UNDERSTANDING AND EVALUATING COMPONENTS OF PERFORMANCE FEEDBACK AND BEHAVIOR SKILLS TRAINING TO SUPPORT TEACHER CANDIDATES VIA REMOTE VIDEO OBSERVATIONS

A Dissertation Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

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August 2024

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Dedication

To my best friend and husband, Jason, thank you for being my biggest cheerleader and believing in me when I don't believe in myself. Thank you for being the best teammate, partner, and my rock through all our life adventures. None of this matters without you.

To my son, Charlie, thank you for making me better daily. Your passion for life, fun, and all the joy you bring to my life keeps me going. Keep asking questions and sharing your passion and humor with those around you. To my daughter, Ellie, you bring so much sunshine into our lives. Always let your beautiful soul shine in this world. I cannot wait to watch you grow and learn in your life journey. I hope I teach you the power of education, to grit your teeth and do hard things, and to share your beautiful gifts with those who need them, and be kind to all creatures in this world. I love you both with all the stars in the sky. I did this for you.

To my mom, Vicki Cornett, thank you for always believing in me and pushing me in everything I wanted to do. You are the voice in my head telling me to keep going.

To my dad, Terry Cornett, thank you for always loving me and cheering for me. Thanks for your constant support.

To my parents-in-law, Anne & Ned Smethers, thanks for listening, offering support, helping with the kids, and being cheerleaders for Jason and me.

To my amazing friends who listened, thank you for rooting for me even when you didn't understand. Thanks for taking the kids for playdates. Thanks for standing by me when I turned down hangouts so I could write. Thanks for loving my kids like your own.

To my incredible work colleagues and doc student colleagues, I could not have survived this without your constant support. The group texts, shared GIFs, brainstorming research ideas, and happy hours all helped me survive.

To my many teachers and mentors, from high school (Mrs. Krehbiel) to undergrad (the late Dr. Marc Carter and Dr. Wendi Born) to graduate school (Dr. Sherry Mee Bell), who have continued to encourage me along the way, so many of you saw this in my future long before I ever did. Thanks for believing in me and sharing your world with me.

ACKNOWLEDGEMENTS

First, thank you to my chair, advisor, and mentor, Dr. Tara Moore. It has been a long, bumpy ride filled with pitstops, wrong turns, and traffic jams, but you never waivered in your faith and support in my ability to do this. You constantly encouraged me while extending the grace I needed to be a doctoral student while working full time, being a mom, and having a second baby during this process. You never turned these into barriers but instead, something we could work through, adjust, and overcome. I look forward to our continued friendship.

Thank you to my long-time advisor and mentor, Dr. David Cihak. Thanks for sharing your love for asking research questions, critical thinking, and innovative problem-solving. You always push me to do more and be more while helping me navigate the academic world every step of the way. I am genuinely thankful for your constant nudges to get me out of my comfort zone and recognize I could be more.

Next, thank you, Dr. Yujeong Park, for passing along your incredible knowledge and passion for research methodology. Your ability to teach and advise with your fantastic humor has improved me. Our late night and wee early hour Zoom sessions were always special to me, and your unwavering belief I could accomplish this while being a mother has meant the world to me.

Thank you, Dr. Terry Ishitani, for pushing me to understand, learn, relearn, and keep learning statistical methodology and using it to answer questions, leading to more questions. Thank you for forcing me to learn how to use the formulas, understand the

processes behind the methods, and ensure I can utilize this information in my explanations. Your teaching and guidance have fueled my desire to be a better statistics instructor. I want to help individuals who may not understand these methods and how they impact their field, so they are more equipped to answer the questions that will lead to better questions.

Finally, thank you to the countless other faculty and mentors who provided support and encouragement. Thank you to those who continue to cheer for me and teach me. I am honored to call you all my mentors and friends.

ABSTRACT

This pilot study focused on the experiences and perceptions of 60 teacher candidates from a large university in the Southeast United States. The researcher examined their use of remote video observations, performance feedback, and behavior skills training as a coaching strategy from their education preparation programs by university supervisors. The study used the researcher-developed Remote Video Observation and Behavior Skills Training Tool (RVO+BST Tool). Through factor analysis and statistical analyses, the researcher gained insights into the challenges of using remote video observation, the types and quality of performance feedback, and the components of coaching teacher candidates received. The results of this pilot study led to the reduction of items from the survey and the creation of six factors that primarily focus on the qualities of performance feedback and behavior skills training desired by education preparation program supervisors. Implications for future research and suggestions are provided for using the survey to enhance the quality of supervision and coaching provided to teacher candidates by education preparation programs.

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LIST OF ABBREVIATIONS

Behavior Skills Training (BST)

Bug-in-the-Ear (BIE)

Educator Preparation Program (EPP)

Exploratory Factor Analysis (EFA)

Factor Analysis (FA)

Kaiser-Meyer-Olkin Test (KMO)

Measures of Sampling Adequacy (MSA)

Performance Feedback (PF)

Principal Component Analysis (PCA)

Remote Video Observation (RVO

CHAPTER ONE

INTRODUCTION AND GENERAL INFORMATION

Teachers, administrators, and schools nationwide are dealing with an overflowing plate of expectations and duties regarding educating students of all ages, backgrounds, and experiences (McLeskey et al., 2004). The expectations and responsibilities have caused many to leave the field earlier than anticipated, leading to teacher shortages and placing individuals with limited training in classrooms (Billingsley & Bettini, 2019; McLeskey et al., 2004; Podolsky et al., 2019). These demanding expectations and responsibilities are especially true for special education teachers, causing long-term fiscal and academic impacts on schools and students (Billingsley & Bettini, 2019; Carver-Thomas & Darling-Hammond, 2017; McLeskey et al., 2004).

Reasons special education teachers may choose to leave the field include: ineffective teacher preparation training experience (Carver-Thomas & Darling-Hammond, n.d.; McLeskey et al., 2004); challenging working conditions (Carver-Thomas & Darling-Hammond, n.d.); teaching conditions including class size, paraprofessional supports, and resources available (Billingsley & Bettini, 2019; McLeskey et al., 2004); lack of social or administrative supports (Billingsley & Bettini, 2019); and student discipline and classroom management concerns (Billingsley & Bettini, 2019; Carver-Thomas & Darling-Hammond, 2017; Podolsky et al., 2019). Recruitment, improved educator preparation programming, and educator training are all recommended as strategies to reduce burnout and increase retention in special education teachers

(Billingsley & Bettini, 2019; Carver-Thomas & Darling-Hammond, 2017; Podolsky et al., 2019).

