d) using assessments in instruction, and (e) demonstrating flexibility and responsiveness. Self-assessment was used to identify mentee teacher beliefs about proficiency. The goal of the initial self-assessments was to identify efficacy and a component for growth and the goal of the self-assessments after the intervention was to identify increased efficacy, perceived growth in components, and the selection of a new component for growth. For the postsurvey, data from the Four Domains Self-Assessment (Danielson et al., 2009) were used in addition to the following open-ended questions:

- On what Domain 3: Instruction component did you focus?

- How did focusing on one component impact your teaching, if at all?

- How did e-mentoring and reflecting on the video of your own teaching change your perception of that component, if at all?

- What new component of your teaching has emerged as an area of focus?

- How did use of the framework, e-mentoring, and video self-reflection inform your perception of your teaching ability?

E-mentoring dialogues. The third data source was qualitative e-mentoring dialogues that occurred during the codevelopment of a lesson. Mentee teachers were asked to complete a lesson development template targeting a selected component for growth. The template included a description of the class, curriculum topic of study, the objective of the lesson, standards addressed, and anticipated instructional strategies and assessments. Exchanges within mentoring dyads were limited by the constraints of the questions, occurred in a dialog box, and consisted of questions and comments based on the template that promoted discussion and shared resources. The e-mentoring dialogues provided information regarding PK, content knowledge (CK), and PCK (Simonsen et al., 2009).

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Video self-reflections. The fourth data source consisted of a video self-reflection form to identify critical incidents in teaching. The Critical Incident Reflection Form (Calandra et al., 2009) helped determine if self-reflection shows PK and PCK based on an awareness of a transformation of content knowledge, or if reflections were more technical (Calandra et al., 2009). Qualitative data from open-ended questions about video self-reflection included responses to questions such as: (a) Describe the feelings you had as you experienced the critical incident, and (b) Which component for growth is addressed in this incident? Although the limited questions posed certain constraints, video self-reflections provided information regarding mentee teachers' perceived strengths and weaknesses of performance.

Procedure

This final section includes detail about the intervention design, data collection, data coding, and analysis using a mixed methods convergent design described by Creswell and Plano Clark (2011). Thematic coding of qualitative data includes grouping phrases, sentences, or paragraphs into codes and then grouping the codes into themes (Creswell & Plano Clark, 2011).

Intervention

The mentoring program was conducted from July to December 2017 with an introductory session, four face-to-face sessions, asynchronous e-mentoring sessions, and video self-reflection to support proficiency and efficacy of mentee teachers. Mentee teachers: (1) identified goals related to their instructional practice and development, (2) participated in content-focused e-mentoring for the codevelopment of a lesson, and (3) participated in video self-reflection to promote growth and teacher efficacy. Mentee teachers and their assigned mentor teachers participated in an e-mentoring workshop, whereby norms for e-mentoring dialogue and guidelines for discussion were created. Mentee and mentor teachers were also introduced to an e-

mentoring platform using a lesson development template to begin an electronic dialogue. Each dyad used the e-mentoring platform to coconstruct a lesson over the course of 2 weeks based on an area of struggle identified using the Four Domains Self-Assessment (Danielson et al., 2009). Lesson collaboration included the development of the curriculum and topic of study, state standards and performance indicators, lesson objectives, instructional strategies, and assessment of student learning. The e-mentoring dialogue began as the mentee teacher completed the template for the lesson, and the mentor provided feedback in the form of questions, comments, and resources. Mentee teachers responded to mentor comments to support completion of the template in a dialog box. After the lesson was implemented, mentee teachers reviewed a videotape of the lesson and completed a self-reflection of the lesson using the Critical Incident Reflection Form (Calandra et al., 2009; see Appendices K and L).

An introductory session occurred in July for 2.5 hours to introduce mentor and mentee teachers and explain the four mentoring sessions from September to December. The first 2.5-hour session with mentoring dyads occurred in September during which mentee teachers received a pretest and then reviewed the Danielson component indicators from the Four Domains Self-Assessment (Danielson et al., 2009) to identify a component for growth. In October, a second 2.5-hour session helped mentoring dyads develop expectations for the e-mentoring codevelopment of the lesson, expectations for the video self-reflection, and an understanding of the importance of self-reflection for the mentee teacher. Mentee and mentor dyads then codeveloped a lesson using the e-mentoring platform asynchronously. A third 2.5-hour session occurred in November, whereby mentees self-assessed a video of the lesson, and mentoring dyads analyzed and discussed video self-reflections. In December, mentee teachers received the electronic survey including the short form of the TSES (Tschannen-Moran & Woolfolk Hoy,

2001) and the Four Domains Self-Assessment (Danielson et al., 2009) to identify areas of perceived growth and select a new component for growth (see Table 1), and reflection questions. Mentoring dyads discussed areas of perceived growth and a new component for growth. Outside of these sessions, dyads were expected to use Google Classroom, a learning management system, to codevelop a lesson.

Google Classroom was introduced to provide private communication between the mentor and the mentee. Mentee teachers and mentors developed guidelines for the e-mentoring session, including expectations for communication in the codevelopment of the lesson, focused on their chosen component, and a timeframe (see Table 2). The mentee teacher initiated the self-reflection of the videotaped lesson after the codevelopment and delivery of the lesson. The video allowed for the mentee teacher's private reflection on growth in a particular component through the use of reflection questions, as the mentor teacher did not critique the videotaped lesson. The researcher provided a videographer, if requested.

Data Collection

Data were collected for the mixed methods convergent design approach to studying teacher development. This section will include how the surveys, dialogues, and reflections were collected.

Teacher survey. Pre- and postsurveys were collected using SurveyMonkey, a web-based tool for customizing survey questions. Participants received an email describing the rationale for the survey, the process to complete the survey electronically, and the informed consent form. Respondents were given 1 week to respond to the survey. The following survey data were uploaded from SurveyMonkey to spreadsheet software: (a) Teacher's Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001); (b) closed questions on demographic variables such

as student teaching duration, setting (i.e., rural, urban, suburban), socioeconomic grouping, mentoring, years of teaching, grade level taught and age; (c) Four Domains Self-Assessment (Danielson et al., 2009); and (d) open-ended questions about e-mentoring and video self-reflection.

E-mentoring dialogues. Mentee teachers recorded the component for growth in Google Classroom. E-mentoring dialogues were collected by downloading the mentor and mentee teacher interactions from Google Classroom.

Video self-reflections. Google Classroom was used to electronically collect responses to the open-ended questions from the Critical Incident Reflection Form (Calandra et al., 2009) about the video self-evaluation.

Table 2

Data Collection Timeline

Intervention Activity	Description	Timeline and Duration
Presurvey	12 question short form of the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001) and demographic questions. Four Domains Self-Assessment (Danielson et al., 2009). Identify a component for growth.	September 2017 2.5-hour session
E-mentoring introductory session	Explore the component for growth, develop expectations for the e-mentoring codevelopment of the lesson, expectations for the video self-reflection, and an understanding of the importance of self-reflection for the mentee teacher.	October 2017 2.5-hour sessions
E-mentoring	Mentee and mentoring dyads codevelop a lesson using the e-mentoring platform asynchronously. Mentee teachers will videotape the lesson implementation.	October 2017 2 weeks
Video self-reflection session	Mentee teachers complete reflection questions about the lesson using the video and then mentoring dyads discuss video self-reflections.	November 2017 2.5-hour session

Postsurvey	Mentee teachers complete the electronic survey including the short form of the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001), the Four Domains Self-Assessment (Danielson et al., 2009), and reflection questions.	December 2017 30 minutes
Reflection and goal setting session	Mentee teachers identify areas of perceived growth and select a new component for growth.	December 2017 2.5-hour session

Data Analysis

The convergent approach to data analysis (Creswell & Plano Clark, 2011) was used to analyze qualitative and quantitative data, and included the following steps:

1. Analyze the information separately.

2. Merge the results by comparing the different data sets.

3. Identify dimensions to compare the data.

4. Present the combined analysis.

Qualitative and quantitative data of each participant were analyzed separately to assess the same concepts, and then the data were merged. First, the quantitative data from the pre- and postsurvey were analyzed. Next, the qualitative data from e-mentoring dialogues, video self-reflection, and open-ended questions were analyzed. Finally, the findings were combined to determine connections. Constructs included teacher efficacy, teacher development, and self-reflection. A side-by-side comparison of merged data analysis occurred, which resulted in presenting the quantitative results and qualitative findings together, with qualitative findings being used to confirm or dispute quantitative findings (Creswell & Plano Clark, 2011).

Quantitative data. A quantitative approach was used to analyze the first 12 questions on the survey, which are from the Teacher's Sense of Efficacy Scale (Tschannen-Moran &

Woolfolk Hoy, 2001) short form. Subfactors included (a) Efficacy in Student Engagement, (b) Efficacy in Instructional Strategies, and (c) Efficacy in Classroom Management. Descriptive statistics such as mode and mean were interpreted using spreadsheet software and were used to identify mentee teacher efficacy. Descriptive statistics were also used to describe demographic data, such as student teaching duration and past mentoring experience

Qualitative data. Theoretical thematic analysis (Braun & Clarke, 2006) was used to analyze qualitative data from the postsurvey open-ended questions, and supported the convergent design approach by Creswell and Plano Clark (2011). The six phases of coding in theoretical thematic analysis (Braun & Clarke, 2006) are: (1) familiarizing oneself with the data, (2) generating codes, (3) identifying themes, (4) reviewing themes to devise thematic maps, which includes identifying and interpreting the themes, (5) defining themes by analyzing how themes fit into the larger picture, and (6) reporting the story of the data using extracts. The benefit to using the six phases is that it is a flexible guide to thematic analysis that can be aligned with each research question (Braun & Clarke, 2006) and aligns with the approach used by Creswell and Plano Clark (2011). Familiarization with data as proposed by Braun and Clarke (2006), for example, is similar to the convergent design approach of analyzing the information separately. Generating codes, as described by Braun and Clarke (2006), is similar to the analysis stage of Creswell and Plano Clark (2011). Identifying and reviewing themes is likewise similar to the integral step of merging the results by comparing the different data sets, while defining themes is aligned with Creswell and Plano Clark (2011) step of identifying dimensions to compare the data. Overall, Creswell and Plano Clark steps for the convergent design approach are complementary to the steps proposed for thematic analysis by Braun and Clarke (2006).

Qualitative data from e-mentoring dialogues were analyzed using a priori coding of knowledge types (e.g., PK, PCK, CK) based on a similar study conducted by Simonsen et al. (2009), which modeled Schulman's (1987) knowledge typology. Qualitative data from the video self-reflection were also analyzed using a priori coding based on a similar study by Calandra et al. (2009); a priori codes were used to determine if self-reflection included PCK. Due to the formulaic structure of the lesson development template and the reflection on critical incidents, the analysis did not lend itself to other themes, although the researcher was open to finding them. Qualitative data were coded by the type of reflection (i.e., technical, contextual, or critical) and by the competency discussed (i.e., knowledge, skills, or dispositions).

Chapter 5

Findings and Discussion

The purpose of the study was to examine mentee teacher development and self-efficacy through e-mentoring and video self-reflection with a focus on the Framework for Teaching (Danielson et al., 2009; Danielson, 2011). This chapter includes a description of the process of intervention implementation for each mentoring session and the outcome evaluation. The goal of this chapter is to provide the study results, organized by research question and framed using reflection or enactment among the domain of practice, external domain, or personal domain from the interconnected model of professional growth (Clarke & Hollingsworth, 2002). Next, the discussion includes the themes of self-efficacy, perceived development, goal setting, and collaboration and shows how the four themes and their change sequences (i.e., reflection and enactment) are used to indicate patterns of mentee teacher growth. The chapter concludes with limitations and implications for practice and future research.

Process of Implementation

Ten mentoring pairs were included in the intervention and encompassed a range of K-12 teachers, from elementary special educators to secondary physical education and social studies teachers. Data from nine of the 10 mentoring pairs were used in the data collection and analysis. One pair did not meet the criteria of classroom teachers who are assessed utilizing the Danielson framework (2011), as they were guidance counselors. The process of implementation is described below, followed by the fidelity of implementation.

Introductory Session

The researcher facilitated a 2.5-hour introductory session in July. The purpose of the session was to introduce mentor and mentee teachers to one another, engage in a warm-up

activity about communication, describe the district, and take a brief bus tour of the district. After

returning to the district office, the researcher provided an overview of the four planned

mentoring sessions, explained the activities of e-mentoring and videotaping that would occur

between the scheduled sessions and the importance of reflection for teacher growth.

Mentoring Session 1

During the first mentoring session, the teachers completed the presurvey to identify a

component for professional growth. Next, the mentors arrived and worked individually with their

assigned mentee teachers to review the component for growth selected and discussed

instructional strategies that align with the selected component.

Mentoring Session 2

Prior to the second session, mentee teachers were sent an email asking them to recall the

component for growth and the instructional strategies that were brainstormed with the mentor

during the first session. Mentee teachers were also asked to bring a general idea for a potential

lesson to be implemented within the next two weeks that focused on their selected component for

growth.

During Session 2, mentor and mentee pairs reviewed the selected component for growth,

discussed a recent lesson conducted by the mentee teacher, and determined how the mentee

teacher may have addressed the component during that lesson. Next, the facilitator conducted a

group activity. The entire group discussed feelings about teaching and learning since the last

session when prompted with a question about how they have reflected on their own teaching.

Next, the whole group watched a video of teaching from a master teacher from the district. The

group was asked to reflect about what the students were doing and saying, and what the teacher

was doing and saying. Then, the mentor and mentee pairs reviewed the selected component for

growth, brainstormed more instructional strategies, and continued to work on the topic for a

potential lesson to be implemented within the next two weeks. Mentor and mentee pairs were

observed collaborating beyond the allotted 20 minutes and had to be stopped by the facilitator to

introduce the topic of e-mentoring.

The facilitator re-introduced the concept of e-mentoring and the codevelopment of a

lesson. Before the end of the session, mentor and mentee pairs initiated a technology platform for

communication using Google Classroom and uploaded the Lesson Development Template (see

Appendix L). Together, they discussed the template and added the selected component for

growth, the description of the class to be observed, and the curriculum topic for study. The

template included a dialog box at the bottom for mentor and mentee communication. Instructions

in the dialog box indicated that mentors should ask clarifying and probing questions and provide

comments to engage in dialogue to support the mentee teacher's development of the lesson.

Mentee and mentor pairs were informed that the codevelopment of the lesson should occur

within the next 2 weeks, and that it was the responsibility of the mentee teacher to videotape the

implementation of the lesson. Finally, the mentors went into a small classroom to brainstorm

with the facilitator how to support the mentee in the e-mentoring dialogues while mentee

teachers continued to develop the lesson.

Mentoring Session 3

Prior to Session 3 the mentee teachers were reminded to bring the videotaped lesson to

the mentoring session. During the session, mentee teachers independently viewed the lesson and

used the Critical Incident Reflection Form (Calandra et al., 2009) to create notes on the critical

incidents they identified in the lessons. Mentee teachers were asked to describe the feelings they

had during the incidents, how the students and teachers likely viewed the incidents, the identified

components for growth addressed in the incidents, personal beliefs related to teaching, and future

goals for teaching. The mentor teachers arrived and the mentee teachers shared their reflections

with them. Mentee teachers facilitated conversations with the mentor teachers about what they

observed, how they addressed the selected components for growth, and their future goals for

teaching.

Mentoring Session 4

During Session 4, the mentor and mentee pairs met with the facilitator to discuss what

went well throughout the year and one thing that surprised the mentee that he would like to focus

on. Next, similar to Session 1, the mentors were dismissed, the facilitator met with the mentee

teachers, and the mentee teachers completed the postsurvey. The survey consisted of the TSES

(Tschannen-Moran & Woolfolk Hoy, 2001), the Four Domains Self-Assessment (Danielson et

al., 2009), and five open-ended questions. The open-ended questions asked how focusing on the

component influenced teaching, how e-mentoring and reflecting on the video changed the

perception of the component, what new component emerged as an area of focus, and how the

framework, e-mentoring, and video self-reflection informed the mentee teacher's perception of

his or her teaching ability.

Process Evaluation

A process evaluation was conducted to identify adherence and responsiveness to the

intervention. Adherence to the intervention was assessed using a checklist to determine whether

the mentor and mentee completed the codevelopment of the lesson during e-mentoring and

whether the videotaped lesson was reviewed and if reflection occurred. The process evaluation

checklist for adherence, therefore, included the numbered participants along with an area to note

the existence of e-mentoring exchanges and the completion of the Critical Incident Reflection

Form (Calandra et al., 2009). Similarly, a process evaluation checklist was used to determine participant responsiveness. The checklist for the numbered participants included: the existence of a written lesson; the number of exchanges in the e-mentoring dialogue; the number of exchanges indicating PK and PCK sharing based on an analysis of codes; completion of the Critical Incident Reflection Form (Calandra et al., 2009); PCK in the critical incident reflection based on the coding of reflections as PCK, CK, or PK; and the identification of a new component for growth.