Educator Preparation and Training

Educators receive training through their educator preparation programs (EPP). Brownell et al. (2010) discuss the role of the EPP as providing instruction, experience, and supervision in theories of teaching and learning, along with best practices in the classroom. The theory and practice of EPPs marry together during internship and practicum experiences (Billingsley et al., 2019; Brownell et al., 2010; Knight, 2014). When teacher candidates gain these hands-on experiences, it can help them expand their knowledge, skill, and reflection on the theories of learning and teaching and the instructional practices they are utilizing with students (Darling-Hammond et al., 2017; Desimone & Pak, 2017; Knight, 2014; Podolsky et al., 2019; Rock, 2019). A critical piece to making these teaching experiences more valuable to our teacher candidates is through quality supervision and coaching from highly-qualified mentors, instructional coaches, or faculty (Billingsley et al., 2019; Brownell et al., 2010; Darling-Hammond, Hyler, & Gardner, 2017).

Performance Feedback

When the EPP supervisor provides information related to the task to the trainee or educator on their performance, this is performance feedback (PF). PF gives insight to the educator and can serve as the bridge between the skills the educators currently understand and the skills they still need to learn (Hattie & Timperley, 2007). Quality PF enhances training and learning opportunities for educators (Fallon & Kurtz, 2019; Hattie &

Timperley, 2007; Schles & Robertson, 2019). Educators learn instructional practices and pedagogy from EPPs (Billingsley & Bettini, 2019; Brownell et al., 2010; Dunst et al., 2019). Teacher education requires continuous learning opportunities beyond what they learn from their EPPs. Educators are adult learners.

Teacher Observations

Teacher observations can be critical to a teacher's or teacher candidate's professional development (Darling-Hammond et al., 2017). Teacher observations are the most well-known part of the evaluation process for teachers' job performance (Taylor & Tyler, 2012). There are other reasons for teacher observations, including self-reflection on teaching practices, coaching and mentoring sessions, and peer observations for peer reflection, sometimes referred to as "teacher rounds." The main goal of all these types of teacher observations is to observe the teacher's or teacher candidate's instructional practices and provide positive and constructive feedback to the teachers (Center for Education Policy Research, 2015).

Traditionally, teacher observations occur when the observer attends the teacher's instruction in the teacher's classroom. The observer sits in the classroom throughout the observation, takes notes, and attends to the teacher's instruction and lesson plan with the students in the classroom. Given technological advancements, observers have begun utilizing video or remote observations (Hartshone et al., 2011; Heafner et al., 2011; Pickering & Walsh, 2011; Wash et al., 2014).

Remote Video Observation

Remote video observation (RVO) uses video to view or observe a teacher, teacher candidate, or paraprofessional. These observations can occur synchronously (in real-time) or asynchronously (reviewed at a later time) (Kane et al., 2020; Knight, 2014; Morin et al., 2019; Schaefer & Ottley, 2018). RVO intends for the supervisor to view, reflect upon, and provide PF based on the behaviors observed in the video (Knight, 2014; Rowland et al., 2021). RVO can replace or supplement traditional teacher observations (Center for Education Policy Research, 2015; Kane et al., 2020). Just as with these observations, the supervisor would watch the educator providing instruction to their students and then give feedback to them via the traditional teacher observation rubrics and evaluation tools (Center for Education Policy Research, 2015; Kane et al., 2020). RVO allows for the potential for supervisors and educators to engage in more accessible, frequency, and quality coaching and PF opportunities to improve educator and student outcomes. To better understand the role these processes can improve learning for educators and students, the theoretical support for the key features for utilizing remote video observation for supporting coaching (i.e., Behavior Skills Training) and performance feedback is provided below.

Theoretical Framework: Utilizing RVO to Provide Coaching and Feedback

Adult Learning Theory

Andragogy

Pedagogy, understanding how children learn, is frequently centered and discussed when training educators. The educator's role is to teach children, so understanding

pedagogy is critical. However, supervisors teach and train adults. Malcolm Knowles (1990) coined the term andragogy to understand how adults learn. The crucial difference between pedagogy and andragogy is that youth learners are submissive to instructions provided by their teachers, and adult learners need to understand why they need to learn a particular skill before a learning opportunity occurs. The supervisor's role is to make the adult learners aware of the importance of the desired skills. Providing a rationale for teacher education opportunities aligns with andragogy. Understanding the role of experience, readiness to learn, orientation to learning, and motivation for learners, youth, and adults is critical to adult learning opportunities (Knowles, 1990).

Adult learners' readiness to learn can relate to their experiences and desire to learn specific skills. The orientation to learning for youth is related to particular topics and organized by the teacher. Adult learners' learning direction connects to various job skills or work experience. The motivation to learn for youth is primarily extrinsic motivation related to the child earning grades, approval, and parental pressures. In contrast, adults may be extrinsically and intrinsically motivated to improve their "job satisfaction, self-esteem, quality of life, and the like" (Knowles, 1990, p. 63).

Merriam and Brockett (1997) discuss the ideas presented by Cyril O. Houle that are related to adult learning processes. The authors discuss adult learners' relationship with the planning and learning processes. See Figure 1 in Appendix B. All tables and figures are located in Appendix A and B at the end of the document. Adult education experiences occur intentionally to bring about learning. Intentional adult education suggests that supervisors should thoughtfully provide professional development activities

for educators. One consideration when it comes to creating learning opportunities is considering the previous experiences of the educators.

Transformative Theory

Knowles (1990) also discusses the importance of individuals' experiences and their impact on future learning opportunities. Jack Mezirow (1997) took this further when talking about transformative theory. Mezirow suggested not just these previous experiences but the individuals' interpretation of their experiences and how the "individuals make meaning of their experience that facilitates growth and learning" (Merriam & Brockett, 1997, pp. 140–141). The transformative theory promotes shaping people through experiences. The goal is for learners to gain empowerment and autonomy through these experiences. As the learners have new experiences, their frames of reference of thoughts, feelings, perceptions, and understanding may shift or adjust how they relate to their past experiences (Merriam & Brockett, 1997; Mezirow, 1997). See Figure 2.

Transformative theory applies to educators as they continue to evolve and grow. Supervisors need to consider how new experiences from their previous experiences shape educators. Supervisors can help educators develop through these frames of reference. When providing professional development and coaching to educators, the supervisors must consider their previous experiences when planning teacher education experiences.

Behavior Skills Training

Behavior skills training (BST) is a performance-based or competency-based training that focuses on "the attainment of measurable outcomes tied to established

objectives" (Merriam & Brockett, 1997, p. 151). Behavior skills training (BST) is a multi-step, evidence-based protocol for training staff, especially in human service-related fields like education (Reid et al., 2021). See Table 1 in Appendix A. BST is a training protocol for performance skills and could serve as an approach to providing professional development to pre-service educators and educators (Brock et al., 2017; Hogan, 2015; Kirkpatrick, 2019; Sawyer et al., 2017). Performance skills in special education include evidence-based interventions to support learners' academic and behavioral skills (Brock et al., 2017; Kirkpatrick, 2019). The BST protocol, coupled with quality PF, effectively supports and improves staff outcomes, including teachers, teacher candidates, and paraprofessionals (Andzik et al., 2021; Brock et al., 2017; Brock & Anderson, 2021; Kirkpatrick, 2019; Sawyer et al., 2017).