Analysis of the checklists indicated that there was adherence and responsiveness to the implementation. A lesson and video self-reflections were completed by all nine mentee teachers, and collaboration existed for seven of the nine mentor and mentee pairs based on the number of exchanges and evidence of PK and PCK sharing. Seven of the nine mentor and mentee pairs exchanged e-mentoring dialogues that included 33 exchanges overall, with 15 of the exchanges demonstrating evidence of PK and seven exchanges demonstrating evidence of PCK. One of the nine pairs did not exchange e-mentoring dialogue at all, and another pair had posts initiated by the mentee, but the mentor did not reciprocate. Interestingly, all mentee teachers developed the lesson using the e-mentoring platform, whether dialogue exchanges with the mentor occurred, all mentee teachers completed the Critical Incident Reflection Form (Calandra et al., 2009) after watching the video, and all created a new component for growth. The mentee teacher adherence may be due to the researcher's role at the time of the study as assistant superintendent of the district.

Outcome Evaluation

An outcome evaluation was conducted using the researcher's checklists and the pre- and postsurvey to identify perceived efficacy and development, which helped to determine if the

short-term outcomes were met, as identified in the logic model. Short-term outcomes included: collaboration, indicated by at least three exchanges, self-efficacy, based on the before-and-after results of the TSES (Tschannen-Moran and Woolfolk Hoy, 2001), evidence of reflective e-mentoring dialogue, evidence of reflection on the Critical Incident Reflection Form (Calandra et al., 2009), and goal setting of a new component for growth.

The checklist indicated that there were three or more exchanges between mentor and mentee teachers in six of the nine pairs, showing evidence of collaboration. Before-and-after results of the TSES (Tschannen-Moran and Woolfolk Hoy, 2001) indicated that efficacy did not decrease in the means of all three subfactors of Efficacy in Student Engagement, Instructional Strategies, and Classroom Management from the presurvey to the postsurvey. Additionally, teacher self-reflection and indicators of PK or PCK were seen in the critical reflections completed after watching the videotaped lesson. Finally, goal setting was identified for every mentee teacher, as all participants created a new component for growth.

Findings

Clarke and Hollingsworth (2002) contend that the interconnected factors of professional growth affect teacher proficiency. The model, as described in Chapters 1 and 3, shows how teacher growth takes place through change sequences and growth networks (i.e., reflection and enactment) within four interrelated domains of change (i.e., external domain, personal domain, domain of practice, domain of consequence). Reflection on action (Schon, 1983) is important for understanding the implementation and effectiveness of goals in teaching, and is the connection between the external domain, personal domain, domain of practice, and domain of consequence. Organizing each research question summary by domain enabled the researcher to focus the

discussion on how factors such as external sources, teacher beliefs, teaching practices, and student outcomes are related to mentee teacher development.

The Change Environment

External Domain

External Source of Information or Stimulus

Personal Domain

Domain of Practice

Knowledge Beliefs And Attitude

Professional Experimentation

Salient Outcomes

Domain of Consequence

→ Enactment
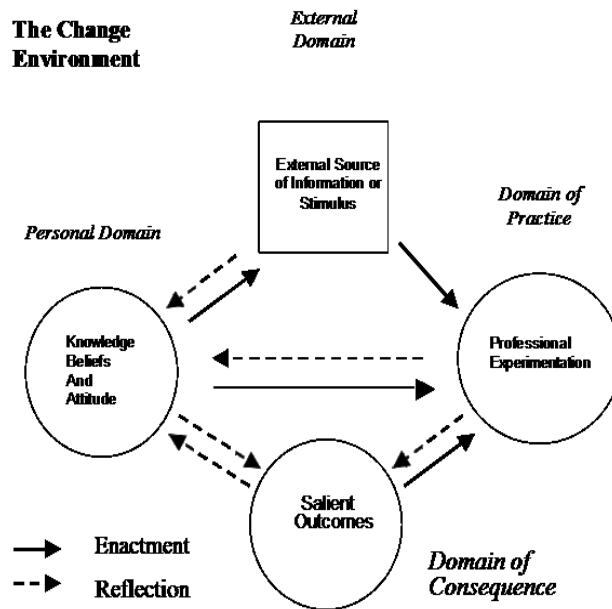
--▶ Reflection

Figure 3. The interconnected model of professional growth. Change is created through the processes of reflection and enactment. Personal domain, domain of practice, domain of consequence and the external domain are connected by solid arrows to denote growth through enactment and dashed arrows to denote growth through reflection. Reprinted from "Elaborating a Model of Teacher Professional Growth," by D. Clarke and H. Hollingsworth, 2002, *Teaching and Teacher Education*, *18*, p. 951.

Perceived Mentee Efficacy (RQ1)

The first research question sought to determine how mentees perceive their efficacy after selecting a component for growth, content-focused e-mentoring, and video self-reflection. Mean and mode scores were noted for the subfactors Efficacy in Student Engagement, Efficacy in

Instructional Strategies, and Efficacy in Classroom Management before and after the intervention using the TSES (Tschannen-Moran & Woolfolk Hoy, 2001; see Appendix M). The results indicated that mentee teacher efficacy did not decrease; the Instructional Strategies showed a positive change (see Table 3). This is noteworthy as efficacy has been found to decline with teachers' experience, resulting from "the gap between the standards they have set for themselves and their own performance" (Woolfolk Hoy & Spero, 2005, p. 353).

Table 3

Descriptive Statistics

	N	Min	Max	Mean	*SD*	Skewness
Engagement Pre	9	23.00	33.00	29.11	3.82	-.69
Instructional Pre	9	20.00	33.00	27.22	4.26	-.40
Management Pre	9	26.00	35.00	30.55	2.96	-.51
Engagement Post	9	24.00	33.00	29.88	2.97	-1.06
Instructional Post	9	28.00	35.00	31.33	2.69	.08
Management Post	9	28.00	34.00	32.44	2.12	-1.45
Valid *N*	9					

Note. Descriptive statistics of mean scores for each subfactor were calculated individually before (pre) and after (post) the intervention.

Efficacy of student engagement. For the subfactor Efficacy in Student Engagement, mean and mode scores were determined before and after the intervention. The mean scores on the presurvey and postsurvey from the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001) changed from *M* = 7.27 to *M* = 7.47. The mode for responses was a 7 on the presurvey, indicating *quite a bit* to describe how much the mentee feels he can do to motivate students, get

students to believe they can do well, help students value learning, and how the teacher can help families to help the student do well. The mode on the postsurvey was an 8, indicating that teachers perceived they had more than *quite a bit* of influence but less than *a great deal* of influence.

Efficacy in instructional strategies. For the subfactor Efficacy in Student Engagement, mean and mode scores were determined before and after the intervention. The mean scores on the presurvey and postsurvey from the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001) changed from $M = 6.80$ to $M = 7.83$. The mode for responses was a 7 on the presurvey, indicating *quite a bit* to describe the extent mentee teachers feel they can craft, or write, good questions, use a variety of assessment questions, provide alternate explanations and examples, and implement alternative strategies. The next most frequently selected response was a 5 on the presurvey, indicating that teachers perceived they only had *some influence*.

The mode on the postsurvey was an 8, indicating mentee teachers felt they could do more than *quite a bit* and less than *a great deal* to influence. The next most frequently selected response on the postsurvey was a 9, indicating mentee teachers felt they could do *a great deal* in crafting good questions, using a variety of assessment questions, providing alternate explanations and examples, and implementing alternative strategies. The mean and mode for the subfactor Efficacy in Instructional Strategies was noteworthy, as mentee teachers perceived more change in this area than the other two subfactors.

Efficacy in classroom management. For the subfactor Efficacy in Classroom Management, mean and mode scores were determined before and after the intervention. The mean scores on the presurvey and postsurvey from the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001) changed from $M = 7.63$ to $M = 8.11$. The mode for responses on the presurvey was a

7, indicating *quite a bit* to describe how much the mentee believes he can do to control disruptive behavior, get children to follow rules, calm a disruptive or noisy student, and establish a classroom management system. The next most frequently selected response was an 8, indicating mentee teachers felt they could do more than *quite a bit* and less than *a great deal*.

The mode on the postsurvey was a 9, indicating mentee teachers felt they could do *a great deal* to control disruptive behavior, get children to follow rules, calm a disruptive or noisy student, and establish a classroom management system. The next most frequently selected response on the postsurvey was an 8, indicating mentee teachers felt they could do more than *quite a bit* and less than *a great deal*.

Cumulative efficacy. The cumulative mean of all subfactors changed from $M = 7.24$ on the presurvey to $M = 7.80$ on the postsurvey. The mode for all subfactors cumulatively on the presurvey was a 7, indicating that overall, mentee teachers felt they could do *quite a bit* with Student Engagement, Instructional Strategies, and Classroom Management overall. The next most frequently selected response on the presurvey was an 8, indicating mentee teachers felt they could do more than *quite a bit* and less than *a great deal* prior to the intervention. The mode for all subfactors cumulatively on the postsurvey was an 8, indicating that overall, most mentee teachers felt they could do more than *quite a bit* and less than *a great deal*. The next most frequently selected response on the postsurvey was a 9, indicating mentee teachers felt they could do *a great deal* with Student Engagement, Instructional Strategies, and Classroom Management overall. The mode for all subfactors cumulatively indicates that overall, mentee teachers initially felt they could do *quite a bit* with Student Engagement, Instructional Strategies, and Classroom Management, but the postsurvey indicated that most mentee teachers felt they could do more than *quite a bit* and less than *a great deal*.

Summary. The presurvey and postsurvey means and modes from the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001) indicate a change in the mentee teachers' personal domain, which includes knowledge, beliefs, attitudes, and personal goals. Later in this section, data from the preparation and teaching of lessons are organized into the domain of practice, and data from mentoring sessions are organized into the external domain. The organization of data into the domains supports a discussion of mentee teacher development as the processes of reflection and enactment explain the growth patterns connecting the domains.

Mentee Teacher Experiences: Teacher Development (RQ2)

The second research question focused on mentee teacher experiences with the use of the framework, e-mentoring, video self-reflection in a mentoring program, and perceived changes. Teacher self-assessments using Domain 3: Instruction (Danielson et al., 2009) were used to analyze mentee perception of proficiency in teaching components before and after the intervention. Changes in the ratings occurred after the intervention, although the changes varied by participant; all but one participant indicated *proficient* or *distinguished* in components in the postsurvey. The Domain 3: Instruction scores from the presurvey to the postsurvey for Participants 1, 2, and 5 and other data were explored further as the three participants indicated initial self-ratings of *needs improvement* for at least one component on the presurvey.

Responses to an open-ended question on the postsurvey and the coding of both the e-mentoring dialogues and the video self-reflection were analyzed for all participants, and then for Participants 1, 2, and 5 individually, to determine if the experiences reflected development. Eight of the nine participant responses to the open-ended question indicated that mentees reflected about the process influencing his or her teaching. Results from coding e-mentoring dialogues indicated that mentee teachers mostly experienced lesson development in dialogues with the

mentor, and most reflections from the video self-reflection were coded as contextual reflections (Calandra et al., 2009), whereby the mentee teacher indicated evidence of an analysis or an interpretation of events.

Overall, mentee teacher experiences with the framework, e-mentoring, and video self-reflection indicated that mentee teachers were engaged in development. A more detailed examination of the responses of Participants 1, 2, and 5 explores mentees who initially indicated they needed improvement in one or more components of teaching.

Mentee perception. The self-assessment using Domain 3: Instruction (Danielson et al., 2009) on the pre- and postsurvey was used to identify mentee perception of proficiency. The components of Domain 3: Instruction (Danielson et al., 2009) were rated by the mentee teachers as *unsatisfactory*, *needs improvement*, *proficient*, or *distinguished* for each of the five components (i.e., communicating with students, using questions and discussion techniques, engaging students in learning, using assessment in instruction, and demonstrating flexibility and responsiveness).

The most frequently selected rating for all participants on the presurvey was *proficient*, although Participant 1 rated him or herself at a *needs improvement* level for the use of assessment in instruction (3d), Participant 2 rated him or herself at a *needs improvement* level for the use of questioning and discussion techniques (3b) and the use of assessment in instruction (3d), and Participant 5 rated him or herself at a *needs improvement* level for the use of questioning and discussion techniques (3b). The rating of *needs improvement* is important as *needs improvement* for the use of questioning and discussion techniques (3b) is defined as having a low level of teacher questions and only partial success in having all students engage in the discussion (Danielson et al., 2009). The rating of *needs improvement* for the use of assessment in

instruction (3d) is defined as the teacher only occasionally using assessment in instruction with uneven feedback to students and limited awareness of assessment criteria for students (Danielson et al., 2009).

Of a possible 45 components from Domain 3 across the nine participants, 23 components were rated by mentees as *proficient*. A rating of *proficient* includes communications that are appropriate for students' cultures and levels of development and indicates that expectations for learning, directions, and procedures, and explanations of content are clear to students (Danielson et al., 2009). Finally, 13 of the participant responses indicated a rating of *distinguished* on the presurvey, meaning that expectations for learning, directions and procedures, and explanations of content are clear to students, and that the teacher's oral and written communication is clear and expressive, appropriate for students' cultures and levels of development, and that the teacher anticipates possible student misconceptions (Danielson et al., 2009).

For the postsurvey, the mode was also *proficient* in Domain 3: Instruction overall. Six additional mentee teachers rated themselves as *distinguished* in the postsurvey, meaning that: expectations for learning, directions, and procedures and explanations of content are clear to students and the teacher's oral and written communication is clear and expressive, appropriate for students' cultures and levels of development, and anticipates possible student misconceptions. Participant 1, however, rated him or herself as *needs improvement* for the use of questioning and discussion techniques (3b) on the postsurvey, yet self-rated as *proficient* on the presurvey. The *needs improvement* level for the component selected as a 2 is described as having a low level of questioning and discussion techniques. Participant 1 rated him or herself as *needs improvement* on the presurvey for the use of assessment in instruction (3d), but in the postsurvey rated him or herself as *proficient.*

Participant 2 rated him or herself as *proficient* in the postsurvey on the use of questioning and discussion techniques (3b) and the use of assessment in instruction (3d), yet self-rated as *needs improvement* in the presurvey for both components. Participant 5 rated him or herself as *proficient* for the use of questioning and discussion techniques (3b) on the postsurvey, yet self-rated as *needs improvement* in the presurvey.

Mentee reflection on teacher development. Mentee responses to the open-ended question from the postsurvey about the framework, e-mentoring, and video self-reflection processes indicated overall that mentees perceived the process as influencing teaching and informing the mentee's perception of his or her teaching ability (see Table 4). Respondents indicated that focusing on the framework helped them to plan and reflect on thinking (Participant 1), be more aware of how effective strategies have been (Participant 3), reflect on the process of teaching (Participant 4), confirm what the teacher thought was happening (Participant 5), focus on student reflection for learning (Participant 6), increase confidence as a new teacher (Participant 7), and adjust teaching practices (Participant 8). Participant 9 did not answer the open-ended question.

Table 4

Teacher Perceptions of Changes in Self-Efficacy and Development, by Participant

Participant	How did use of the framework, e-mentoring, and video self-reflection inform your perception of your teaching ability?
1	I used the framework to help plan and reflect on my teaching. I am capable of learning and growing throughout my career.
2	It helped me see all different sides of the framework and all the different ways it can be implemented.
3	It helped me to be more aware of how effective the strategies I have been implementing have been.
4	It allowed me to reflect on my process of teaching, because although I am not a "new" teacher I am "new" to a district where I have been given an opportunity to thoughtfully create lessons that drive 21st century appropriate instruction.
5	It matched as I thought I was doing, which was good to see (video).
6	I now want to focus on asking my students to reflect upon their learning and growth at the

	end of each lesson and/or major assignment. Through reflection, I noticed that this is an important element to further promote student learning, engagement, and retention.
7	Watching the video of me teaching was useful to see myself from an outside perspective. It was interesting to see things within my lesson and classroom that I had not previously noticed. My work with my mentor also gives me a different perspective, and one that benefits from my mentors years of experience both in teaching this material and in working within the culture of [the school district]. These tools have increased my confidence fitting in here as a new teacher and increased my confidence in my perception of my teaching ability as my strengths are confirmed by reflection and any challenges I face are done so with such support.
8	e-mentoring and video reflection allowed me to slow down and adjust my teaching based on the outcomes. I was able to look deeper at my practice and make necessary adjustments.
9	No response given

Note: The table includes participant responses to the question asking how use of the framework, e-mentoring, and video self-reflection informed the perception of teaching ability.

For the three participants who indicated *needs improvement* for one component or more on the presurvey, but *proficient* on the same components in the postsurvey using the Four Domains Self-Assessment (Danielson et al., 2009), Participant 1 indicated that, "I used the framework to help plan and reflect on my teaching. I am capable of learning and growing throughout my career." Participant 2 indicated, "It helped me see all different sides of the framework and all the different ways it can be implemented." Participant 5 indicated, "It matched as I thought I was doing, which was good to see (video)." It is interesting to note that Participants 1 and 2 responded to the open-ended question by focusing on the use of the framework as a development tool while Participant 5 focused on the video reflection as confirming what the mentee already thought about his or her teaching.

Reflection in e-mentoring dialogues. In addition to mentee responses on the open-ended question, coded using the six phases of coding using theoretical thematic analysis (Braun & Clarke, 2006), e-mentoring dialogues were analyzed for all participants, and then Participant 1, 2, and 5 separately. The e-mentoring analysis used a priori coding with a goal to, "validate or extend conceptually a theoretical framework or theory" (Hsieh & Shannon, 2005). Wu et al.

(2016) note that, "qualitative work is often foundational to future qualitative, quantitative, or mixed-method studies" (p.2), supporting the researcher's use of a priori coding modeled after Simonsen, Luebeck, and Bice (2009). Sandelowski and Barroso (2002) posit that the risks of qualitative research include that individual quotations in qualitative data may not be convincing on their own, also supporting the researcher's use of a priori coding. Sandelowski and Barroso (2002) further notes that the problem with theses and dissertations is whether it is worth the time and expense of, "locating, retrieving, and analyzing these works for inclusion in qualitative metasynthesis" (Sandelowski & Barroso, 2002, p. 5). The use of a priori coding enables future researchers to easily identify this research and the research of Simonsen, Luebeck, and Bice (2009) to confirm or corroborate other's themes.

Qualitative data from e-mentoring dialogues were analyzed using a priori coding of knowledge types (e.g., PK, PCK, CK), indicated in Table 4, to identify whether mentee teachers experienced PK and PCK aligned with the knowledge types (Simonsen, Luebeck, and Bice, 2009). As indicated in Chapter 4, the analysis of the e-mentoring dialogues did not lend itself to other themes, although the researcher was open to finding them. Qualitative data were also coded modeling (Simonsen et al., 2009) by the type of reflection (i.e., technical, contextual, or critical) and by the competency discussed (i.e., knowledge, skills, or dispositions). A total of 24 mentee messages from nine mentor and mentee dialogues revealed 15 PK knowledge types, eight PCK knowledge types, and only one CK knowledge type; Table 5 lists the knowledge types.

Table 5

Knowledge Types

Code	Knowledge Type	Message Subject Evidence
PK	Pedagogical Knowledge	School and classroom issues

| PCK | Pedagogical Content Knowledge | Teaching practice within or regarding specific content |
| CK | Content Knowledge | Content knowledge, not teaching of content |

Note: The knowledge types (Simonsen et al., 2009) are adapted from Schulman (1987). Coded messages indicate types of interactions with the mentor.

The PK knowledge types varied across mentees and included topics that support teacher development, such as self-reflection, formal and informal assessment, peer-to-peer questioning and discussion, self-monitoring, and aligning the lesson with the Danielson (2011) rubric. Instructional strategies were also noted, such as grouping students, think-pair-share strategies for student collaboration, exit tickets as assessment tools, clarity of directions, ways to initiate student thinking, cues, and general statements about the use of group activities. For Participant 7, the focus was mostly on school and classroom pedagogy:

> Students are informally assessed during each component of the lesson and at the
> end of each component to gauge student understanding and identify which
> students need further support or conferencing. The exit ticket serves as a final
> formative assessment to ensure that each individual student met the objective of
> the lesson.

The eight PCK knowledge types identified included topics that support teacher development, such as conversation starters for self-reflections, book club group discussion sessions, graphic organizer categorizing of specific social studies topics, mathematics maps to show relationships between parts and the whole to set up proportions, and increasing weights in increments of 2.5 pounds, barbell modifications, and cardiovascular warm-ups and pacing strategies for resting, active, and recovering heart rate goals in physical education class. Mentee teacher statements focused heavily on teaching practice regarding specific content, such as,

"Students will work in groups to complete a tree map [graphic organizer] categorizing labor movement concepts. When they are done using the text to complete the maps, the groups will present to each other" (Participant 4).

E-mentoring dialogues for Participants 1, 2, and 5 indicated evidence of PK. Participant 1 indicated, "I will provide five conversation starters for student led discussion groups and observe the conversations of the students to see if they are self-reflective." Participant 2 indicated, "I can think of a few students who would really benefit from self-reflecting after a lesson. I definitely want to make time to do this because I think it helps them become more accountable in their own work." Participant 5 focused heavily on grouping as a challenge in the dialogue with the mentor, indicating:

I think in this case, I am going to group in pairs of 2, 2, and then 1. Pair 1: MZ and RK, Pair 2: AS and KM, Pair 3: JW. These pairs work to the strengths of each of the students. For example, JW is least distracted working independently. MZ and RK work well together, even though initially, they always ask to work independently. Lastly, AS and KM work very well together. AS is able to hold KM to a higher standard when working in small group.

Perceived decrease in proficiency. Participant 1's rating change from *proficient* to *needs improvement* for the use of questioning and discussion techniques (3b) is noteworthy. The *needs improvement* level for the component is described as having a low level of questioning and discussion techniques. Participant 1's e-mentoring dialogue about discussion starters conceptually focused on providing five conversation starters for student-led discussion groups but did not provide specific examples of discussion starters. The absence of specific examples may have shaped his or her view of classroom performance in that area for the mentee.

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Video self-reflections. Next, findings from the Critical Incident Reflection Form (Calandra et al., 2009) were coded by types of reflection and types of competency, which also contributed to understanding mentee teacher development as most reflections focused on mentee teacher development (see Tables 6 and 7).

Table 6

Types of Reflection

Technical	Teaching techniques, procedures, knowledge base, student actions
Contextual	Evidence of analysis or interpretation of events
Critical	Observation about fairness, ethics, equity or power

Table 7

Types of Competency

Knowledge	Knowledge of content, pedagogy, PCK, learners, context
Skills	Knowledge of planning, instructional strategies and tools, implementing curriculum, and communication
Dispositions	Attitudes, values, professional beliefs, reflective, action oriented, inquiry based, collegial, open minded, and caring

Note: The types of reflection and competency were adapted from Calandra et al. (2009) and were used to code mentee teacher self-reflections about teaching.

A total of 102 reflections on nine critical incidents were recorded by the mentee teachers. Some critical incidents included an observation of peer-to-peer questioning (Participant 3), and an observation of the absence of rigorous teacher-directed questions (Participant 4). There were 15 incidents of technical reflections, whereby the mentee teacher discussed teaching techniques, procedures, knowledge base, or student actions. There were 39 responses coded as contextual

reflections, whereby the mentee teacher indicated evidence of an analysis or an interpretation of events. Only one participant was noted as including a critical reflection about power, whereby the mentee teacher reflected that the student "took the lesson learned into a direction that I wasn't prepared for" (Participant 9).

In addition to the types of reflection, types of competency for the critical reflections were coded by knowledge, skills, or dispositions, and support the e-mentoring dialogues. Fifteen mentee teacher responses on the Critical Incident Reflection Form (Calandra et al., 2009) included statements coded as knowledge of content, pedagogy, PCK, learners, or context, called knowledge competency. Twenty mentee teacher responses were coded as knowledge of planning, instructional strategies and tools, implementing curriculum, or communication. Finally, 12 mentee teacher reflections were coded as dispositions or attitudes, values, professional beliefs, reflective, action oriented, inquiry based, collegial, open minded, and caring. Dual coding occurred for 11 of the 12 items, which were coded as skills competency and dispositions. Overall, the types of competency in the self-reflection of the lesson were similar to the teacher development practices indicated in the e-mentoring dialogues as mentee teachers spent a considerable amount of time on instructional strategies and tools and implementing the curriculum.

Critical incidents for Participants 1, 2, and 5 included teacher perception of student responses to teacher directed questions (Participant 1), teacher observations of a student struggling with reading fluency (Participant 2), and teacher question and discussion techniques (Participant 5). Participants reflected about their feelings about the experience identified in the video self-reflection and what they would do differently in the next lesson in light of the new understanding. Participant 1 indicated,

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After asking question after question, trying to extract/scaffold and elicit a response, I was feeling frustrated that that students were dancing around a concrete answer. They were showing understanding but not able to accurately answer the higher-level question. A student responded with an actual answer after I referred to a specific word list.

Participant 1 indicated that in the future, he would, "model more think-alouds to answer higher level questions. Provide more structured examples and preview additional vocabulary. I will also visit other teachers and classrooms to see how other teachers are able to achieve."

Participant 2 indicated,

When one student was reading aloud she had a hard time reading with fluency. I wish I would have taken the time to scoop a few of those sentences to help address the fluency. About a week prior to this lesson, I taught the strategy of scooping sentences to read with phrases.

Participant 2 indicated that in the future, "I will address weaknesses in the moment. I think this will be helpful because students with IEP's need these reinforcement lessons to remember the strategies they have been taught."

Participant 5 indicated,

When I was teaching the skill breakdown, I related the squat to sitting in a chair and used humor to show the correct examples. I could feel that I had all of their attention and used a 4-step break down that was simple and easy to remember. I felt proud of myself because I felt like the students understood this new skill.

Participant 5 indicated that in the future, "I will use humor or a relatable memory to connect with the students when teaching skill breakdown. Keep teaching and learning fun and excited for the students. I know with each class I teach, I can become a better teacher!"

Summary. Self-ratings using the Danielson et al., Framework for Teaching (2009), reflective answers to an open-ended question, e-mentoring dialogues, and the Critical Incident Reflection Form (Calandra et al., 2009) responses indicated the existence of teacher enactment and reflection, which are key components in the model of professional growth (Clarke & Hollingsworth, 2002). Self-reflection supporting experimentation in the domain of practice creates the change pathways that lead to growth (Clarke and Hollingsworth, 2002).

The Danielson et al. (2009) self-assessment activity supports reflection, or the change pathway described by Clarke and Hollingsworth (2002) necessary for growth in the personal domain, external domain, and domain of practice. Although not all mentee teachers recorded a positive change in the self-assessment from pre- to postsurvey, the ratings are evidence of teacher development through reflection. The change from the presurvey results about teacher perceptions using the Danielson Framework for Teaching (Danielson et al., 2009) indicates that reflection has occurred, similar to e-mentoring and the video self-reflections. Data found in the e-mentoring dialogues about lesson creation represents the domain of practice, in which mentee teacher experimentation takes place and will be explored in the Discussion section of this chapter.

Teacher development, indicated on the Critical Incident Reflection Form (Calandra et al., 2009) as changes for the future, was identified as a change pathway that supported growth in one domain based on reflection or enactment in another domain. The critical incident activity provided opportunities for reflection, illustrating that the domain of practice (e.g., lesson development) and external domain (e.g., mentoring sessions) influence the mentee teachers' personal domain (e.g., knowledge, beliefs, and attitudes).

E-mentoring and Video Self-reflection (RQ3)

The third research question focused on how e-mentoring and video self-reflection supported goal setting, collaboration, and self-reflection. Regarding goal setting, two open-ended questions from the postsurvey asked the mentee teachers how focusing on one component for growth from Domain 3: Instruction influenced teaching, if at all, and how e-mentoring and reflecting on the video of teaching changed the perception of that component, if at all. Mentee teacher statements about collaboration and self-reflection were captured from the e-mentoring dialogues and the Critical Incidents Reflection Form (Calandra et al., 2009). Overall, substantial evidence existed to support that goal setting, collaboration, and self-reflection occurred, even though, interestingly, not all mentee teachers indicated the value of e-mentoring and video self-reflection in their responses to the open-ended question.

Goal setting. When asked how focusing on one component for growth from Domain 3: Instruction influenced the perception of teaching or changed one's perception of the component for growth, if at all, participants spoke about honing a skill (Participant 1), designing specific assessments (Participant 3), guiding the lesson (Participant 4) and guiding the alignment of the lesson to the reflection process (Participants 6 and 8; see Table 8).

Table 8

Focusing on One Component for Growth

Participant	How did focusing on one component impact your teaching, if at all?
1	It allowed me an opportunity to focus and hone in on a particular skill. I was more aware of how to scaffold questions, allowing me to present high order thinking questions even when concepts are difficult. I was able to reflect and create actional feedback regarding this component.
2	I looked into the DOK (Depth of Knowledge) to help guide my questioning
3	It helped me isolate an area of need and design specific assessments to address this area.
4	Focusing on one component worked well, because it guided and paved the road for my engaging lesson.
5	It made me think am I keeping everyone focused and involved in learning.

6	Focusing on this component helped guide the alignment of my lesson and my reflection process.
7	Focusing on one component meant that there was a consistent thread running through my lesson planning and reflections.
8	Focusing on this component helped me to reflect on my teaching. I was able to focus on one area and work with my mentor to plan and discuss on my teaching.
9	No response given

Another open-ended question from the postsurvey about goal setting asked mentee

teachers how e-mentoring and reflecting on a video of one's own teaching changed the

perception of the selected component for growth, if at all. The results indicated in Table 9 were

more varied when compared to the benefit of goal setting. Four participants responded that e-

mentoring and video reflection allowed him or her to: see student behaviors (Participant 1), see

what the mentee teacher was saying and asking (Participant 2), see what students see and

determine pacing (Participant 3), and share ideas with the mentor and critique levels of

questioning (Participant 4). One mentee said e-mentoring was more work and not helpful

(Participant 5), while another said it was more challenging than communicating in person

(Participant 6). One participant said that e-mentoring and reflection did not change his or her

perception of the component (Participant 7). Participants 8 and 9 did not respond to the open-

ended question.

Table 9

Changes in Perception of E-Mentoring and Video Self-Reflection

Participant	How did e-mentoring and reflecting on the video of your own teaching change your perception of that component, if at all?
1	It allowed me to see more student behaviors. What did they say or do, what did/didn't they react to.
2	I was able to see what I am actually saying and what questions I was actually asking.
3	Watching myself teach was a helpful because it enables me to see what the students see. It helps me determine if I am going at a fast pace or if my pace is suitable for the students.
4	E-Mentoring prior to the video helped me to drive engaging instruction and bounce ideas between my mentor and I. Reflecting on the video allowed me to critique my levels of questioning with students. And work on prompting my self-contained learners to thinking deeper and more critically.

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5	It was more work, I did not find it helpful. I work with my teacher in the classroom and he is able to give me feedback on the spot.
6	E-mentoring was a bit challenging because I find it easier and more meaningful to communicate in person. I found myself summarizing conversations we had in person. Watching the video was very helpful because it is difficult to rely on memory after the lesson while focusing on executing the lesson.
7	E-mentoring and reflecting on the video of my lesson did not change my perception of the 3b questioning and discussion technique component.
8	No response given
9	No response given

Collaboration. Regarding collaboration, e-mentoring dialogues included interactions between the mentor and the mentee teacher about lesson development. In an e-mentoring dialogue about a codeveloped lesson for a book club, Participant 2 asked the mentor, "Should I have more than one question within the discussion, or have one very analytical question that makes them think and keep questioning each other?" The mentor responded,

I think I'd begin with a few questions as they learn how to have a discussion. One

to two deep questions could be your goal, but maybe for your group they may

need practice and scaffolding to get there. Or, what about having each student

prepare an implicit question to bring to the group?

Another mentee teacher described putting students into groups to create a graphic

organizer categorizing the Labor Movement concepts to present to the rest of the class. The

mentee explained that, "Peer to peer [sic] questioning and discussion will naturally take place

during the presentations" (Participant 3). The mentor for Participant 3 responded by providing a

pedagogical approach to group work, "I like this idea of the groups presenting to each other. You

might want to consider having students work independently first so that they have something to

bring to their group."

In a third example of collaboration from the e-mentoring dialogues, the mentor and

mentee engaged in a discussion about whether the lesson activity was aligned with the Danielson

(2011) components. The mentee teacher indicated, "I have began [sic] to plan out my lesson in alignment with the Danielson Framework for Teaching. My focus is now on creating the materials to match my plan. Do you think my planning aligns to Danielson appropriately (Participant 4)?" The mentor for Participant 4 responded, "Your lesson most certainly aligns with the Danielson rubric. I like how you recognized that some students may find this challenging and that you are allowing choice, which is a component of Danielson." The mentor continued to collaborate on the component of providing student choice when discussing a specific student, "Differentiating for MZ will help keep him engaged. Have you thought about how you are going to group the students?" The mentee teacher responded with how he planned to group each student by considering each child's ability to work independently or in groups.

In a fourth example of collaboration found in e-mentoring dialogues, a mentor and mentee sought to determine details of the lesson, whether the activity should be completed in a whole group or partner setting, and the length of time for the activity. When the mentee teacher expressed concern that the groups might be too big (i.e., not permitting every student to partake in the exercise) the mentor responded, "Let's compromise and split the class in half. Only do two scenarios and have 3–4 students represent each school of thought."

In a fifth example, a mentee teacher indicated that he wanted to work with the students on following directions:

> Recently what I am noticing is that some of my students process the directions
> and act on them while others wait to see what everyone else is doing. I think that I
> need to review different types of directions, teach them a few strategies to help
> them following the directions, and focus on the language and formats I am using
> when giving both written and verbal directions (Participant 8).

The mentor responded with a simple question in this collaboration, "Okay, so what would that look like?" The question prompted the following detailed response from the mentee:

> I am thinking that I want to do a lesson where I teach the students about different types of directions that they will encounter throughout the day. I think the two most common ones are verbal and written. My plan is to introduce and model myself following each set of directions. I will them give the students an opportunity to follow both types of directions with support. Finally, I'll have them complete various sets of directions independently. Currently they are independent with 1–2 step directions. My goal is to get them to a point where they can complete 3–5 steps at any given time with both verbal and written directions without prompting. I will also provide two strategies for the students, checking off each step as you complete it for written directions, and jotting down the steps for verbal directions. I plan to have them try each strategy at least 1x [one time]. Once we complete the instruction piece I am going to provide time for them to self reflect [sic]. Ideally, they will recognize where their strengths/weaknesses fall in regard to following multistep directions and determine which strategies will be most helpful. I will also have them share other strategies that have worked for them in the past.
>
> Some things I need to think about:
>
> My language when giving directions needs to be explicit and consistent. At times I feel that the breakdown occurs because of my language.
>
> Less is more: I have a tendency to say too much!