BST is an effective adult learning strategy that strategically utilizes professional development opportunities to train educators. BST builds upon observation, and a qualified supervisor provides PF to the educators. PF is a critical piece of BST (Reid et al., 2021). Understanding the value of PF, it is essential to consider potential theoretical support for PF. PF is closely associated with applied behavior analysis (ABA) and behaviorism. PF also aligns with aspects of Albert Bandura's Social Cognitive Theory (Bandura, 1977, 1986) and David Kolb's Experiential Learning framework (Kolb, 1984). Malcolm Knowles' andragogy adult learning theory (Knowles, 1990) and Jack Mezirow's transformation theory (Mezirow, 1997) play a role in PF's influence on adult learners, as previously discussed.

Developing the Theoretical Framework for Performance Feedback (PF)

Behaviorism

Operant Conditioning

Behaviorism is the most closely aligned theory of learning associated with BST and PF. The work of Edward Thorndike (Thorndike, 1927) and B.F. Skinner (Skinner, 1953) is seen in these core training protocols. Thorndike's Law of Effect suggests that behavior that leads to the desired consequences or outcomes becomes "stamped in." It shows that organisms behave more quickly or efficiently when the same situation and potential consequences are desired. This process became known as the learning curve and was one of the first attempts to show the behavior process quantitatively (Thorndike, 1927). B.F Skinner extended upon this theory with his influential work on operant conditioning in his book *Science and Human Behavior* (Skinner, 1953). Skinner clarified Thorndike's learning curve, Law of Effect, was not measuring the desired behavior it was seeking to measure. Instead, the Law of Effect measures the elimination of the other potential behaviors occurring. Skinner believed the desire of an organism to engage in the behavior depended on the consequence associated with the behavior response or class of responses. The class of responses is an organism's behavioral response to gain access to reinforcement. An organism engages in the class of responses contingent upon reinforcement (the operant). Engagement with the operant strengthens these responses (i.e., the conditioning). Consequently, organisms engage in the response that leads to accessing the reinforcer (Skinner, 1953).

Applied Behavior Analysis

Applied Behavior Analysis was born out of behaviorism, especially Skinner's work on operant conditioning (Baer et al.; 1968; Skinner, 1953, 1957). Applied Behavior Analysis is applied research to create improvements for participants that are socially significant by developing "functional relations between socially significant behavior and controlling variables" (Cooper et al., 2020, p. 21) to be successful in various life activities, including work performance (Baer et al., 1968, 1987; Cooper et al., 2020). Behavior analysts "design, implement, and evaluate behavior change programs" developed from behaviorism principles (Cooper et al., 2020, p. 21).

Establishing Operations. An "environmental event, operation, or stimulus conditions that affect an organism momentarily" impacts the effectiveness of reinforcers (Michael, 1993, p. 192) comes from Jack Michael's work on establishing operations (EO). EOs build off of Skinner's work on operant conditioning, deprivation, and satiation (Skinner, 1953). Skinner discussed how a state of deprivation for organisms helps increase the momentary effectiveness of a particular reinforcer (i.e., food). When a reinforcer is presented to the organism, it can increase the class of responses that has been previously reinforced by this particular reinforcer, known as an evocative effect (Michael, 1988, 1993; Skinner, 1953).

Motivating Operations. Cooper et al. (2020) discussed replacing the term establishing operations with motivating operations to encompass the altering of behavior definition discussed above and define it as value-altering and behavior-altering. Value-altering effects occur when the effectiveness of reinforcement increases or decreases.

Behavior-altering effects occur when the frequency of the behavior increases or decreases to gain access to the same amount or level of reinforcement.

Understanding how the concepts of establishing operations and motivating operations play into the learning process for organisms is critical. They help us know that it is not just enough to have the opportunity of reinforcement available or the environmental conditions present but also the conditions the organism is under that lead to the behavioral response. The potential for reinforcement may not be enough. Still, the reinforcer's value or frequency of the behavior is necessary to retrieve the reinforcer that impacts an individual's response, referred to as drive (Cooper et al., 2020; Michael, 1988, 1993; Skinner, 1953). Taking the drives of an organism into consideration in the operant learning process and approaching learning and behavior from an applied and systematic approach "to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change" is the core of applied behavior analysis (Cooper et al., 2020, p. 19). See Figure 3.

Applied Behavior Analysis interventions utilized by behavior analysts are rooted in learning curves (Thorndike, 1927), operant conditioning (Skinner, 1953), and establishing or motivating operations (Cooper et al., 2020; Michael, 1988, 1993). The drive to engage in the behavior (establishing or motivation operations) impacts the participant's likelihood to attend to the stimulus that initiates the behavior desired and access to the reinforcer (operant conditioning; Baer et al., 1968, 1987; Cooper et al., 2020; Michael, 1988, 1993; Skinner, 1953). Behavior analysts often utilize one strategy to expand on behaviorism concepts: observational learning and modeling appropriate

behaviors to teach participants/clients. Modeling is rooted in social cognitive theory (Bandura, 1977, 1986).

Social Cognitive Theory

Reciprocal Determinism

Albert Bandura (1961) uses models to teach behavior in the infamous "Bobo doll experiment." During this experiment, children viewed adult models engaging with a bobo doll toy in typical or aggressive play. The researchers then observed how the children engaged with the same toy. Results indicated that the children tended to engage with the toy the same way as the model. This study suggested and promoted the idea of using modeling to teach behavior. Modeling is central to social cognitive theory or social learning theory (Bandura et al., 1961). Social cognitive theory approaches human learning as a reciprocal process "in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other" (Bandura, 1986, p. 18). This interconnected reciprocal relationship across behavior, cognitive, and environmental events is the basis for reciprocal determinism. See Figure 4. Reciprocal determinism describes how, unlike in experiments, reciprocal sources of influence are inseparable and operate concurrently. These "ongoing interchanges, one and the same event can thus be a stimulus, a response, or an environmental reinforcer" (Bandura, 1977, p. 204). Behaviorists assert the environment can be controlled for, but social cognitive theory suggests that personal control can also play a role in schedules of reinforcements and contingencies. "People may be considered partially free insofar as they can influence future conditions by managing their own behavior" (Bandura, 1977, p. 205). As learners,

we may be able to exert some control over our behaviors. The contingencies in place for our behaviors support some of the main tenets in applied behavior analysis; behaviors taught are socially significant to create impactful changes in participants' lives (Bandura, 1977, 1986; Cooper et al., 2020).

Observational Learning

One approach to help participants learn these socially significant behaviors is observational learning. Human beings learn many experiences and behaviors by watching an appropriate model for the intended behavior and the consequences that follow the behavior. The impact of observational learning is evident when an individual can produce behaviors from models exhibiting "novel patterns of thought or behavior" (Bandura, 1986, p. 49) that the individual did not already have in their repertoire (Bandura, 1977, 1986).