I need to have a cue to gain the attention of my students. In the past I used, "Eyes

on me." I feel that with my current setting and population this is not an

appropriate cue. Any ideas? (Participant 8)

The mentor and mentee dialogue continued, as the mentor provided examples of the cues

the mentee could provide for the students, and statements such as, "It may require a bit of

scaffolding that can be eventually faded away as they make these strategies a part of their natural

routine." The mentee responded to the mentor collaboration with the following reaction and plan

for future lessons:

Yes, I totally agree about generalizing the skills and making them functional so

they can be generalized. As I am preparing for future lessons, I am planning the

instructional pieces for each lesson and offering them opportunities to practice

following both oral and written directions. I am incorporating a direction box on

the top of some assignments where they can either jot down directions when I

give them orally or check off the directions as they complete them when I supply

them with written directions on an assignment (Participant 8).

E-mentoring dialogues provided evidence of collaboration. The dialogues included

interactions between mentors and mentee teachers about lesson development. Through

lesson development with the mentor, mentee teachers made changes to lesson plans that

resulted in self-reflection and teacher growth.

Self-reflection. The mentee teachers recorded self-reflections of the video of teaching on

the Critical Incident Reflection Form (Calandra et al., 2009). Reflections provided information

on perceived strengths and weaknesses of their teaching. First, mentee teachers were asked to

describe the feelings they had as the critical incident was initially experienced. One mentee

described how he wished he had provided support for the student who was struggling with reading fluency (Participant 2). Another mentee expressed that he felt pride when watching a meaningful incident whereby students engaged in peer-to-peer questioning (Participant 3). Yet another mentee teacher indicated sometimes being pleased with the questioning techniques used and also noting "other times where I felt almost a sense of uncomfort [sic], because I felt as though I could have been more rigorous and specific in my questioning" (Participant 4). Four mentee teachers used the word "frustrated" to describe their feelings, with examples about repeatedly trying to scaffold questions to elicit a response from students who were not able to answer a higher-level question (Participant 1), not finishing the lesson (Participant 7), trying to include too much information in a lesson (Participant 8), or because, "the student took the lesson learned into a direction that I wasn't prepared for" (Participant 9).

Participants also reflected about personal beliefs related to teaching and learning identified when reflecting on the incident. Three mentee teachers spoke about student participation and the pedagogy required. Participant 1 indicated that, "students can reach success when given the right tools to succeed. Providing them with correct strategies and scaffolds to answer higher level, open-ended questions promotes learning and growth for students." Participant 2 stated, "I feel that creating opportunities for students to engage in questioning and discussion allows students to make meaningful connections on their own," and Participant 4 indicated, "Thinking about the multi-step procedures of a percent problem engages the student in their own learning."

Two other participants wrote about responding to students during the lesson. Participant 7 wrote, "prepare for the unexpected as much as possible. This could involve having contingency plans for lessons or concepts that have the potential to require more time, or including buffers of

time built into lesson planning to accommodate these situations," and Participant 8 indicated, "Reflection needs to take place during lessons as well as after and the process of planning can always be adjusted based on observations and needs."

Participants also responded to the question of how the use of the framework, e-mentoring, and video self-reflection informed the perception of his or her teaching ability. Four participants reflected on teaching strategies and the process of teaching. Participant 1 indicated that the framework was useful for planning and reflecting on teaching and that, "I am capable of learning and growing throughout my career." Participant 3 indicated, "It helped me be more aware of how effective the strategies I have been implementing have been," and Participant 6 wrote,

> I now want to focus on asking my students to reflect upon their learning and growth at the end of each lesson and/or major assignment. Through reflection, I noticed that this is an important element to further promote student learning, engagement, and retention.

Finally, Participant 9 indicated "e-mentoring and video reflection allowed me to slow down and adjust my teaching based on the outcomes. I was able to look deeper at my practice and make necessary adjustments."

Participants 1, 2, and 5 were analyzed more closely due to their self-rating on the presurvey as *needs improvement* for the use of assessment in instruction (Participant 1), the use of questioning and discussion techniques and the use of assessment in instruction (Participant 2), and the use of questioning and discussion techniques (Participant 5). Regarding goal setting, the participants responded that focusing on one component helped to maintain a focus and hone in on a particular skill (Participant 1), guide questioning (Participant 2), and keep everyone

involved in learning (Participant 5). Regarding collaboration, Participant 1 wrote about developing conversation starters for student led discussion groups, but the mentor for Participant 1 did not respond to the mentee dialogue box. Participant 2 and the mentor engaged in a dialogue about student reflection and shared resources, and Participant 5 and the mentor collaborated about ranges in repetition for different ability levels when weight lifting. Regarding self-reflection, Participant 1 used the term, "frustrated" to describe feelings about repeatedly trying to scaffold questions to elicit a response from students who were not able to answer a higher-level question, but indicated that with the right tools, strategies, and scaffolds, students can achieve success; Participant 1 was the only mentee to self-assess the questioning and discussion techniques component (3b) on the postsurvey as *needs improvement.* Participant 2 self-assessed, using the Danielson et al. rubric (2009), that students can make meaningful connections when opportunities are provided for engagement in questioning and discussion, and Participant 5 indicated on the rubric rating that students were able to learn a new skill based on an adaptation by the teacher during instruction.

Summary. The open-ended questions from the postsurvey regarding goal setting provided further insights into the key components in the interconnected model of professional growth (Clarke & Hollingsworth, 2002). Goal setting is situated in the domain of practice, with reflection influencing the personal domain (i.e., knowledge, beliefs, and attitude). Self-reflection supported the change pathways that led to perceived growth for teachers regarding individual goals.

The domain of practice constitutes professional experiences. Specific goals related to instruction by eight of the mentee teachers indicated that focusing on the component of

instruction helped support higher order thinking (Participant 1), isolate areas of need for students (Participant 3), support focus (Participant 5), and support alignment (Participant 6).

Although there were indications that goal setting supported mentee teachers' professional growth, only four participants indicated a positive response to e-mentoring and video reflection (Participant 1, 2, 3, and 9). Positive responses included comments that e-mentoring allowed mentee teachers to see student and teacher behaviors and to share ideas. Three participants responded negatively, commenting on e-mentoring and video reflection being more work (Participant 5), challenging (Participant 6), or not changing perception (Participant 7); two participants did not respond at all. Overall, the professional experience of goal setting contributed to a change pathway influencing the personal domain, yet mentee teachers did not necessarily indicate e-mentoring as being supportive of their growth.

The interconnected model of professional growth is explained using evidence recorded in dialogues, self-assessments supporting collaboration and self-reflection, and self-efficacy in instruction, student engagement, and classroom management. The responses to open-ended questions, however, show variation in mentee teacher perception of e-mentoring and video reflection as supporting professional growth. Collaboration with a mentor was noted in e-mentoring dialogues and indicated: scaffolding (Participant 8), questioning an approach to a lesson and alignment of a rubric (Participant 4), and questioning from peer-to-peer (Participant 3). The evidence of collaboration in the domain of practice, therefore, supports professional growth, even though some mentee teachers did not indicate that e-mentoring supported growth when responding to the open-ended question. Similarly, open-ended responses indicated that self-reflection supported growth by helping mentee teachers understand how to better support

students who struggle (Participant 2) and the feelings of pride or pleasure in teaching (Participants 3 and 4).

Conclusions

The mentee teachers had experience teaching and preparing for teaching (e.g., student teaching, having a mentor teacher) prior to the intervention. The findings from this study indicate that mean and mode did not decline for Efficacy in Student Engagement, Efficacy in Instructional Strategies, and Efficacy in Classroom Management using the TSES (Tschannen-Moran and Woolfolk-Hoy, 2001). Teacher development was found in the e-mentoring dialogues to support efficacy. Self-reflection also supported efficacy; analysis of the mentee teachers' Critical Incident Reflection Form (Calandra et al., 2009) was indicative of self-reflection, as a majority of the responses included evidence of analysis or an interpretation of events, as indicated in the Danielson et al. (2009) rubric. Additionally, many of the critical incidents demonstrated knowledge of planning, instructional strategies and tools, implementation of curriculum, or communication.

Overall, mentee teacher efficacy did not decrease in Student Engagement, Instructional Strategies, and Classroom Management and dialogues and self-reflections included indicators of professional development. Responses regarding teacher perceptions of change varied, although more teachers rated themselves as *distinguished* in the postsurvey of the Four Domains Self-Assessment (Danielson et al., 2009) than in the presurvey, and the most frequently selected rating in Domain 3: Instruction (Danielson et al., 2009) was *proficient*. Finally, e-mentoring dialogues and video self-reflection were indicative of goal setting, collaboration, and self-reflection.

Discussion

The findings of the study are discussed based on the goals of self-efficacy and mentee teacher development through goal setting, collaboration, and self-reflection. Additionally, the findings were framed using the interconnected model of professional growth (Clarke & Hollingsworth, 2002), which illuminated that mentee teacher development was supported through reflection and enactment among various domains, including outside stimulus, teacher beliefs, and professional experiences.

Clarke and Hollingsworth (2002) refer to the change environment as a setting needed for development, experimentation, and participation to promote growth and support change through the connected domains. Mentoring, including targeting a component for growth, e-mentoring for the codevelopment of a lesson, and video reflection, enabled mentee teachers to experience what Clarke and Hollingsworth (2002) refer to as "change as training" (p. 948). Mentee teachers collaborated with a mentor on lesson development, used the videotaped lesson for self-assessment and self-reflection, and self-evaluated using the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001) and the Four Domains Self-Assessment (Danielson et al., 2009). The implications are that reflection may connect the external domain (e.g., e-mentoring) with the domain of practice (e.g., lesson implementation with use of the framework and video self-reflection) and the personal domain (e.g., beliefs), thus potentially influencing the domain of consequence.

The change sequences or growth pathways were found in the mentee teacher reflections on the Critical Incident Reflection Form (Calandra et al., 2009), and an open-ended survey question asking how the use of the Danielson Framework for Teaching (2011) and video self-reflection informed teacher ability. Data suggested that through enactment (i.e., implementation)

and reflection, factors from the external domain and the domain of practice are related to the personal domain of knowledge, beliefs, and attitudes about teaching. Mentee teachers demonstrated goal setting and collaboration that will hopefully support continuous self-improvement after mentoring has concluded. Overall, there is evidence that mentee teachers "change inevitably through professional activity" (Clarke & Hollingsworth, 2002, p. 948).

Teacher Self-efficacy

The mean and mode scores for the subfactors of Efficacy in Student Engagement, Instructional Strategies, and Classroom Management are important as efficacy may be correlated with PCK development as a factor contributing to proficiency (Swackhamer et al., 2009). The mean scores are remarkable in that they did not decline when researchers have posited that efficacy beliefs are "resistant to change" after they have been established (i.e., the first several years in the field; Woolfolk-Hoy & Spero, 2005, p. 346).

Chester and Beaudin (1996) found that changes in teachers' self-efficacy is associated with school practices for novice teachers, experienced teachers new to schools, teachers migrating from another district, or teachers who returned to teaching. There is also support for the use of the teacher evaluations in self-efficacy. Re-evaluations may actually provide the opportunity for the teacher to, "make a more realistic self-efficacy appraisal" (Siwatu, 2005, p. 359). For eight of the nine pairs, mentors collaborated with mentee teachers in a supportive school setting. Research indicates that teachers' self-efficacy beliefs are specific to the context of the school setting (Siwatu, 2011).

Using the interconnected model of professional growth (Clarke & Hollingsworth, 2002), knowledge, beliefs, and attitudes (i.e., personal domain) were influenced by the mentee teachers' lesson preparation (i.e., external domain) and implementation (i.e., domain of practice). The

mean scores indicate that the personal domain changed after the intervention, or that mentee teacher knowledge, beliefs, and attitudes changed after the e-mentoring and video self-reflection occurred. A pattern of growth is demonstrated through the act of reflection, or cognition change, as described by Clark and Hollingsworth (2002). Self-efficacy supports that beliefs in specific areas of ability, or domains, helps to identify some level of individual perceived competence (Bandura, 1986).

Teacher Development

Three sets of data suggested that mentee teacher development occurred as a result of the intervention. First, the evidence found in mean scores indicated efficacy in instructional strategies. Next, most e-mentoring dialogue messages focused on assessment, questioning techniques, grouping, and think-pair-share activities, and dialogues focused heavily on teaching practice regarding specific content. Finally, teacher perception of development, identified using the Four Domains Self-Assessment (Danielson et al., 2009), showed that there were six more mentee teachers who rated themselves as *distinguished* in the postsurvey. The increase in scores may support existing research that defining levels of proficiency using components of teaching provides an opportunity for teacher growth (Evans et al., 2015). The increase in scores also supports teacher development identified in empirical studies on mentoring in the context of mentoring that focuses on learning-while-doing (Aydin et al., 2015; Barnett & Friedrichsen, 2015; Bradbury, 2010) and content-based mentoring that supports the coconstruction of knowledge (Achinstein & Davis, 2014; Simonsen et al., 2009).

Additionally, knowledge, beliefs, and attitudes (i.e., personal domain) may have been influenced by the mentee teachers' lesson preparation (i.e., external domain) and implementation (i.e., domain of practice), as indicated by the qualitative coding. The personal domain, including

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Efficacy in Instructional Strategies scores, demonstrates a pattern of growth supported by e-mentoring dialogues that included the preparation and implementation of a lesson. The pattern of growth can be described as occurring from the enactment of the lesson, which may have influenced the mentee teachers' self-efficacy.

Self-efficacy scores for Participants 1, 2, and 5 on the TSES (Tschannen-Moran & Woolfolk Hoy, 2001) pre- and postsurvey were noteworthy as all participants created lessons with the mentor focused on areas the mentee indicated they could do very little or only somewhat to support students in instructional strategies and questioning and discussion techniques. Participant 1 rated him or herself as a 3 on the presurvey, or *very little,* for how much the participant can use a variety of instructional strategies. Participant 1 rated him or herself a 7 on the postsurvey, or *quite a bit,* after a lesson focused on student-led discussion groups and conversation starters. Participant 2 also indicated an increase in rating from a 5 on the presurvey to a 6 on the postsurvey for the same question, with a lesson design focused on discussion techniques, and a change from a rating of 5 to a 7 for the use of assessment strategies and discussed the use of rating scales for students to set goals in the lesson codevelopment. Participant 5 indicated a change from a self-rating of 5 to a 7 on the use of assessment strategies, and also described, in the lesson codevelopment, developing students' prior knowledge to increase their capacity to ask questions relative to the activities. Each of the three participants indicated a change in the self-rating after directly addressing the area in the lesson development with the mentor.

Participants 1, 2, and 5 also indicated a change from needs improvement to proficient from the pre- to postsurvey for the components about assessment in instructional strategies and questioning and discussion techniques using the Danielson et al. self-assessment (2009). Only

Participant 1 indicated through self-reflection in the postsurvey that he needed improvement in a new area, the component for questioning and discussion techniques (3b). Although Participant 1 attempted to engage in a dialogue with the mentor about questioning, the mentor did not engage in dialogue in the codevelopment of the lesson and did not provide support on the lesson dialog box.

Participants 2 and 5 engaged in dialogue with the mentor regarding both the use of questioning and discussion techniques (Participant 2) and the use of assessments in instruction (Participants 2 and 5), which were components initially identified by the participants as needs improvement. Discussions with the mentor and the revised ratings support Chester and Beaudin's (1996) findings that, for experienced teachers in a new school, changes in teachers' self-efficacy is associated with school practices supporting teacher development.

Goal Setting

When asked how e-mentoring and video reflection changed the mentee teachers' perceptions of a component for growth, responses were varied. Participants 1, 2, and 3 did not address e-mentoring in their responses, Participant 5 said it was more work and Participant 6 said e-mentoring was challenging. Only Participant 4 said that e-mentoring was helpful. Regarding a change in teacher perception after the video self-reflection, five of the participants (i.e., Participants 1, 2, 3, 4, and 6 indicated that video reflection positively influenced their perception of the component for growth.

Minimal positive responses to e-mentoring is surprising when one considers the results of the teacher efficacy scale after the intervention, although a comparable empirical study using a pre- and postsurvey self-efficacy scale for 43 teachers over a 10-week mentoring intervention had similar results (Lombardo-Graves, 2014). The study revealed that teacher self-efficacy

increased after an intervention focused on teacher development regarding a specific goal, yet teacher perception of the influence of e-mentoring did not match the changes in efficacy identified.

For the video self-reflection, teacher responses were more favorable. Five of the seven respondents indicated that the video self-reflection was helpful (Participants 1, 2, 3, 4, and 6), but one said it did not change his perception of the component (Participant 7); two participants did not respond. Perceptions of video reflection is important when compared to other studies that have shown PCK development through video self-assessments (e.g., Calandra et al., 2009; Wright, 2008). The video reflection process can result in "more pedagogically connected reflective pieces" and reflections can show changes in teacher perspectives about their teaching (Calandra et al., 2009, p. 81). Similar results occurred in this study, as mentee teachers showed evidence of pedagogically reflective pieces on the Critical Incident Reflection Form (Calandra et al., 2009).

There was a positive mentee teacher response regarding video reflection as a support for goal setting, but no response or a negative response about e-mentoring as a support for goal setting. The findings based on the open-ended question alone, therefore, do not support that e-mentoring has the capability to take on a robust role in mentee teacher development. Contrary to the response to e-mentoring, every e-mentoring dialogue included a lesson targeting a component for growth, dialogue with evidence of teacher development, and lessons that were self-assessed by the mentee and included areas of growth and new areas for focus. The inclusions support that, despite teacher perception, e-mentoring has the capability to take on a robust role in mentee teacher development for its capacity to: provide a platform to address timely concerns requiring an expert (Alsbury & Hackmann, 2006; Hansford & Ehrich, 2006), promote

collaboration (Bang & Luft, 2013; Cothran et al., 2009; Hunt et al., 2013; Shrestha et al., 2009),

promote lesson development (Bang, 2013; Bang & Luft, 2013; Simonsen et al., 2009) and

support reflection (Farr & Riorden, 2015).

Collaboration

Despite no or negative responses on the influence of e-mentoring reported in the last

section, collaborative e-mentoring dialogues existed for seven of the nine participants. The

external domain and the domain of practice included the teacher's ability to experiment with

ideas and the professional experiences of the mentee teacher. The professional experiences

included evidence of dialogues about teaching. The dialogues and use of the framework are

evidence that professional experiences occurred for the mentee in the external domain and the

domain of practice. Evidence of the importance of the dialogues for each pair is identified in the

types of discussions about lesson development, grouping, alignment of the lesson with a

component for growth, lesson details, following directions, and planning for future lessons. Each

of the seven dialogues articulated a plan for the current or future lesson. Collaboration, therefore,

supported goal setting for seven of the nine participants.

E-mentoring reflects the external domain, or outside stimulus, for the mentee teacher, as

dialogues included interactions between the mentor and mentee targeting a component for

growth in lesson development. Interactions as part of the external domain indicated

collaboration, as evidenced by their exchanges, thus potentially influencing both the domain of

practice and the personal domain. Through e-mentoring, the mentee teachers experimented with

ideas, gained professional experience, and built on what he knows.

Self-reflection

There is evidence supporting that self-reflection occurred during the intervention. Reflections for most participants indicated evidence of a mentee teacher analysis or an interpretation of a teaching event in the 102 reflections recorded on the Critical Incident Reflection Form (Calandra et al., 2009). Mentee statements provided information on perceived strengths and weaknesses of performance, and personal beliefs related to teaching and learning, which are evidence of reflection. Similar to empirical findings on preservice teachers, the mentee teacher statements supported that reflection enabled teachers to identify areas of strength and areas for growth in teaching (Chamoso et al., 2012). The evidence further supported studies on reflective practice and PCK development that reveal that reflection-on-action and reflection-in-action result in greater PCK development as the novice teacher is situated in the learning process (Chan & Yung, 2016; Park & Oliver, 2008). Finally, the evidence supported studies that indicate the value of video reflection for promoting self-reflective practice (Calandra et al., 2009; Wright, 2008) and for promoting growth when used with a teaching framework (Mielke, 2012; Wright, 2008).

The responses from the Critical Incident Reflection Form (Calandra et al., 2009), or the reflection on one's own teaching, were illustrative of the growth pathways and change sequences experienced by the mentee teachers. An open-ended question, for example, asked how focusing on one component influenced teaching. Eight of the nine participants who responded indicated that the experience of focusing on one component positively supported their learning. Reflection on the domain of practice may have supported the domain of consequence, or outcomes, and the personal domain, or what the teacher knows or believes.

Less robust findings supporting self-reflection came from participant responses to an open-ended question about how the Framework for Teaching (Danielson, 2011), e-mentoring, and video self-reflection informed the perception of teaching ability. Only four of the nine participants reflected on teaching strategies and the process of teaching. Again, less robust findings may be attributable to the open-ended question including three distinct sub-questions that were not all addressed in each mentee teacher response.

Limitations

This study has limitations based on the characteristics of the district, experience of teachers, length of the study, use of the specific research design, structure of the e-mentoring dialogues and video reflections, and the coding techniques used. First, the demographics of the district are limited to a high-performing student population in a high socioeconomic setting. The demographics of the mentee teacher population are also limited to teachers who are new to the district but already have 3-10 years of teaching experience, with all but one participant experiencing mentoring prior to this teaching position. Based on the limited and specific demographics, the findings cannot be used to describe a typical school setting in the United States.

Results of the study, therefore, would likely have been different with teachers with less or no experience and in typical or high-need schools. Next, the length of the study was from July to December, yet the typical mentoring program is a 1-year program. Although long-term outcomes of goal setting, collaboration, and reflection were met as identified in the logic model, changes in teacher efficacy and evidence of PCK development may have been more developed in a study that lasted longer than 6 months. Additionally, the researcher's views of PK and PCK could be

different from those intended by Calandra et al. (2009). The researcher cannot know all of the content areas well enough to determine with certainty that all evidence of PCK is accurate.

There were also limitations to using the convergent design based on the small sample size. The sample size of nine participants prohibited the use of rigorous statistical tests and limited the quantitative findings to descriptive statistics (Creswell & Plano-Clark, 2011). Although the researcher collected both qualitative and quantitative data from the same nine participants, not all participants answered all parts of the survey questions nor did all participants address all parts of the qualitative open-ended questions. These omissions were few in number, but they occurred nonetheless. The structure of the e-mentoring dialogue and video reflections also did not lend itself to deeper analysis.

Finally, there were limitations to the use of provisional coding used to analyze the e-mentoring dialogues and the video self-reflections. Saldaña (2016) explains that preconceptions about expectations can distort both fact finding and interpretation of results. The author describes how predesigned coding without modification may make the researcher, "run the risk of trying to fit qualitative data into a set of codes and categories that may not apply" (Saldaña, 2016, p. 170). Coding was taken from two different studies that used e-mentoring dialogues (Calandra et al., 2009) and video self-reflection (Simonsen et al., 2009), and all items corresponded with the codes; there were no additional codes identified based on researcher observations of additional findings. Since no additional codes were identified during analysis, the potential did not seem to exist for missing an additional analysis of findings, although evidence of PK and PCK was based on the researcher's interpretation of events, which may vary from the original authors used as a model.

Implications for Practice

There are several implications for practice based on the results of the study regarding teacher self-efficacy, e-mentoring, use of an evaluation framework, and the use of video self-reflection to promote growth, when mentee teachers, regardless of prior experience, adopt a novice state of mind. The novice state of mind (Turniansky & Friling, 2006) has been described as supporting change in individual learning processes, with a novice not necessarily being a new teacher. Rather, the novice and expert states of mind are "two states of being" (Turniansky & Friling, 2006, p. 778) with a focus on both perceptions maintained by a teacher in professional development. Turniansky and Friling (2006) describe professional development as including an active learner in a series of collaborative events. Having teachers with 3–10 years of experience focus on a component for growth through e-mentoring and video self-reflection supports teacher professional growth and self-efficacy.

It is important to note for future practice that not all mentee participants perceived that the collaborative e-mentoring was beneficial, even though findings from e-mentoring dialogues indicated, when coded by knowledge type, that most messages were PK and focused on assessment, questioning techniques, grouping, and think-pair-share activities. The next highest number of coded messages was PCK knowledge types, with dialogues focused heavily on teaching practice within or regarding specific content. The researcher wonders if about the placement of the dialog box at the bottom of the lesson development template, removed from the individual components of the lesson itself. Recommendations to practitioners, such as other superintendents, would be to try an e-mentoring platform that includes an area for dialogue embedded in each section of the lesson development template.

Mentee teacher reflection shows that the use of the Framework for Teaching (Danielson et al., 2009; Danielson, 2011) promoted growth. The results support research indicating that evaluation rubrics used as formative tools to improve the quality of teaching provide opportunities to track performance and help to guide teachers to improve classroom and content strategies (Johnson, 2012; Marzano, 2012). Recommendations for practice would be to use the framework as a teacher development tool, and not merely as an evaluation tool.

The video reflection is arguably the most important implication for practice. All mentee teachers stated that reflecting on a recording of one's own teaching supported goal setting and development, as reflection enabled identification of an area for growth. The results may have been due to mentee teachers' ability to reflect on the video privately. It is recommended that school administrators facilitating mentoring programs include self-reflection about one's own teaching aligned with a specific goal, permitting the mentee to privately view his or her teaching and then assess the findings with the mentor.

Implications for Future Research

There are several implications for future research based on the results of the study. Although self-efficacy in practice was noted, it is not known if a control group of teachers who are new to the district would have experienced similar growth due to maturation, therefore, a control group is recommended for future research to determine if an increase in self-efficacy occurs without e-mentoring and video self-reflection simply as the result of maturation. The site for this intervention was a high-performing suburban school consisting of an economically advantaged population. Further research should be conducted in typical or high-needs schools. As the school district in this study had few teachers qualified for inclusion, a larger sample size may yield richer results.

Some implications for future research focus on the mentor-mentee relationship. E-mentoring dialogues reflected more evidence of PK than PCK, so it would also be interesting to see if additional lesson collaborations between the mentor and the mentee include evidence of more PCK than PK, indicating growth in PCK through repeated dialogues, as in Simonsen et al. (2009), who determined message foci shifted from pedagogy to PCK for the mentoring dyads after repeated dialogues over the course of a year. A recommendation for researchers, therefore, is to consider more than one occurrence of e-mentoring for lesson development throughout the study. Additionally, it is important to note that only mentee teacher perceptions of individual growth were recorded. Future research should identify mentor perceptions of mentee teacher growth as well. It would be interesting to identify if mentor teachers had the same perception of mentee teacher growth through lesson codevelopment using e-mentoring. It would also be interesting to compare administrator evaluations using the framework to mentor and mentee perceptions.

Other recommendations are related to the format of the intervention. Future research could have a face-to-face group and an e-mentoring group of mentoring dyads to see whether teacher interactions in face-to-face lesson development indicate evidence of teacher development. Finally, Bang and Luft (2013) found that "new realities" were discovered as new topics were introduced and became realities, or long-term changes in the lessons were observed, and the electronic exchanges between a mentor and novice about lesson development resulted in long-term changes in lessons with students. A recommendation for future research is to determine if one or more occurrence of e-mentoring led to an actual change in practice.

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Appendix A

Teacher Efficacy Questionnaire

Directions: Follow the prompts for each question on the questionnaire and provide your opinion about each of the statements by selecting a response. Next, you will be asked to respond to two open-ended questions. This questionnaire is designed to help develop better knowledge of the difficulties teachers face. Your answers are confidential, and appreciated.

Teachers' Sense of Efficacy Scale- Teacher Beliefs
How much can you do?
(1) Nothing (3) Very Little (5) Some (7) Quite A Bit (9) A Great Deal

1. How much can you do to control disruptive behavior in the classroom?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

2. How much can you do to motivate students who show low interest in schoolwork?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

3. How much can you do to get students to believe they can do well in schoolwork?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

4. How much can you do to help your students value learning?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

5. To what extent can you craft good questions for your students?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

6. How much can you do to get children to follow classroom rules? (1) (2) (3) (4) (5) (6) (7) (8) (9)

7. How much can you do to calm a student who is disruptive or noisy?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

8. How well can you establish a classroom management system with each group of students?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

9. How much can you use a variety of assessment strategies?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

10. To what extent can you provide an alternative explanation or example when students are

confused?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

11. How much can you assist families in helping their children do well in school?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

12. How well can you implement alternative strategies in your classroom?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

Part II.

Directions: Please indicate or select a response to the next five questions:

13. Did you have student teaching experience?   ___Yes   ___No

    a. If so, what was the duration?   ___ semester   ___ year

    b. Was it for the same level you teach now?   ___Yes   ___No
       (Elementary, Middle, High School)

    c. Was it in a similar setting? (urban, suburban, rural)   ___Yes   ___No

    d. Was it in a similar socioeconomic grouping?   ___Yes   ___No

    e. Did it prepare you for your current teaching position?
       (1) Not at all (2) Very Little (3) Somewhat (4) Quite A Bit (5) A Great Deal

14. Did you have a mentor in your first year of teaching?   ___Yes   ___No

    a. Were you mentored in this district?   ___Yes   ___No

    b. Did mentoring prepare you for your current teaching position?

       (1) Not at all (2) Very Little (3) Somewhat (4) Quite A Bit (5) A Great Deal

15. How many years have you been teaching in Byram Hills?   (1) (2) (3) (4) (5)

16. How many years have you been teaching overall?   (1) (2) (3) (4) (5) (6) (7) (8) (9) (more)

17. What grade level do you teach?   (K)(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

    a. Has your experience been mostly at the same grade level?   ___Yes   ___No

18. What is your age?   ____20-25 ___26-30 ___ 31-35 ____36-40 ___41-45

       ___46-50 ____51-55 ___56-60

Part III.

19. Please read the definitions for three aspects of professional identity:

- a **subject matter expert** is a teacher who bases his/her profession on subject matter knowledge and skills;
- a **didactical expert** is a teacher who bases his/her profession on knowledge and skills regarding the planning, execution, and evaluation of teaching and learning processes;
- a **pedagogical expert** is a teacher who bases his/her profession on knowledge and skills to support students' social, emotional, and moral development.

a. Represent your professional identity by awarding a **total of 100 points** to the three aspects of this identity (for example, 50 points to subject matter expertise, 20 points to didactical expertise, and 30 points to pedagogical expertise).

_____ **subject matter expert**   +____ **didactical expert** +____ **pedagogical expert = 100 points**

b. Briefly describe why you awarded the aspects of professional identity the way you did.

20. Please answer the two questions related to your work with the Danielson Rubric (2011)

a. Please check three components from the Danielson rubric you would identify as having the greatest impact on future teaching, if mastered.

The Framework for Teaching:
Components of Professional Practice

Domain 1: Planning and Preparation
- Demonstrating Knowledge of Content and Pedagogy Demonstrating
- Knowledge of Students
- Setting Instructional Outcomes
- Demonstrating Knowledge of Resources
- Designing Coherent Instruction
- Designing Student Assessments

Domain 2: The Classroom Environment
- Creating an Environment of Respect and Rapport
- Establishing a Culture for Learning
- Managing Classroom Procedures
- Managing Student Behavior
- Organizing Physical Space

Domain 4: Professional Responsibilities
- Reflecting on Teaching
- Maintaining Accurate Records
- Communicating with Families
- Participating in a Professional
- Community
- Growing and Developing Professionally
- Showing Professionalism

Domain 3: Instruction
- Communicating with Students
- Using Questioning and Discussion
- Techniques
- Engaging Students in Learning
- Using Assessment in Instruction
- Demonstrating Flexibility and Responsiveness

b. Which component do you struggle with the most? Please briefly explain why you think

so.

Appendix B

Institutional Review Board Consent

Johns Hopkins University

Homewood Institutional Review Board

Teacher Consent

Title:	Impact on Teacher Effectiveness
Principal Investigator:	Jen Lamia, Doctoral Student, Johns Hopkins University
Date:	4/5/16

PURPOSE of NEEDS ASSESSMENT:

The purpose of this needs assessment is to identify how teacher efficacy (ability), experience and

beliefs impact teaching, particularly regarding the knowledge of instruction, engagement, and

classroom management.

PROCEDURES:

Participation in the needs assessment is voluntary. You will be asked to complete the *Teachers'*

Sense of Efficacy Scale, which is a 12-item questionnaire that will help develop insight about

factors that contribute to difficulty for teachers. You will also be asked to complete additional

survey questions and two short response questions.

Time required: Approximately 15 minutes.

RISKS/DISCOMFORTS:

There are no anticipated risks to teachers and the responses are confidential.

BENEFITS:

A potential benefit of the results of the needs assessment is insight into how to support new teachers to the district.

VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW:

Participation is voluntary. Teachers can stop participation in the study at any time without penalty. Teachers who wish to withdraw from the study may contact Jen Lamia

jlamia@byramhills.org

CONFIDENTIALITY:

The information collected by this needs assessment is confidential and will only be used for research purposes. Information may be reviewed by the Johns Hopkins University Homewood Institutional Review Board, and by officials from government agencies such as the Office for Human Research Protections who are responsible for making sure research is conducted properly. Records that identify you will be kept confidential to the extent permissible by law. Identifiable information will not be included in any reports of the needs assessment published or provided to school administration. A participant number will be assigned to all surveys.

Surveys will be collected electronically. Survey data completed electronically will be collected via a password protected Google account belonging to the school district.

All research data will be kept in a secured location. Electronic data will be stored on the researcher's computer, which is password protected. Any electronic files will be erased and paper documents shredded, ten years after collection. Only group data will be included in publication; no individual data will ever be published.

COMPENSATION:

Teachers will not receive any compensation for participating in this assessment.

IF YOU HAVE QUESTIONS OR CONCERNS:

Questions about this research study may be directed to Jen Lamia jlamia@byramhills.org. If you have questions about your rights as a research participant or feel that you have not been treated fairly, please contact the Homewood Institutional Review Board at Johns Hopkins University at (410) 516-6580.

Consent:

By continuing this survey, you agree to participate in the assessment, understand the information in this consent form, and understand that you have not waived any legal rights.