A series of processes are in place through observational learning: attentional, retention, motor reproduction, and motivational processes that impact the matching performances of the participants who viewed the model. In short, each individual's ability, interaction with the model (how well the participant attends to the model, remembers the model, reproduces the model's behaviors, and motivation to adopt the modeled behavior), and environmental factors can all reciprocally impact the accuracy of the imitation of the modeled behavior (Bandura, 1977, 1986). Observational learning through modeling can improve behavioral outcomes for individuals (Bandura, 1977). As individuals perform these skills and behaviors successfully, this can help reinforce their

desire to continue to engage in these behaviors and build their self-efficacy (Bandura, 1977, 1986; Cooper et al., 2020).

Self-Efficacy

Self-efficacy is the self-belief in one's ability to engage in the expected behaviors in various situations. An individual's self-efficacy when performing certain behaviors in situations can impact whether they engage in the behavior or avoid it. People's perception of their self-efficacy can influence their personal or professional development and growth. When people do not believe they can conduct specific tasks, they may be less likely to attempt them and choose tasks they view themselves as able to do. Individuals who believe they are capable are likelier to engage in the activities and grow their competencies (Bandura, 1986).

An individual's ability to accurately appraise their capabilities is critical to their growth and development. One way to promote self-efficacy is when individuals experience success through five information sources: enactive attainment, vicarious experience or observational learning, verbal persuasion, and physiological state (Bandura, 1986). See Table 2 for descriptions of these information sources.

Understanding the sources of information for self-efficacy is critical when considering how participants intake information and anticipate success. Their self-efficacy concerning specific tasks or experiences can impact their motivating operations regarding whether they are more likely or less likely to engage in a series of responses or behaviors to gain access to reinforcement. Self-efficacy influences an individual's experiences while learning new tasks or skills (Bandura, 1986; Cooper et al., 2020;

Michael, 1988, 1993). Experiential learning is one approach to help support participants' self-efficacy, support the participant in learning socially significant behavior, and make essential improvements to the participants' lives, a central tenet of ABA (Baer et al., 1968, 1987; Bandura, 1986; Cooper et al., 2020).

Experiential Learning

David Kolb's (1984) experiential learning theory framework considers many learning theories and scholars and is perhaps a more pragmatic and action research view on learning. The pragmatist view of experiential learning theory is seen in its central belief that learning is a process, and each individual's experience determines what that process may look like (Kolb et al., 2014). There is no absolute best way to learn, and each person's experience is critical to the learning cycle, often evaluated or seen through action research (Kolb, 1984).

Experiential learning theory promotes the importance of experiences in the learning process. Learning is interactive and reciprocal between the learner, facilitator or trainer, and the environment. While looked at through a different lens, this relates closely to Bandura's social learning theory, specifically with reciprocal determinism (Bandura, 1977). This dynamic relationship is central to experiential learning theory and the experiential learning cycle.

The experiential learning cycle encompasses four main components; "concrete experience, reflective observation, abstract conceptualization, and active experimentation" (Kolb, 1984, p. 40). Learning occurs through the transactions of these four components and the two modes in the experiential learning theory learning cycle:

grasping experience and transforming experience. "Grasping experience refers to the process of taking in information, and transforming experience is how individuals interpret and act on that information" (Kolb et al., 2014, p. 214). Learning requires individuals to have experiences to reflect and think about and then act on what they experience and process (Kolb et al., 2014; Kolb, 1984). See Figure 5. The experiential learning cycle components are visible through BST and PF protocols (Reid et al., 2021).

Connecting the Theory and RVO + PF

This theoretical framework connects the key features of behavior skills training (BST) and remote video observation (RVO). These different educational theories work together to promote critical features for effective educator professional development and coaching (Joyce & Showers, 1982). Quality teacher observation, instruction and modeling, practice, and performance feedback are all key features of effective professional development and coaching. BST via RVO to improve outcomes for educators and students is grounded in these educational and learning theories and what this dissertation will build upon.

A critical part of BST is performance feedback (PF). PF is part of step 4 in BST. As previously mentioned, Reid et al. (2021) provide an evidence-based protocol for BST (see Table 1). Reid et al. (2021) also offer a protocol for PF (see Table 3). The PF protocol is a seven-step protocol for providing behavior-specific praise and corrective feedback. When training educators, it is essential to keep in mind both protocols. These protocols work together to improve educator outcomes (Reid et al., 2021).

BST and PF can lead to better outcomes, success, and improved self-efficacy for special education teachers and paraprofessionals (Brock et al., 2017; Brock & Anderson, 2021; Kirkpatrick, 2019). To help us better understand the importance of these steps and the connections of the theory within PF, we need to break down each step of the protocol and look at how the theories of behaviorism, social cognitive theory, and experiential learning theory connect through PF. We also connect the theoretical support regarding RVO's role in improving outcomes for teachers and teacher candidates through virtual PF opportunities.

PF: Step 1 of 7

The first step in the PF protocol is to "begin feedback with a positive or empathetic statement" (Reid et al., 2021, p. 96). This initial statement is typically positive or empathetic and complimentary about something the supervisor observed the educator's performance. This statement relates to Bandura's social cognitive theory concept of self-efficacy, which promotes the teacher or teacher candidate's perception of their self-efficacy, leading to professional development and growth. It can help convince the educator to complete the task and encourage them to put more effort into future teacher experiences following the feedback session (Bandura, 1986). Beginning the feedback session with a positive or empathetic statement is related to the motivation operations (MO). This initial statement could momentarily improve the behavior-altering effects to increase the educator's desired behavior frequency in future observations (Cooper et al., 2020; Michael, 1988, 1993; Skinner, 1953).

PF: Step 2 of 7

The second step of the PF protocol is to "specify what staff performed correctly" (Reid et al., 2021, p. 96). The supervisor specifying what the staff performed correctly can serve as verbal persuasion to improve the educator's self-efficacy. Letting the educator know the skills or steps of a skill they completed correctly can convince them to continue engaging in these tasks (Bandura, 1986).

This verbal persuasion to improve the teacher or teacher candidate's self-efficacy can help motivate the educator to continue engaging in the desired skills (Bandura, 1977, 1986). The motivating operation behavior-altering effects can improve as the educator's self-efficacy grows. Essentially, when the supervisor specifies what they have performed correctly and increases their self-efficacy, the educator can increase their use of the desired teaching strategies to continue gaining access to positive feedback from their supervisor (Cooper et al., 2020).

PF: Step 3 of 7

The third step of the PF protocol is to "specify what staff performed incorrectly, if applicable" (Reid et al., 2021, p. 96). Supervisors specifying what educators performed incorrectly is critical to ensure they fully utilize research-based teaching strategies. Providing corrective feedback is a vital element of operant conditioning. As previously stated, conditioning the educator to engage in the desired response in the future will lead to greater access to reinforcement (e.g., improved teaching outcomes; Skinner, 1953).