Appendix C

Results of Needs Assessment

Table C1

Efficacy

Subfactors	*N*	*M*	*SD*
Efficacy in Class Management	33	7.29	1.05
Efficacy in Instructional Strategies	33	7.58	.97
Efficacy in Student Engagement	33	6.87	.80

Table C2

Efficacy of Student Engagement

Student Engagement	*N*	*Sum*	*M*	*SD*
How much can you do to motivate students who show low interest in schoolwork?	33	211	6.39	1.02
How much can you do to get students to believe they can do well in schoolwork?	33	234	7.09	1.18
How much can you do to help your students value learning?	33	222	6.73	1.28
How much can you assist families in helping their children do well in school?	33	241	7.30	.95

Table C3

Professional Identity

		Subject matter expert	Didactical expert	Pedagogical expert
N	Valid	33	33	33
Mean		35.58	29.73	33.94
Median		33.00	30.00	34.00
Mode		25[a]	30	40[a]
Std. Deviation		13.02	9.41	13.48
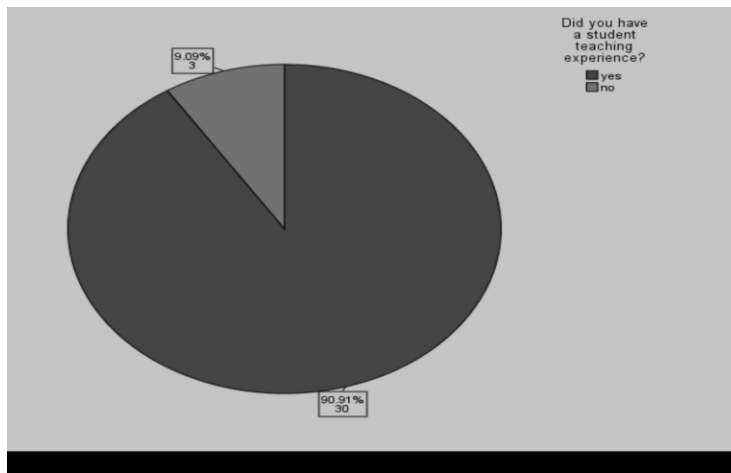
Figure C1. Student teaching experience of mentee teachers indicating most teachers had a student teaching experience.
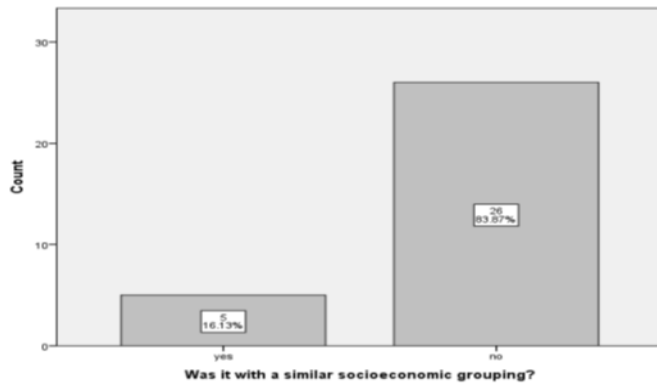
Figure C2. Student teaching socioeconomic grouping indicating a majority of student teaching experiences were not with a similar socioeconomic grouping.
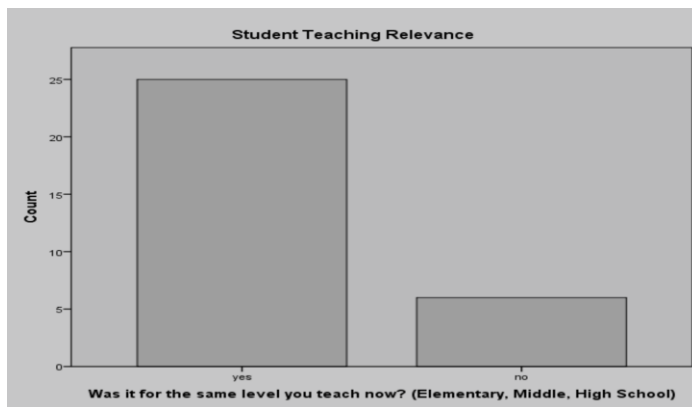
Figure C3. Student teaching relevance for the same level of current teaching assignment.
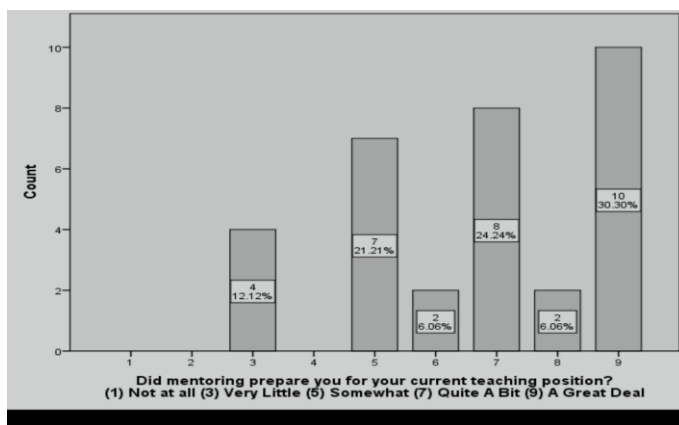
Figure C4. Mentoring as preparation for current teaching position, from *not at all* to *a great deal*.

Appendix D

Logic Model

Situation: The problem of practice situated in a K-12 high-performing public school setting in the Northeastern U.S. is that mentee teachers are not always equipped with the development, knowledge, attitudes, and beliefs necessary for expected teacher proficiency; therefore, mentee teachers need support to develop. The logic model below indicates the inputs, outputs, and outcomes for a mentoring program to support mentee teacher development.

Inputs/ Resources	Outputs		Outcomes		
	Activities	*Participation*	*Short*	*Medium*	*Long*

- Mentor and mentee dyads
- Chromebooks
- E-platform
- Video technology
- Videographer
- Before and after self-assessment of Danielson components for Domain 3: *Instruction* (Danielson et al., 2009)
- Mentor stipends
- Teacher time

E-mentoring to codevelop lesson targeting component for growth from Danielson et al., (2009) self-assessment

Video self-reflection and reflection with Mentor

Lesson plan & activities

E-mentoring dialogue and collaboration

Videotaped lesson

Collaboration

Increased efficacy in area of focus

PCK development

Reflective dialogue

Goal-setting of new component for growth

Culture of continuous learning and resource sharing

Continuous reflection

Teacher proficiency

Teacher retention

Collaborative culture

Resource Sharing

Assumptions
-Novice teachers need PCK development.
-Mentoring provides opportunities for shared expertise.
-Codevelopment of a lesson will improve efficacy of instruction, classroom management, and student engagement.
-Reflection will provide opportunities for growth.
-Teachers will collaborate through the e-mentoring platform.
-Teachers have time.

External Factors
-available mentors
-development of mentor/mentee relationship
-fidelity to e-mentoring platform
-ability to reflect upon teaching
-teacher and school leadership quality

Appendix E

Summary Matrix

Research Question	Constructs	Measures and Instrumentation	Data Collection	Data Analysis
RQ1: How do teachers perceive their efficacy after content focused e-mentoring and video self-reflection?	Teacher efficacy	Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001)	Survey Monkey	Descriptive statistics
RQ2: What are mentee teacher experiences with the use of e-mentoring, video reflection, and Domain 3: Instruction in a mentoring program?	Self-efficacy related to Domain 3: Instruction PCK Perceptions of e-mentoring Perception of video self-assessment	Four Domains Self-Assessment Open-ended survey questions E-mentoring dialogues Video self-reflection	Survey Monkey Google Classroom	Descriptive statistics Theoretical thematic analysis (Braun & Clarke, 2006)
RQ3: How have e-mentoring and video self-reflection supported goal setting, collaboration, and self-reflection?	Goal setting Collaboration Self-reflection	Open-ended questions	Survey Monkey	Descriptive statistics

Appendix F

Mixed Methods Exploratory Design

Below is a visual model for mixed methods convergent design procedures. Adapted from "Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice," by N. V. Ivankova, J. W. Creswell, and Sheldon L. Stick, 2006, *Field Methods, 18*(1), 3-20.

Phase	Procedure	Product
Quantitative Data Collection	Web-based survey	numerical data
Quantitative Data Analysis		descriptive statistics
Connecting Quantitative and Qualitative Phases		
Qualitative Data Collection	E-mentoring dialogue, video self-reflection	themes
Qualitative Data Analysis	Coding and thematic analysis	interpretation and explanation
Integration of Quantitative and Qualitative Results	Discussions of the quantitative and qualitative results	implications for future research

Appendix G

Process Evaluation: Adherence and Participant Responsiveness

Table G1

Process Evaluation: Adherence

	Existence of E-Mentoring Exchanges	Completion of Critical Incident Reflection Form
Participant 1	Only mentee statements	x
Participant 2	x	x
Participant 3	x	x
Participant 4	x	x
Participant 5	x	x
Participant 6	x	x
Participant 7	x	x
Participant 8	No exchanges	x
Participant 9	x	x

Table G2

Process Evaluation: Participant Responsiveness

	Lesson Developed	Number of Exchanges in E-Mentoring Dialogue	Number of Exchanges that are Evidence of PK/PCK Sharing	PK or PCK Noted in Critical Incident Reflection	Identification of a New Component for Growth Goal from Domain 3: Instruction (Danielson et

					al., 2009).
Participant 1	x	1	0/1	1	X
Participant 2	x	3	1/2	7	X
Participant 3	x	8	1/1	9	X
Participant 4	x	6	3/1	3	X
Participant 5	x	2	0/2	4	X
Participant 6	x	3	4/0	2	X
Participant 7	x	4	5/0	5	X
Participant 8	x	0	0/0	4	X
Participant 9	x	6	1/0	2	X

Appendix H

Recruitment Email

To New and Mentee Teachers,

I am a doctoral student working under the supervision of Dr. Sherri Prosser, Visiting Assistant Professor in the Doctor of Education Program at Johns Hopkins University, School of Education. I am emailing you because I am conducting a study that aims to support new teacher proficiency, and am currently seeking new teacher–mentor teacher pairs as volunteer participants in the study. The study was reviewed and received ethics clearance through Johns Hopkins University Homewood Institutional Review Board.

First, a survey will be completed by new teachers as a self-assessment to identify teacher efficacy and a component for growth in Domain 3: Instruction (Danielson et al., 2009). Next, participation in the study involves all teachers attending an introductory 2-hour workshop that supports an e-mentoring program for new teachers using the Google Classroom. Both new and mentor teachers will codevelop a lesson using Google Classroom as an e-mentoring platform, targeting the new teacher's self-identified component for growth to support teacher proficiency. Finally, new teachers will participate in the videotaping of the implemented lesson and reflect upon the lesson with the mentor.

Overall, participation in this study would take approximately 5.0 hours of your time. Participation is voluntary. If you are interested in participating, please contact me at jlamia@byramhills.org. I will then send a confirmation email indicating that you are a participant, and provide you with further information concerning the initial survey and introductory workshop for the study at the district office. Thank you very much for your consideration.

Sincerely,

Jen Lamia

Name and address of the Principal Investigator:

Dr. Sherri Prosser

Visiting Assistant Professor, Doctor of Education Program

Johns Hopkins University, School of Education

2800 North Charles Street, Baltimore, MD 21218

Appendix I

Institutional Review Board Informed Consent

Title: Mentoring Novice Teachers to Develop Pedagogical Content

                      Knowledge Proficiency

Principal Investigator: Dr. Sherri Prosser

                      Visiting Assistant Professor, Doctor of Education Program

                      Johns Hopkins University, School of Education

Date: June 18, 2017

Johns Hopkins University

Homewood Institutional Review Board (HIRB)

Informed Consent Form

PURPOSE OF RESEARCH STUDY:

The purpose of this research study is to examine the role of e-mentoring and reflection in supporting lesson development for new teachers to the district. The study seeks to identify if a difference in new teacher perceived ability exists after e-mentoring and reflection.

We anticipate that approximately eight mentor–new teacher pairs will participate in this study.

PROCEDURES:

First, new teachers will complete a self-assessment survey to identify teacher efficacy and select a component for growth in Domain 3: Instruction (Danielson et al., 2009). Next, participation in the study involves new and mentor teachers attending an introductory 2.5-hour

workshop that supports an e-mentoring program for new teachers using Google Classroom. Expectations for e-mentoring will be developed during the workshop. Both new and mentor teachers will also initiate the codevelopment of a lesson using Google Classroom as an e-mentoring platform, targeting the new teacher's self-identified component for growth to support teacher proficiency. The lesson will be codeveloped independently after the workshop. Finally, new teachers will videotape the implemented lesson and reflect upon the lesson with the mentor. New teachers will also complete a postmentoring survey.

RISKS/DISCOMFORTS:

The risks associated with participation in this study are no greater than those encountered in daily life (or during the performance of routine physical or psychological examinations or tests).

BENEFITS:

A potential benefit of the study is insight into how lesson collaboration supports new teacher development, resulting in improved student instruction. Benefits to new and mentor teachers that may be reasonably expected from the research include a collaborative learning environment, resource sharing, and goal-setting.

VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW:

Your participation in this study is entirely voluntary: You choose whether to participate. If you decide not to participate, there are no penalties, and you will not lose any benefits to which you would otherwise be entitled.

If you choose to participate in the study, you can stop your participation at any time, without any penalty or loss of benefits. If you want to withdraw from the study, please contact Jen Lamia at jlamia@byramhills.org

<u>CIRCUMSTANCES THAT COULD LEAD US TO END YOUR PARTICIPATION:</u>

Under certain circumstances we may decide to end your participation before you have completed the study. Specifically, we may stop your participation if you are no longer a Byram Hills employee.

CONFIDENTIALITY:

Any study records that identify you will be kept confidential to the extent possible by law. The records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Johns Hopkins University Homewood Institutional Review Board and officials from government agencies such as the National Institutes of Health and the Office for Human Research Protections. (All of these people are required to keep your identity confidential.) Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

A participant number will be assigned to all surveys and Google Classroom accounts. Surveys and the contents of Google Classroom collaborations will be collected electronically via a password protected Google account belonging to Byram Hills. All research data will be kept in a secured location. Electronic data will be stored on the researcher's computer, which is

password protected. Any electronic files will be erased and paper documents shredded, 10 years after collection.

COMPENSATION:

You will not receive any payment or other compensation for participating in this study.

IF YOU HAVE QUESTIONS OR CONCERNS:

You can ask questions about this research study now or at any time during the study, by talking to the researcher working with you or by calling Dr. Sherri Prosser at 386-314-3015.

If you have questions about your rights as a research participant or feel that you have not been treated fairly, please call the Homewood Institutional Review Board at Johns Hopkins University at (410) 516-6580.

SIGNATURES

WHAT YOUR SIGNATURE MEANS:

Your signature below means that you understand the information in this consent form. Your signature also means that you agree to participate in the study.

By signing this consent form, you have not waived any legal rights you otherwise would have as a participant in a research study.

Participant's Signature _____ **Date** _____

Signature of Person Obtaining Consent _____ **Date** _____

(Investigator or HIRB Approved Designee) _____

Appendix J

Teacher Efficacy Questionnaire

Pre- and Post Intervention

Directions: Follow the prompts for each question on the questionnaire and provide your opinion about each of the statements by selecting a response. Next, you will be asked to respond to two open-ended questions. This questionnaire is designed to help develop better knowledge of the difficulties teachers face. Your answers are confidential, and appreciated.

Part I:

Teachers' Sense of Efficacy Scale - Teacher Beliefs[a]

How much can you do?

(1) Nothing (3) Very Little (5) Some (7) Quite A Bit (9) A Great Deal

1. How much can you do to control disruptive behavior in the classroom?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

2. How much can you do to motivate students who show low interest in schoolwork?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

3. How much can you do to get students to believe they can do well in schoolwork?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

4. How much can you do to help your students value learning?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

5. To what extent can you craft good questions for your students?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

6. How much can you do to get children to follow classroom rules? (1) (2) (3) (4) (5) (6) (7) (8) (9)

7. How much can you do to calm a student who is disruptive or noisy?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

8**.** How well can you establish a classroom management system with each group of students?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

9**.** How much can you use a variety of assessment strategies?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

10. To what extent can you provide an alternative explanation or example when students are

confused?   (1) (2) (3) (4) (5) (6) (7) (8) (9)

11. How much can you assist families in helping their children do well in school?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

12**.** How well can you implement alternative strategies in your classroom?

(1) (2) (3) (4) (5) (6) (7) (8) (9)

Part II. Demographic Questions (pre-intervention only)

Directions: Please indicate or select a response to the next five questions:

13. Did you have student teaching experience?   ___Yes   ___No

    a. If so, what was the duration?   ___ semester   ___ year

    b. Was it for the same level you teach now?   ___Yes   ___No

        (Elementary, Middle, High School)

    c. Was it in a similar setting? (urban, suburban, rural)   ___Yes   ___No

    d. Was it in a similar socioeconomic grouping?   ___Yes   ___No

    e. Did it prepare you for your current teaching position?

(**1**) Not at all (2) Very Little (3) Somewhat (4) Quite A Bit (5) A Great Deal

14. Did you have a mentor in your first year of teaching?   ___Yes   ___No

    a. Were you mentored in this district?   ___Yes   ___No

    b. Did mentoring prepare you for your current teaching position?

        (**1**) Not at all (2) Very Little (3) Somewhat (4) Quite A Bit (5) A Great Deal

15. How many years have you been teaching in Byram Hills?   (1) (2) (3) (4) (5)

16. How many years have you been teaching overall?   (1) (2) (3) (4) (5) (6) (7) (8) (9) (more)

17. What grade level do you teach?   (K)(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

    a. Has your experience been mostly at the same grade level?   ___Yes   ___No

18. What is your age?   ____20-25 ___26-30 ___ 31-35 ____36-40 ___41-45

        ___46-50 ____51-55 ___56-60

Part III: Danielson Self-Assessment of Domain 3: Instruction

For questions 19-23, please self-assess your teaching for each component of Domain 3[b, c] (Danielson et al., 2009; Danielson, 2011). Refer to the tables to help answer the questions.