As educators improve the implementation fidelity for research-based teaching practices, this will promote their self-efficacy. As educators improve their self-efficacy,

this can lead to further professional development and growth. This relationship between the corrective feedback, improved implementation fidelity, and impact on the educator's self-efficacy shows the interconnected reciprocal relationship between the supervisor's feedback, associated environmental events, and the educator's behavior and cognitive abilities as related to Albert Bandura's reciprocal determinism (Bandura, 1977, 1986). This reciprocal relationship plays a role in improved schedules of reinforcement and contingencies for educators (Skinner, 1953).

PF: Step 4 of 7

The fourth step of the PF protocol is to "specify what staff needs to do to correct the work behavior identified in Step 3" (Reid et al., 2021, p. 96). Once the supervisor provides the educator with corrective feedback, they should also explain how to correct the behavior. Frequently, this may include the supervisor reviewing the steps of the targeted skill, providing a written copy of the steps to perform the targeted skill, or modeling the targeted skill for the educator. Explaining what educators must do is a critical step in the feedback loop to improve teachers' and teacher candidates' implementation fidelity in research-based practices (Reid et al., 2021).

Providing educators with explicit feedback that includes details about what they need to do to improve their performance in the future builds off of Applied Behavior Analysis principles (Baer et al., 1968, 1987). Modeling the targeted skill builds off Albert Bandura's observational learning theory. Observational learning gives the staff or educator a model of the intended behavior. The staff or educator's ability to attend to the model and perform the model's skills is critical in specifying what the staff needs to do

following corrective feedback given in Step 3. When the staff or educator can attend, engage with, and reproduce the model, they are likelier to complete the targeted skills (Bandura, 1977, 1986).

When staff is more likely to engage in the task due to potential value-altering or behavior-altering motivating operations, this can lead to improved desired behavior outcomes and success (Cooper et al., 2020; Michael, 1988, 1993). The success of the staff or educator may reinforce their desire to continue to engage in the targeted skill. Success builds the staff or educator's self-efficacy by seeing someone perform the skill successfully or vicarious experience (Bandura, 1986). The successful demonstration of the targeted skill can impact the experience of the staff or educator. The educator's experiences and moving through the experiential learning cycle with concrete experiences instill learning of the target skill (Kolb et al., 2014; Kolb, 1984).

PF: Step 5 of 7

The fifth step of the PF protocol is to "solicit questions from staff about the information provided" (Reid et al., 2021, p. 96). When coaches and supervisors provide teachers or teacher candidates with questions, this helps them clarify expectations of the targeted skills. Soliciting questions is evident in the experiential learning cycle by encouraging reflection, thinking about the experience or performance of the skill, and finally acting upon this in the future (Kolb et al., 2014; Kolb, 1984). The educator asks supervisors and coaches questions to obtain information about their performance. The supervisor answers their questions and provides feedback on their performance related to the instructional situation's functions. Supervisors providing this guidance improve

teachers' or teacher candidates' fidelity of implementing the targeted teaching strategies (Gagne, 1977; M. Knowles, 1990).

PF: Step 6 of 7

The sixth step of the PF protocol is to "inform staff about subsequent supervisory actions regarding the target work behavior" (Reid et al., 2021, p. 96). Supervisors provide educators with details about the expected follow-up steps during this step. Follow-up steps could include future observations and continued monitoring of the educators' implementation of the targeted teaching strategy. Supervisors may utilize contingencies of reinforcement based on implementation fidelity, such as frequency of observations or adjustments to professional development opportunities. Reinforcement contingency can impact the educator's response (Skinner, 1953). The educator's frequency of behavior may change based on the value-altering motivating operations to access an increase of reinforcement (i.e., reduction in the number of observations) as they improve their fidelity of implementation in the targeted teaching strategies (Cooper et al., 2020; Michael, 1988, 1993; Skinner, 1953).

PF: Step 7 of 7

The seventh step of the PF protocol is to "end feedback with a positive or empathetic statement" (Reid et al., 2021, p. 96). When supervisors end their feedback with a positive statement, this serves as reinforcement to elicit the educator's targeted skills that need to continue. This positive statement acts as a behavior-altering motivation operation to ensure the educator continues to engage in this same behavior in the future to

continue to gain access to this reinforcement (i.e., improve teacher and student outcomes; Michael, 1988, 1993).

Providing the educator with a positive statement also allows the supervisor to improve the educator's self-efficacy through verbal persuasion. This continued growth in the educators' self-efficacy is essential to encourage the educator to enhance effective teaching strategies (Bandura, 1986). See Figure 6 for a visual representation of this theoretical framework.

Purpose of Dissertation

This dissertation aims to expand on the growing body of research to evaluate professional development and coaching practices to improve educators' fidelity of implementing effective teaching practices. BST is one coaching model beginning to be utilized in educational settings. Utilizing BST to enhance educators' implementation fidelity in research-based strategies is critical to support teachers, teacher candidates, and teaching assistants. Further research that evaluates the use of BST and teacher candidates' perceptions of the essential components of BST, especially with PF, is needed. Understanding both their perceptions and the effectiveness of these components can help EPPs provide quality and meaningful professional development and coaching opportunities.

Another key focus for this dissertation is understanding teacher candidates' perceptions of RVO and the various modalities of RVO. RVO is an effective and efficient way to provide observations, coaching, and feedback to teachers and teacher candidates, and EPPs frequently utilize it. Understanding teacher candidates' perceptions

will help EPPs evaluate their use of remote video observations and what they must consider when utilizing RVO. Another crucial part of this research is understanding our educators' perceptions of these key features and evaluating the use of BST using RVO and its impact on teacher candidates and teachers.

CHAPTER TWO

LITERATURE REVIEW

Providing quality professional development and coaching to teacher candidates and teachers alike is critical to ensure these educators feel prepared, motivated, and confident as they move forward and meet the job demands. Performance feedback is a critical feature in most coaching models, including behavior skills training (BST) (Reid et al., 2021). Training staff or educators to learn by doing the targeted skills and gain success in performing these skills will better reinforce these skills (Skinner, 1953), build self-efficacy (Bandura, 1986), and promote future actions based on these skills (Kolb, 1984). Utilizing performance feedback as part of the training for educators to gain these skills and boost their future success is a decisive step towards helping to improve outcomes for teachers and teacher candidates, including remote video observations (RVO) within these coaching and professional development opportunities. This chapter will review the critical literature across the key features of BST and PF being evaluated in this study.

Coaching in Education

A critical piece to making these teaching experiences more valuable to our teacher candidates is through quality supervision and coaching from highly qualified mentors, instructional coaches, or faculty (B. Billingsley et al., 2019; Brownell et al., 2010; Darling-Hammond et al., 2017). Coaching for teachers is available to teacher candidates and practicing teachers alike. Joyce and Showers (1982) discuss the critical components of coaching, including “the study of theory, the observation of demonstrations, and

practice with feedback" (Joyce & Showers, 1982, p. 5). This coaching process is critical to helping educators embed these new skills or strategies into their repertoire.

Performance Feedback

Performance feedback (PF) provides information related to the task to the trainee or educator from the supervisor on their performance. PF gives insight to the educator and can serve as the bridge between the skills the educators currently understand and the skills they still need to learn (Hattie & Timperley, 2007). Reid et al. (2021) provide an evidence-based protocol for providing PF. This seven-step protocol was introduced in chapter one and includes starting feedback with a positive statement, providing behavior-specific praise about what the staff performed correctly, corrective feedback for what the staff performed incorrectly, and discuss further actions needed following the supervision or observation. See Table 3 for a complete list of all the steps. Providing quality PF is instrumental to improving educators' teaching practices (Fallon et al., 2015; Hattie & Timperley, 2007; Reid et al., 2021).

PF is a critical element of teacher professional development and observations to improve teachers' performance (Taylor & Tyler, 2012). The concept of delivering feedback to impact performance in various organizational settings is rooted in organizational behavior management (Alvero et al., 2001). PF usually includes providing the trainee (i.e., an educator) information about the "quantity or quality of their past performance" (Alvero et al., 2001, p. 4). This information from the trainer (i.e., supervisor) following the trainee's performance tells the trainee how they are doing and allows them to adjust their performance (Alvero et al., 2001). PF continues to be a critical

feature in evaluating job performance across many industries and fields (Alvero et al., 2001; Fallon et al., 2015; Taylor & Tyler, 2012).

Reid et al. (2021) provide an evidence-based protocol for providing PF to employees. Initially created to support individuals who work with people in settings that help individuals with disabilities, this model applies to many fields, including education. See Chapter One for more details about this protocol. See Table 1 for Reid et al.'s (2021) performance feedback evidence-based protocol. The evidence-based protocol for providing PF applies to education settings, including PF, to educators (Reid et al., 2021). Several meta-analyses and reviews of literature summarize the effectiveness of PF for teachers and teacher candidates (Cornelius & Nagro, 2014; Fallon et al., 2015; Hattie & Timperley, 2007; Schles & Robertson, 2019).

Hattie and Temperley (2007) reviewed several meta-analyses that included over 196 studies and found the average effect size was 0.79, with a range of variability depending on the type of performance feedback provided by teachers to students. Purposeful and corrective feedback, including "receiving information feedback about a task and how to do it more effectively," showed the highest effect sizes (Hattie & Timperley, 2007, p. 84). PF should help students understand how they are doing and where do they go next in their skill development. While this review was primarily focused on K-12 students, the elements of PF including the types of feedback, timing of feedback, use of positive and negative feedback, and mode of feedback, are critical elements of PF for adults and children alike. Scheeler et al. (2004) indicate that the immediacy of the feedback is critical to its effectiveness. Cornelius and Nagro (2014)

share that PF is best when it is immediate (although there is recognition that delayed feedback can be effective), specific, constructive, and purposeful.

Cornelius and Nagro (2014) reviewed the literature on PF for teacher candidates. The authors found "performance feedback during field experience can lead to increased implementation fidelity of evidence-based instructional strategies" (Cornelius & Nagro, 2014, p. 143). However, the authors indicated mixed results in determining if PF is an evidence-based practice and indicated further high-quality research is needed.

Schles and Robertson (2019) conducted a literature review to evaluate if PF improved teacher candidates' use of evidence-based practices. This review found "19 out of 20 pre-service special education teachers improved their implementation fidelity of EBPs" (Schles & Robertson, 2019, p. 43). However, there were not enough studies to identify PF as an EBP for training teacher candidates, but the research suggests PF is a "promising practice in teacher preparation," and further research is needed (Schles & Robertson, 2019, p. 43).

Fallon et al. (2015) conducted a systematic review of the literature of PF. They found PF to be "an evidence-based strategy to increase implementers' treatment fidelity when providing academic and behavioral interventions to students in education settings" (Fallon et al., 2015, p. 242). The authors identified different feedback modes; however, research is limited in determining the most effective modality. Some other feedback modes include written feedback, conferences, and bug in the ear (BIE).

Written Feedback

Research on written feedback provided to educators often focuses on feedback provided via e-mail messages (Ascetta et al., 2019; Barton et al., 2013; Fullerton et al., 2009; Hemmeter et al., 2011), a data summary (Alexander et al., 2012; Ascetta et al., 2019), or a rubric rating (Dyke et al., 2008; Kane et al., 2015, 2020; Wash et al., 2014). Written feedback could be each of these types individually or in combination. Written feedback effectively improves teacher outcomes (Cornelius & Nagro, 2014; Fallon et al., 2015; Hattie & Timperley, 2007).

Written feedback via e-mail has grown in popularity, likely because it is user-friendly and easily adapted for various contexts. Barton et al. (2013) conducted three single-case research design studies to evaluate the effectiveness of PF provided to preschool teachers via e-mail. The e-mail started with a greeting and positive comment, provided data from the observation with supportive feedback, outlined a list of corrective feedback, a request for a response from the teacher to the supervisor, and ended the e-mail with a closing encouraging statement. The structure of this e-mail includes the same steps as Reid et al.'s (2021) evidence-based protocol for providing feedback to staff. See Table 3. The three studies showed a functional relation between the targeted teacher behaviors and PF provided via e-mail.

Ascetta et al. (2019) found similar results during a randomized controlled treatment experimental design study. During this study, teachers participated in a series of professional development modules and one of two written feedback models via e-mail: quantitative self-report data feedback or qualitative feedback based on their teaching

performance as observed via asynchronous RVO. The professional development modules and PF training package improvements were seen in targeted teacher behaviors and student language outcomes regardless of the type of written PF they received. One benefit to the quantitative data feedback group was it took the supervisor less time to provide feedback to the teachers. This time-saving approach improved efficiency and time saved for the supervisor to provide quality coaching and PF to other teachers and teacher candidates.

Ascetta et al. (2019), with the added element of quantitative data summary provided in the feedback, build upon incorporating goal-setting and self-monitoring into educator training and feedback opportunities (Hattie & Timperley, 2007). By setting goals and then evaluating improvements towards these goals through PF and data summaries, educators have the opportunity to reflect upon their practice and target areas to make improvements (Alexander et al., 2012; Ascetta et al., 2019; Bishop et al., 2015; Hattie & Timperley, 2007). Written feedback that includes data summarized in description and visuals (i.e., graphs) can help educators concretely evaluate their performance on teacher and student behavior outcomes (Ascetta et al., 2019).