19. Component 3a: Communicating with Students

1 Unsatisfactory: Expectations for learning, directions and procedures, and explanations of content are unclear or confusing to students. The teacher's use of language contains errors or is inappropriate for students' cultures or levels of development.

2 <u>Basic</u>: Expectations for learning, directions and procedures, and explanations of content are clarified after initial confusion; the teacher's use of language is correct but may not be completely appropriate for students' cultures or levels of development.

3 <u>Proficient</u>: Expectations for learning, directions and procedures, and explanations of content are clear to students. Communications are appropriate for students' cultures and levels of development.

4 <u>Distinguished</u>: Expectations for learning, directions and procedures, and explanations of content are clear to students. The teacher's oral and written communication is clear and expressive, appropriate for students' cultures and levels of development, and anticipates possible student misconceptions.

(1) (2) (3) (4)

Component 3a	Unsatisfactory	Basic	Proficient	Distinguished
3a: Communicating with Students	The instructional purpose of the lesson is unclear to students, and the directions and procedures are confusing. The teacher's explanation of the content contains major errors and does not include any explanation of strategies students might use. The teacher's spoken or written language contains errors of grammar or syntax. The teacher's academic vocabulary is inappropriate, vague, or used incorrectly, leaving students confused.	The teacher's attempt to explain the instructional purpose has only limited success, and/or directions and procedures must be clarified after initial student confusion. The teacher's explanation of the content may contain minor errors; some portions are clear, others difficult to follow. The teacher's explanation does not invite students to engage intellectually or to understand strategies they might use when working independently. The teacher's spoken language is correct but uses vocabulary that is either limited or not fully appropriate to the students' ages or backgrounds. The teacher rarely takes opportunities to explain academic vocabulary.	The instructional purpose of the lesson is clearly communicated to students, including where it is situated within broader learning; directions and procedures are explained clearly and may be modeled. The teacher's explanation of content is scaffolded, clear, and accurate and connects with students' knowledge and experience. During the explanation of content, the teacher focuses, as appropriate, on strategies students can use when working independently and invites student intellectual engagement. The teacher's spoken and written language is clear and correct and is suitable to students' ages and interests. The teacher's use of academic vocabulary is precise and serves to extend student understanding.	The teacher links the instructional purpose of the lesson to the larger curriculum; the directions and procedures are clear and anticipate possible student misunderstanding. The teacher's explanation of content is thorough and clear, developing conceptual understanding through clear scaffolding and connecting with students' interests. Students contribute to extending the content by explaining concepts to their classmates and suggesting strategies that might be used. The teacher's spoken and written language is expressive, and the teacher finds opportunities to extend students' vocabularies, both within the discipline and for more general use. Students contribute to the correct use of academic vocabulary.
Critical Attributes	• At no time during the lesson does the teacher convey to students what they will be learning. • Students indicate through body language or questions that they don't understand the content being presented. • The teacher makes a serious content error that will affect students' understanding of the lesson. • Students indicate through their questions that they are confused about the learning task. • The teacher's communications include errors of vocabulary or usage or imprecise use of academic language.	• The teacher provides little elaboration or explanation about what the students will be learning. • The teacher's explanation of the content consists of a monologue, with minimal participation or intellectual engagement by students. • The teacher makes no serious content errors but may make minor ones. • The teacher's explanations of content are purely procedural, with no indication of how students can think strategically. • The teacher must clarify the learning task so students can complete it. • The teacher's vocabulary and usage are correct but unimaginative.	• The teacher states clearly, at some point during the lesson, what the students will be learning. • The teacher's explanation of content is clear and invites student participation and thinking. • The teacher makes no content errors. • The teacher describes specific strategies students might use, inviting students to interpret them in the context of what they're learning. • Students engage with the learning task, indicating that they understand what they are to do. • If appropriate, the teacher models the process to be followed in the task.	• If asked, students are able to explain what they are learning and where it fits into the larger curriculum context. • The teacher explains content clearly and imaginatively, using metaphors and analogies to bring content to life. • The teacher points out possible areas for misunderstanding. • The teacher invites students to explain the content to their classmates. • Students suggest other strategies they might use in approaching a challenge or analysis. • The teacher uses rich language, offering brief vocabulary lessons where appropriate, both for general vocabulary and for the discipline. • Students use academic language correctly.

Component 3a	Unsatisfactory	Basic	Proficient	Distinguished
	• The teacher's vocabulary is inappropriate to the age or culture of the students.	• When the teacher attempts to explain academic vocabulary, it is only partially successful. • The teacher's vocabulary is too advanced, or too juvenile, for students.	• The teacher's vocabulary and usage are correct and entirely suited to the lesson, including, where appropriate, explanations of academic vocabulary. • The teacher's vocabulary is appropriate to students' ages and levels of development.	
Possible Examples	• A student asks, "What are we supposed to be doing?" but the teacher ignores the question. • The teacher states that to add fractions they must have the same numerator. • Students have a quizzical look on their faces; some may withdraw from the lesson. • Students become disruptive or talk among themselves in an effort to follow the lesson. • The teacher uses technical terms without explaining their meanings. • The teacher says "ain't." • And others…	• The teacher mispronounces "____." • The teacher says, "And oh, by the way, today we're going to factor polynomials." • A student asks, "What are we supposed to be doing?" and the teacher clarifies the task. • A student asks, "What do I write here?" in order to complete a task. • The teacher says, "Watch me while I show you how to ____," asking students only to listen. • A number of students do not seem to be following the explanation. • Students are inattentive during the teacher's explanation of content. • Students' use of academic vocabulary is imprecise. • And others…	• The teacher says, "By the end of today's lesson you're all going to be able to factor different types of polynomials." • In the course of a presentation of content, the teacher asks students, "Can anyone think of an example of that?" • The teacher uses a board or projection device for task directions so that students can refer to it without requiring the teacher's attention. • The teacher says, "When you're trying to solve a math problem like this, you might think of a similar, but simpler, problem you've done in the past and see whether the same approach would work." • The teacher explains passive solar energy by inviting students to think about the temperature in a closed car on a cold, but sunny, day or about the water in a hose that has been sitting in the sun. • The teacher uses a Venn diagram to illustrate the distinctions between a republic and a democracy. • And others…	• The teacher says, "Here's a spot where some students have difficulty; be sure to read it carefully." • The teacher asks a student to explain the task to other students. • When clarification about the learning task is needed, a student offers it to classmates. • The teacher, in explaining the westward movement in U.S. history, invites students to consider that historical period from the point of view of the Native Peoples. • The teacher asks, "Who would like to explain this idea to us?" • A student asks, "Is this another way we could think about analogies?" • A student explains an academic term to classmates. • The teacher pauses during an explanation of the civil rights movement to remind students that the prefix in- as in inequality means "not" and that the prefix un- also means the same thing. • A student says to a classmate, "I think that side of the triangle is called the hypotenuse." • And others…

20. Component 3b: Using Questioning and Discussion Techniques

1 Unsatisfactory: The teacher's questions are low-level or inappropriate, eliciting limited student participation and recitation rather than discussion.

2 Basic: Some of the teacher's questions elicit a thoughtful response, but most are low-level, posed in rapid succession. The teacher's attempts to engage all students in the discussion are only partially successful.

3 Proficient: Most of the teacher's questions elicit a thoughtful response, and the teacher allows sufficient time for students to answer. All students participate in the discussion, with the teacher stepping aside when appropriate.

4 Distinguished: Questions reflect high expectations and are culturally and developmentally appropriate. Students formulate many of the high-level questions and ensure that all voices are heard.

(1) (2) (3) (4)

Component 3b	Unsatisfactory	Basic	Proficient	Distinguished
3b: Using Questioning and Discussion Techniques	The teacher's questions are of low cognitive challenge, with single correct responses, and are asked in rapid succession. Interaction between the teacher and students is predominantly recitation style, with the teacher mediating all questions and answers; the teacher accepts all contributions without asking students to explain their reasoning. Only a few students participate in the discussion.	The teacher's questions lead students through a single path of inquiry, with answers seemingly determined in advance. Alternatively, the teacher attempts to ask some questions designed to engage students in thinking, but only a few students are involved. The teacher attempts to engage all students in the discussion, to encourage them to respond to one another, and to explain their thinking, with uneven results.	While the teacher may use some low-level questions, he poses questions designed to promote student thinking and understanding. The teacher creates a genuine discussion among students, providing adequate time for students to respond and stepping aside when doing so is appropriate. The teacher challenges students to justify their thinking and successfully engages most students in the discussion, employing a range of strategies to ensure that most students are heard.	The teacher uses a variety or series of questions or prompts to challenge students cognitively, advance high-level thinking and discourse, and promote metacognition. Students formulate many questions, initiate topics, challenge one another's thinking, and make unsolicited contributions. Students themselves ensure that all voices are heard in the discussion.
Critical Attributes	• Questions are rapid-fire and convergent, with a single correct answer. • Questions do not invite student thinking. • All discussion is between the teacher and students; students are not invited to speak directly to one another. • The teacher does not ask students to explain their thinking. • Only a few students dominate the discussion.	• The teacher frames some questions designed to promote student thinking, but many have a single correct answer, and the teacher calls on students quickly. • The teacher invites students to respond directly to one another's ideas, but few students respond. • The teacher calls on many students, but only a small number actually participate in the discussion. • The teacher asks students to explain their reasoning, but only some students attempt to do so.	• The teacher uses open-ended questions, inviting students to think and/or offer multiple possible answers. • The teacher makes effective use of wait time. • Discussions enable students to talk to one another without ongoing mediation by teacher. • The teacher calls on most students, even those who don't initially volunteer. • Many students actively engage in the discussion. • The teacher asks students to justify their reasoning, and most attempt to do so.	• Students initiate higher-order questions. • The teacher builds on and uses student responses to questions in order to deepen student understanding. • Students extend the discussion, enriching it. • Students invite comments from their classmates during a discussion and challenge one another's thinking. • Virtually all students are engaged in the discussion.
Possible Examples	• All questions are of the "recitation" type, such as "What is 3 x 4?" • The teacher asks a question for which the answer is on the board; students respond by reading it. • The teacher calls only on students who have their hands up.	• Many questions are of the "recitation" type, such as "How many members of the House of Representatives are there?" • The teacher asks, "Who has an idea about this?" The usual three students offer comments.	• The teacher asks, "What might have happened if the colonists had not prevailed in the American war for independence?" • The teacher uses the plural form in asking questions, such as "What are some things you think might contribute to _____?"	• A student asks, "How many ways are there to get this answer?" • A student says to a classmate, "I don't think I agree with you on this, because…"

21. Component 3c: Engaging Students in Learning

1 Unsatisfactory: Activities and assignments, materials, and groupings of students are inappropriate for the instructional outcomes or students' cultures or levels of understanding, resulting in little intellectual engagement. The lesson has no structure or is poorly paced.

2 Basic: Activities and assignments, materials, and groupings of students are partially appropriate to the instructional outcomes or students' cultures or levels of understanding, resulting in moderate intellectual engagement. The lesson has a recognizable structure, but that structure is not fully maintained.

3 Proficient: Activities and assignments, materials, and groupings of students are fully appropriate to the instructional outcomes and students' cultures and levels of understanding. All students are engaged in work of a high level of rigor. The lesson's structure is coherent, with appropriate pace.

4 Distinguished: Students, throughout the lesson, are highly intellectually engaged in significant learning, and make material contributions to the activities, student groupings, and materials. The

lesson is adapted as necessary to the needs of individuals, and the structure and pacing allow for student reflection and closure.

(1) (2) (3) (4)

Component 3c	Unsatisfactory	Basic	Proficient	Distinguished
3c: Engaging Students in Learning	The learning tasks/activities, materials, and resources are poorly aligned with the instructional outcomes, or require only rote responses, with only one approach possible. The groupings of students are unsuitable to the activities. The lesson has no clearly defined structure, or the pace of the lesson is too slow or rushed.	The learning tasks and activities are partially aligned with the instructional outcomes but require only minimal thinking by students and little opportunity for them to explain their thinking, allowing most students to be passive or merely compliant. The groupings of students are moderately suitable to the activities. The lesson has a recognizable structure; however, the pacing of the lesson may not provide students the time needed to be intellectually engaged or may be so slow that many students have a considerable amount of "downtime."	The learning tasks and activities are fully aligned with the instructional outcomes and are designed to challenge student thinking, inviting students to make their thinking visible. This technique results in active intellectual engagement by most students with important and challenging content, and with teacher scaffolding to support that engagement. The groupings of students are suitable to the activities. The lesson has a clearly defined structure, and the pacing of the lesson is appropriate, providing most students the time needed to be intellectually engaged.	Virtually all students are intellectually engaged in challenging content through well-designed learning tasks and activities that require complex thinking by students. The teacher provides suitable scaffolding and challenges students to explain their thinking. There is evidence of some student initiation of inquiry and student contributions to the exploration of important content; students may serve as resources for one another. The lesson has a clearly defined structure, and the pacing of the lesson provides students the time needed not only to intellectually engage with and reflect upon their learning but also to consolidate their understanding.
Critical Attributes	• Few students are intellectually engaged in the lesson. • Learning tasks/activities and materials require only recall or have a single correct response or method. • Instructional materials used are unsuitable to the lesson and/or the students. • The lesson drags or is rushed. • Only one type of instructional group is used (whole group, small groups) when variety would promote more student engagement.	• Some students are intellectually engaged in the lesson. • Learning tasks are a mix of those requiring thinking and those requiring recall. • Student engagement with the content is largely passive; the learning consists primarily of facts or procedures. • The materials and resources are partially aligned to the lesson objectives. • Few of the materials and resources require student thinking or ask students to explain their thinking. • The pacing of the lesson is uneven—suitable in parts but rushed or dragging in others. • The instructional groupings used are partially appropriate to the activities.	• Most students are intellectually engaged in the lesson. • Most learning tasks have multiple correct responses or approaches and/or encourage higher-order thinking. • Students are invited to explain their thinking as part of completing tasks. • Materials and resources support the learning goals and require intellectual engagement, as appropriate. • The pacing of the lesson provides students the time needed to be intellectually engaged. • The teacher uses groupings that are suitable to the lesson activities.	• Virtually all students are intellectually engaged in the lesson. • Lesson activities require high-level student thinking and explanations of their thinking. • Students take initiative to improve the lesson by (1) modifying a learning task to make it more meaningful or relevant to their needs, (2) suggesting modifications to the grouping patterns used, and/or (3) suggesting modifications or additions to the materials being used. • Students have an opportunity for reflection and closure on the lesson to consolidate their understanding.

Component 3c	Unsatisfactory	Basic	Proficient	Distinguished
Possible Examples	• Most students disregard the assignment given by the teacher; it appears to be much too difficult for them. • Students fill out the lesson worksheet by copying words from the board. • Students are using math manipulative materials in a rote activity. • The teacher lectures for 45 minutes. • Most students don't have time to complete the assignment; the teacher moves on in the lesson. • And others…	• Students in only three of the five small groups are figuring out an answer to the assigned problem; the others seem to be unsure how they should proceed. • Students are asked to fill in a worksheet, following an established procedure. • There is a recognizable beginning, middle, and end to the lesson. • The teacher lectures for 20 minutes and provides 15 minutes for the students to write an essay; not all students are able to complete it. • And others…	• Five students (out of 27) have finished an assignment early and begin talking among themselves; the teacher assigns a follow-up activity. • Students are asked to formulate a hypothesis about what might happen if the American voting system allowed for the direct election of presidents and to explain their reasoning. • Students are given a task to do independently, then to discuss with a table group, followed by a reporting from each table. • Students are asked to create different representations of a large number using a variety of manipulative materials. • The lesson is neither rushed nor does it drag. • And others…	• Students are asked to write an essay in the style of Hemingway and to describe which aspects of his style they have incorporated. • Students determine which of several tools—e.g., a protractor, spreadsheet, or graphing calculator—would be most suitable to solve a math problem. • A student asks whether they might remain in their small groups to complete another section of the activity, rather than work independently. • Students identify or create their own learning materials. • Students summarize their learning from the lesson. • And others…

22. Component 3d: Using Assessment in Instruction

1 Unsatisfactory:

Assessment is not used in instruction, either through monitoring of progress by the teacher or students, or through feedback to students. Students are unaware of the assessment criteria used to evaluate their work

2 Basic: Assessment is occasionally used in instruction, through some monitoring of progress of learning by the teacher and/or students. Feedback to students is uneven, and students are aware of only some of the assessment criteria used to evaluate their work.

3 Proficient: Assessment is regularly used in instruction, through self-assessment by students, monitoring of progress of learning by the teacher and/or students, and high-quality feedback to students. Students are fully aware of the assessment criteria used to evaluate their work

4 Distinguished: Assessment is used in a sophisticated manner in instruction, through student involvement in establishing the assessment criteria, self-assessment by students, monitoring of progress by both students and teacher, and high-quality feedback to students from a variety of sources.