Rubrics are a standard tool used to provide educators with PF for evaluations. Charlotte Danielson's framework for teaching is probably one of the most widely used teacher evaluation rubric models (Danielson, 2007). This framework includes four main domains: planning, instruction, climate and culture, and professionalism. Typically, administrators will observe teachers across these domains in several observations. Administrators provide teachers with both written feedback and scores based on these

rubrics. Based on these observations, administrators then share strengths (areas of reinforcement) and areas to improve (areas of refinement) with the teacher. Teacher observations are standard practice in teacher evaluation (Taylor & Tyler, 2012; Tennessee Department of Education, 2018).

Teacher evaluation observations are frequently conducted in person, where administrators or supervisors visit educators in classrooms to observe their instruction. However, observations can be accomplished via RVO, either asynchronous or synchronous (Hartshone et al., 2011; Wash et al., 2014). Kane et al. (2020) conducted a quasi-experimental design comparing educators observed in-person to RVO asynchronous observations. Results indicated that teachers who participated in RVO saw improvement in the evaluation process and the evaluation rubric outcomes. RVO also allowed post-observation conferences to be more meaningful because teachers could view themselves teaching, reflect on their teaching practices, and implement administrators' recommendations. While administrators spent less time in the teachers' classrooms in RVO, they could complete and provide PF with more observations. Freeing up their time and ability to attend to critical school needs, including being more available to educators, students' needs, and being present in more classrooms and throughout the school building. Teacher survey data indicated teachers who participated in RVO were more likely to remain in the same school district, same school, and same teaching assignment than those who participated in the control group (in-person observation). These results support the notion that RVO with PF provided via evaluation rubrics is a

practical approach to improving teacher outcomes (Center for Education Policy Research, 2015; Kane et al., 2015, 2020).

Conferences

Many teacher evaluation systems require conferences between the educator and supervisor (Danielson, 2007; Tennessee Department of Education, 2018). The conference is an opportunity for the supervisor to provide PF to the educator. This conference can be immediately following observation or delayed. Ideally, this is a shorter delay (i.e., within 24-48 hours). While conferences may be delayed beyond 48 hours, shorter delays are preferred (Center for Education Policy Research, 2015). The meeting may occur in person, by phone, or via videoconferencing software. It is common for these conferences to include written feedback, including notes, data summaries, and evaluation rubrics as shared by the supervisor (Center for Education Policy Research, 2015; Kane et al., 2020; Wash et al., 2014).

It is common for these conversations to include both praise and corrective feedback during the teacher evaluation process. Behavior-specific praise is given in reinforcement areas, and corrective feedback is provided for improvement. While there is research to evaluate the impacts of the teacher evaluation rubric and various forms of written feedback, less research looks specifically at the conversations during these conferences. It is unclear if supervisors utilize a standard approach to providing PF during the conferences. Future research should evaluate the components of the PF within these conferences (Fallon et al., 2015; Scheeler et al., 2004; Schles & Robertson, 2019).

Bug in the Ear (BIE)

Bug in the ear (BIE) is a growing kind of PF in teacher education that can improve teacher and student outcomes (Rock, 2019; Schaefer & Ottley, 2018). Originally known as the third mechanical ear, BIE, was first utilized in the 1950s (Korner & Brown, 1952). BIE in teacher education was first identified in the 1970s when FM radios provided educators with feedback following the training they received during a workshop (Bowles & Nelson, 1976). BIE occurs with synchronous RVO, virtual coaching, or telehealth sessions (Knight, 2014; Rock, 2019). Rock et al. (2012) describe virtual coaching or ecoaching sessions with BIE as the observed educator wears headphones or earpiece (i.e., Bluetooth or wireless earbud). The headphones allow the educator to hear the supervisor throughout the entire observation. The supervisor then has access to a microphone connected to the headphone or earpiece the educator is wearing. As the educator is engaged in their instructional practices, the supervisor provides them with instantaneous PF. The educator receives PF on their performance as they engage in teaching or targeted behavior(s). BIE can include both behavior specific praise and corrective feedback about the behaviors they are engaging in during their instruction. BIE may also include prompts to cue or remind the teacher to complete certain behaviors as outlined in their previous conversations, goal setting, or training (Rock et al., 2012; Rock, 2019; Schaefer & Ottley, 2018; Scheeler et al., 2004).

BIE is an effective form of PF to improve both educator outcomes (Coogle et al., 2015; Rock et al., 2012; Schaefer & Ottley, 2018) and student outcomes (Coogle et al., 2020; Rosenberg et al., 2020; Scheeler et al., 2012). Schaefer et al. (2018) systematically

reviewed single-case research design studies using BIE for PF. Results indicate that the majority of the cases meet What Works Clearinghouse (WWC) standards (Horner et al., 2005; Kratochwill et al., 2010) without reservations (n = 39) or with reservations (n = 34), for a total of 63 cases. Of these 63 cases, 89% provided evidence to support BIE as "an effective intervention to change teacher behavior" (Schaefer & Ottley, 2018, p. 7). BIE often occurs alongside other PF forms, including written feedback and conferencing. BIE targets specific teacher and student behaviors to improve. BIE focuses on these targeted behaviors (Rock et al., 2012; Schaefer & Ottley, 2018). BIE PF is typically short, concise, and focused on previously identified targeted behaviors. Abbreviated PF via BIE reduces reactivity or distraction from the actual instructional practices and learning (Scheeler et al., 2012). BIE is often one part of a multi-component training package to improve teacher and student outcomes (Bloomfield et al., 2020; Rosenberg et al., 2020).

Rock et al. (2012) and Rock et al. (2009) support using BIE to provide PF to teacher candidates during their teacher observations. BIE can also target more specific interventions or improve teachers' use of specific evidence-based practices to improve student outcomes. Examples of BIE being used via virtual coaching, ecoaching, or telehealth sessions to train educators including to conduct functional analysis (Bloomfield et al., 2020), functional behavior assessments (Barretto et al., 2006), functional communication training (Gibson et al., 2010), three-term contingency (Scheeler et al., 2006, 2012), naturalistic instruction (Coogle et al., 2019) and other EBPs or high leverage practices as defined by McLeskey et al. (2019) utilized by educators to improve

student outcomes (Coogle et al., 2016, 2020; Nagro et al., 2021; O'Brien et al., 2021; Owens et al., 2020).

Across these studies, BIE is a practical approach to improving teacher behavior. RVO, paired with BIE, allowed teachers to get instantaneous feedback and improve their teaching practices. Despite the growing body of research to support BIE, the specific components of BIE PF and RVO are not always clearly defined, and further research is needed to evaluate these components (Schaefer & Ottley, 2018).

Behavior Skills Training

Behavior skills training (BST) is a performance-based and competency-based training protocol. Parsons et al. (1993) provide one of the initial explanations about BST, the Teaching-Skills Training Program. The authors developed the program to train support staff in strategies that teach individuals with developmental disabilities critical skills. The training focused on two skill areas: verbal and performance skills (i.e., task analysis, least-to-most prompts, reinforcement, and error correction; Parsons et al., 1993, 1996).