(1) (2) (3) (4)

	Unsatisfactory	Basic	Proficient	Distinguished
3d: Using Assessment in Instruction	Students do not appear to be aware of the assessment criteria, and there is little or no monitoring of student learning; feedback is absent or of poor quality. Students do not engage in self- or peer assessment.	Students appear to be only partially aware of the assessment criteria, and the teacher monitors student learning for the class as a whole. Questions and assessments are rarely used to diagnose evidence of learning. Feedback to students is general, and few students assess their own work.	Students appear to be aware of the assessment criteria, and the teacher monitors student learning for groups of students. Questions and assessments are regularly used to diagnose evidence of learning. Teacher feedback to groups of students is accurate and specific; some students engage in self-assessment.	Assessment is fully integrated into instruction, through extensive use of formative assessment. Students appear to be aware of, and there is some evidence that they have contributed to, the assessment criteria. Questions and assessments are used regularly to diagnose evidence of learning by individual students. A variety of forms of feedback, from both teacher and peers, is accurate and specific and advances learning. Students self-assess and monitor their own progress. The teacher successfully differentiates instruction to address individual students' misunderstandings.
Critical	• The teacher gives no indication of	• There is little evidence that	• The teacher makes the standards	• Students indicate that they clearly

	Unsatisfactory	Basic	Proficient	Distinguished
Possible Examples	• A student asks, "How is this assignment going to be graded?" • A student asks, "Is this the right way to solve this problem?" but receives no information from the teacher. • The teacher forges ahead with a presentation without checking for understanding. • After the students present their research on globalization, the teacher tells them their letter grade; when students ask how he arrived at the grade, the teacher responds, "After all these years in education, I just know what grade to give." • And others...	• The teacher asks, "Does anyone have a question?" • When a student completes a problem on the board, the teacher corrects the student's work without explaining why. • The teacher says, "Good job, everyone." • The teacher, after receiving a correct response from one student, continues without ascertaining whether other students understand the concept. • The students receive their tests back; each one is simply marked with a letter grade at the top. • And others...	• The teacher circulates during small-group or independent work, offering suggestions to students. • The teacher uses specifically formulated questions to elicit evidence of student understanding. • The teacher asks students to look over their papers to correct their errors; most of them engage in this task. • And others...	• The teacher reminds students of the characteristics of high-quality work, observing that the students themselves helped develop them. • While students are working, the teacher circulates, providing specific feedback to individual students. • The teacher uses popsicle sticks or exit tickets to elicit evidence of individual student understanding. • Students offer feedback to their classmates on their work. • Students evaluate a piece of their writing against the writing rubric and confer with the teacher about how it could be improved. • And others...

23. Component 3e: Demonstrating Flexibility and Responsiveness

1 <u>Unsatisfactory</u>: The teacher adheres to the instruction plan, even when a change would improve the lesson or address students' lack of interest. The teacher brushes aside student questions; when students experience difficulty, the teacher blames the students or their home environment.

2 <u>Basic</u>: The teacher attempts to modify the lesson when needed and to respond to student questions, with moderate success. The teacher accepts responsibility for student success, but has only a limited repertoire of strategies to draw on.

3 <u>Proficient</u>: The teacher promotes the successful learning of all students, making adjustments as needed to instruction plans and accommodating student questions, needs, and interests.

4 <u>Distinguished</u>: The teacher seizes an opportunity to enhance learning, building on a spontaneous event or student interests. The teacher ensures the success of all students, using an extensive repertoire of instructional strategies.

(1) (2) (3) (4)

	Unsatisfactory	Basic	Proficient	Distinguished
3e: Demonstrating Flexibility and Responsiveness	The teacher ignores students' questions; when students have difficulty learning, the teacher blames them or their home environment for their lack of success. The teacher makes no attempt to adjust the lesson even when students don't understand the content.	The teacher accepts responsibility for the success of all students but has only a limited repertoire of strategies to use. Adjustment of the lesson in response to assessment is minimal or ineffective.	The teacher successfully accommodates students' questions and interests. Drawing on a broad repertoire of strategies, the teacher persists in seeking approaches for students who have difficulty learning. If impromptu measures are needed, the teacher makes a minor adjustment to the lesson and does so smoothly.	The teacher seizes an opportunity to enhance learning, building on a spontaneous event or students' interests, or successfully adjusts and differentiates instruction to address individual student misunderstandings. Using an extensive repertoire of instructional strategies and soliciting additional resources from the school or community, the teacher persists in seeking effective approaches for students who need help.
Critical Attributes	• The teacher ignores indications of student boredom or lack of understanding. • The teacher brushes aside students' questions. • The teacher conveys to students that when they have difficulty learning, it is their fault. • In reflecting on practice, the teacher does not indicate that it is important to reach all students. • The teacher makes no attempt to adjust the lesson in response to student confusion.	• The teacher makes perfunctory attempts to incorporate students' questions and interests into the lesson. • The teacher conveys to students a level of responsibility for their learning but also his uncertainty about how to assist them. • In reflecting on practice, the teacher indicates the desire to reach all students but does not suggest strategies for doing so. • The teacher's attempts to adjust the lesson are partially successful.	• The teacher incorporates students' interests and questions into the heart of the lesson. • The teacher conveys to students that she has other approaches to try when the students experience difficulty. • In reflecting on practice, the teacher cites multiple approaches undertaken to reach students having difficulty. • When improvising becomes necessary, the teacher makes adjustments to the lesson.	• The teacher seizes on a teachable moment to enhance a lesson. • The teacher conveys to students that she won't consider a lesson "finished" until every student understands and that she has a broad range of approaches to use. • In reflecting on practice, the teacher can cite others in the school and beyond whom he has contacted for assistance in reaching some students. • The teacher's adjustments to the lesson, when they are needed, are designed to assist individual students.

	Unsatisfactory	Basic	Proficient	Distinguished
Possible Examples	• *The teacher says, "We don't have time for that today."* • *The teacher says, "If you'd just pay attention, you could understand this."* • *When a student asks the teacher to explain a mathematical procedure again, the teacher says, "Just do the homework assignment; you'll get it then."* • *And others…*	• *The teacher says, "I'll try to think of another way to come at this and get back to you."* • *The teacher says, "I realize not everyone understands this, but we can't spend any more time on it."* • *The teacher rearranges the way the students are grouped in an attempt to help students understand the lesson; the strategy is partially successful.* • *And others…*	• *The teacher says, "That's an interesting idea; let's see how it fits."* • *The teacher illustrates a principle of good writing to a student, using his interest in basketball as context.* • *The teacher says, "This seems to be more difficult for you than I expected; let's try this way," and then uses another approach.* • *And others…*	• *The teacher stops a lesson midstream and says, "This activity doesn't seem to be working. Here's another way I'd like you to try it."* • *The teacher incorporates the school's upcoming championship game into an explanation of averages.* • *The teacher says, "If we have to come back to this tomorrow, we will; it's really important that you understand it."* • *And others…*

[a] Teachers' Sense of Efficacy Scale - Teacher Beliefs. Adapted from Tschannen-Moran, M., & Woolfolk-Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*(7)*, 783-805. Reprinted with permission.

[b] The Four Domains Self-Assessment. Adapted from Danielson, C., Axtell, D., Bevan, P., Cleland, B., McKay, C., Phillips, E., & Wright, K. (2009). *Implementing the framework for teaching in enhancing professional practice*. Alexandria, VA: Association for Supervision and Curriculum Development. Reprinted with permission.

[c] The Framework for Teaching, Adapted from Danielson, C. (2011). *Enhancing professional practice: A framework for teaching.* Alexandria, VA: Association for Supervision and Curriculum Development. Reprinted with permission.

Danielson, C. (2012). Observing classroom practice. *Educational Leadership*, *70*, 32-37.

Part IV: (post intervention only)

Please respond to the following questions:

1. On what Domain 3: Instruction component did you focus?

2. How did focusing on one component impact your teaching, if at all?

3. How did e-mentoring and reflecting on the video of your own teaching change your perception of that component, if at all?

4. What new component of your teaching has emerged as an area of focus?

5. How did use of the framework, e-mentoring, and video self-reflection inform your perception of your teaching ability?

Appendix K

Video Self-Reflection: Critical Incident Reflection Form (adapted from Calandra et al., 2009)

What are critical incidents?

Critical incidents are the "oops," "ouch," "aha…," or "oh…" moments that you experience during a teaching episode or as you watch your videotaped lesson. The incident may be something that "amused" or "annoyed," was "typical" or "atypical," or a "felt difficulty" or "felt success."

Why use critical incidents?

One goal of using critical incidents is to help you look beyond the experience of the incident to the meaning of the incident. This is a form of reflection on-action. Another goal is to help you develop your ability to reflect on these incidents as they happen, or reflection-in-action. Finally, using critical incidents can help you adjust your lesson and strategies for future teaching cycles, or reflection-for-action.

How do I reflect on the critical incidents that I select?

Remember, there is no "right" or "wrong" way to select an incident. It should be something useful and meaningful to you. After watching and editing your videotaped lesson for critical incidents, use the statements and questions below to guide you as you reflect about the two to three critical incidents that you selected.

Directions: Provide an in-depth description of the event. Try to write this without judgment or interpretation.

1. Describe the feelings you had as you "experienced" the critical incident.

2. Explain the critical incident from the perspective of each participant (student, teacher, etc.). Use "I" for each participant's explanation.

3. Which component for growth is addressed in this incident?

4. What are some of your personal beliefs related to teaching and learning that you identified when reflecting on this incident and the component that you addressed. You might begin with "As an educator, I believe/value…"

5. After considering this critical incident, what will you do differently in the next lesson in light of your new understandings? You might begin with, "As an educator, I will…"

Appendix L

Lesson Development Template

Component for Growth:

Description of Class to be Observed:

Curriculum and Topic of Study:

New York State Learning Standards and Performance Indicators to be Addressed:

Objectives of Lesson:

Instructional Strategies (identify components and list strategies):

Assessment of Student Learning (identify components and list assessments):

Dialog Box:

Directions: repeat format for each dialogue

Dialogue date: _____
Dialogue:
Mentor comment–
Mentee comment-

Appendix M

Pre- and Postsurvey Results of Teachers' Sense of Efficacy

Table M1

Efficacy by Subfactors

		Presurvey		Postsurvey	
Subfactors	N	M	SD	M	SD
Efficacy in Student Engagement	9	7.28	1.30	7.47	1.18
Efficacy in Instructional Strategies	9	6.81	1.51	7.83	1.06
Efficacy in Classroom Management	9	7.64	1.07	8.11	.82

Table M2

Efficacy of Student Engagement

		Pre survey		Post survey	
Student Engagement	N	M	SD	M	SD
How much can you do to motivate students who show low interest in schoolwork?	9	7.55	1.67	7.33	1.12
How much can you do to get students to believe they can do well in schoolwork?	9	7.67	.87	7.89	1.30
How much can you do to help your students value learning?	9	6.45	1.23	7.89	.60
How much can you assist families in helping their children do well in school?	9	7.45	1.13	6.77	1.40

Table M3

Efficacy in Instructional Strategies

Instructional Strategies	N	Pre Survey M	SD	Post Survey M	SD
To what extent can you craft good questions for your students?	9	6.89	1.05	7.78	.97
How much can you use a variety of assessment strategies?	9	5.78	1.48	7.22	1.30
To what extent can you provide an alternative explanation or example when students are confused?	9	7.33	1.65	8.11	1.20
How well can you implement alternative strategies in your classroom?	9	7.22	1.48	8.22	.66

Table M4

Efficacy of Classroom Management

Classroom Management	N	Pre Survey M	SD	Post Survey M	SD
How much can you do to control disruptive behavior in the classroom?	9	7.78	.97	8.67	.70
How much can you do to get children to follow classroom rules?	9	7.33	1.22	8.11	.78
How much can you do to calm a student who is disruptive or noisy?	9	7.67	.70	7.33	0.5
How well can you establish a classroom management system with each group of students?	9	7.78	1.39	8.33	.70

Pre- and Postsurvey Means for Efficacy In Student Engagement

Means

7.5
7.4
7.3
7.2
7.1

| Pre-Survey Efficacy in Student Engagement | Post-Survey Efficacy in Student Engagement |

Pre- and Postsurvey Means for Efficacy in Classroom Management

Means

8.2
8
7.8
7.6
7.4

| Pre-Survey Efficacy in Classroom Management | Post-Survey Efficacy in Classroom Management |

Pre- and Postsurvey Means for Efficacy in Instructional Strategies

Means

8
7.5
7
6.5
6

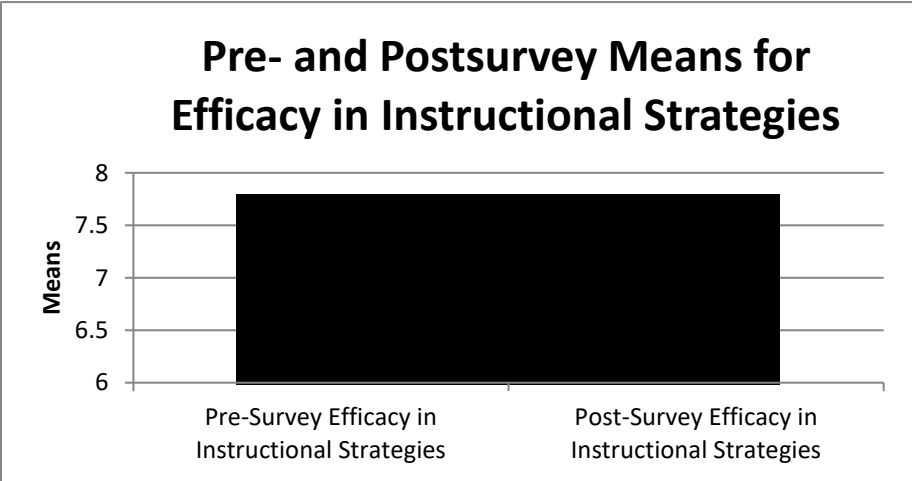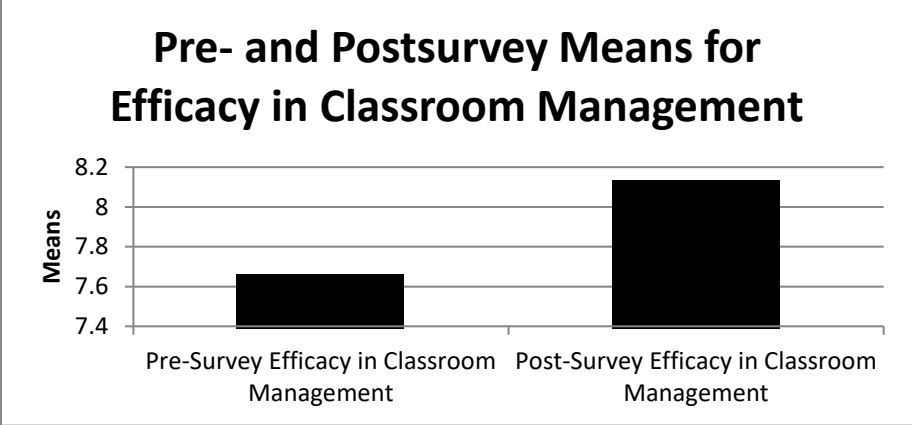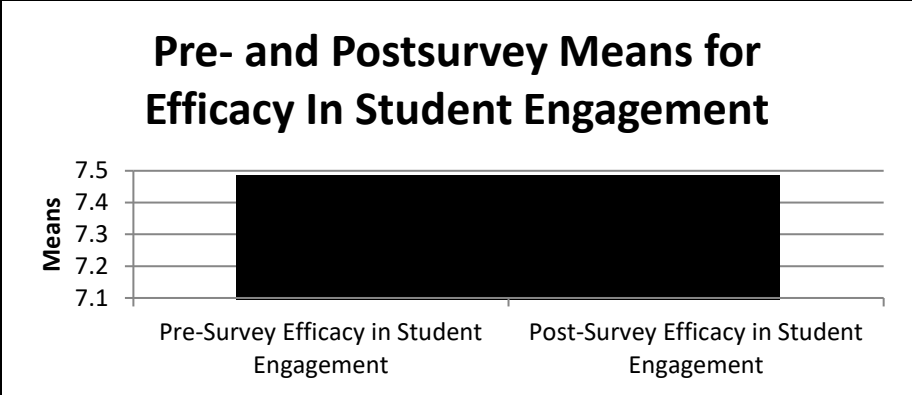| Pre-Survey Efficacy in Instructional Strategies | Post-Survey Efficacy in Instructional Strategies |

Figure M1. Mean of Efficacy in Student Engagement, Instructional Strategies, and Classroom Management subfactors from pre- and postsurvey. Means indicate how much a teacher feels he can do to influence student engagement, instructional strategies, and classroom management.

Jennifer Lamia   25 Rochelle Drive
Byram Hills School District   New City, NY 10956
Armonk, NY 10504   914-275-2436
 914-273-4082
jlamia@byramhills.org

Academic Background

2015-2018	**Johns Hopkins University**, Baltimore, Maryland EdD
2003-2005	**Fordham University**, New York, New York Master of Science in Educational Administration and Leadership
1991-1994	**Lehman College**, New York, New York Master of Arts in English Literature
1990-1991	**Long Island University**, Blauvelt, New York Master of Science in Computers in Education
1985-1989	**Mount Holyoke College**, South Hadley, Massachusetts Bachelor of Arts in English Literature

Professional Experience

July 2017-present	Byram Hills Central School District, Armonk, New York **Superintendent of Schools**
July 2012-present	Byram Hills Central School District, Armonk, New York **Assistant to the Superintendent for Personnel**
2011	Chapel School – IB World School, Sao Paulo, Brasil **Project Consultant**
2008-2010	Byram Hills High School **Assistant Principal**
2003-2008	Byram Hills School District **English Department Chairperson grades 6-12**

1990-2003	Byram Hills School District, Armonk, NY **Teacher of English, grades 7 and 8**
1989-1990	Tuxedo High School , Tuxedo, NY **Teacher of English**, grades 7, 9, 11, 12