The training began with workshops on specific skills and a pretest covering the information covered in the workshops. Written directions were provided during the workshop, and a video model was shown for each skill. Following the videos, the staff participated in several practice activities to practice the skills covered in the workshops, followed by a post-test. Finally, the trainees utilized the skills in their respective areas, and the trainee provided PF. The PF included behavior-specific praise and corrective feedback. All feedback sessions began and ended with behavior-specific praise. This

program is an early rendition of BST. Reid et al. (2021) and Sarokoff and Sturmey (2004) expand on Parsons et al. (1993, 1996) Teaching-Skills Training Program.

Sarokoff and Sturmey (2004) initially discussed the steps of BST by ensuring the trainer provided and reviewed a written copy of procedures with each trainee. Next, the trainer shared a copy of the baseline data with the trainee and provided feedback to the trainee. Next, the trainee engaged in role-playing or practice for the targeted skill, and the trainer provided immediate verbal feedback to the trainee. Then, the trainer modeled the targeted skill and discussed specific areas of the skill the trainee needed to improve based on previous practice sessions. This process would continue until the trainee met the criteria. “Instructions, feedback, rehearsal, and modeling” (Sarokoff & Sturmey, 2004, p. 537) are steps to improve the trainee’s implementation of the targeted skill. Reid et al. (2021) built upon these steps with the BST evidence-based protocol.

Reid et al. (2021) discuss the critical steps of BST. See Table 1. The first step includes providing trainees with sufficient detail to describe the performance skill and responsibilities. The supervisor or trainer provides the trainee with detailed verbal descriptions of the skill. It is beneficial for the supervisor to provide the trainee with the rationale for performing the skills to promote acceptance amongst the staff. The second step includes providing the staff with a written summary of the skill. A performance checklist is frequently utilized and can serve as a permanent reminder for the trainee or staff to refer to as needed. Every staff member should receive a copy of the written summary or performance checklist. The written summary is concise and straightforward. The third step involves demonstrating the target skills. The supervisor models the

targeted skill for the trainee or staff. Modeling is a critical element of performance-based training. Supervisors must be competent in the skills they are training the staff to perform.

The fourth step involves two parts. First, the staff role-plays or practices the targeted skill. Second, the supervisor or trainer provides performance feedback to the trainee or staff. Role-play or practice is often known as a behavioral rehearsal in BST. PF is a critical piece of performance-based training. Following the staff's skill performance, the supervisor or trainer must provide the staff with feedback. The feedback should inform the trainee or staff what they did correctly and incorrectly. The fifth step involves repeating the third and fourth steps until the trainee demonstrates mastery. BST is a performance-based and competency-based training protocol (Reid et al., 2021).

PF is a critical piece and step four of the BST protocol. As discussed in Chapter One, Reid et al. (2021) offer an evidence-based protocol for giving feedback. See Table 3. This protocol for PF is effective as it includes both behavior-specific praise and corrective feedback. Quality feedback is critical to improving teachers' implementation fidelity for evidence-based practices (Hattie & Timperley, 2007).

BST is a practical training protocol for clinical staff, parents, and educators. BST is effective in clinical, home, and classroom settings. BST has been effective at improving the fidelity of implementation in different teaching strategies, including functional analysis (Pence et al., 2014; Rios et al., 2020; Ward-Horner & Sturmey, 2012), functional community training, augmentative and alternative communication (Andzik et al., 2021), mand training (Nigro-Bruzzi & Sturmey, 2010), and discrete trial training

(Sarokoff & Sturmey, 2004). Brock et al. (2017) conducted a meta-analysis examining approaches to coaching and training practitioners who work with students who require intervention. One hundred eighteen single-case research design studies were identified that included training 475 practitioners to work with 642 students with disabilities and 971 students with disabilities. Most studies include initial training and coaching for the practitioner in an intervention. Various training and coaching elements were reviewed, including PF, modeling, skill rehearsal, and behavior skills training. BST provides the most consistent improvements in the fidelity of implementation in the use of skills by the practitioners. BST is a multicomponent training and coaching protocol with several effective strategies, including modeling and feedback (Brock et al., 2017).

Ward-Horner and Sturmey (2012) conducted a component analysis of BST to train direct-care staff to conduct functional analyses (to determine potential functions, or purposes, of problem behavior. An alternating treatment single-case research design was used for this study. Three dyads of staff members and students were included in this study. During each training phase, the experimenter randomly assigned and utilized counterbalancing of modeling, rehearsal, or feedback to each functional analysis condition. Each staff member viewed a video model before conducting the functional analysis condition during the modeling condition. During the feedback condition, the researcher provided performance feedback (i.e. written and verbal) to the staff member after each observation session. During the feedback condition, the experiment provided praise and corrective feedback. Results indicated that feedback and modeling components

of BST is the most critical. Further research and component analysis are needed with different participants and settings (Ward-Horner & Sturmey, 2012).

BST is an effective training and coaching protocol for practitioners in school settings (Brock et al., 2017; Kirkpatrick, 2019; Ward-Horner & Sturmey, 2012). Sawyer et al. (2017) conducted a pre-and post-test single-case research design to utilize BST as a training and coaching protocol with teacher candidates in special education. Seven teacher candidates participated in this study. BST was utilized with role-play scenarios for implementing seven evidence-based practices: "constant time delay, differential reinforcement of other behavior, discrete trial teaching, functional communication training, naturalistic intervention, least-to-most prompting, and response interruption/redirection" (Sawyer et al., 2017, p. 297). Pre- and post-test results before and after BST were compared across participants and EBPs. Most participants showed improvement in their implementation fidelity before and after BST. These results suggest that BST with role-play scenarios could be a valuable training and coaching protocol to improve teacher candidates' use of evidence-based practices (Sawyer et al., 2017).

The use of BST in education settings continues to become more prevalent. Providing educators with quality training and coaching protocols supports their continued professional development. However, not all schools have access to specialists to provide this level of training and coaching. Remote or virtual coaching could be one way to improve educators' implementation of fidelity (Knight, 2014; Rock, 2019; Rowland et al., 2021).

Virtual Coaching

Remote or virtual coaching models build upon and consider the critical coaching elements for educators. Virtual coaching works with RVO (Center for Education Policy Research, 2015; Kane et al., 2020; O'Brien et al., 2021). RVO synchronous sessions include a live video feed, and feedback can be conducted instantaneously with BIE feedback (Coogle et al., 2021; Rock et al., 2012; Schaefer & Ottley, 2018; Scheeler et al., 2012), immediately following the session (Fallon et al., 2015; Kane et al., 2020; Suhrheinrich & Chan, 2017), or delayed such as written feedback (Ascetta et al., 2019; Barton et al., 2013; Hemmeter et al., 2011). RVO asynchronous sessions include recorded sessions and the video reviewed later (Center for Education Policy Research, 2015; Kane et al., 2020). The feedback following RVO asynchronous sessions can include delayed feedback or video analysis. Video analysis consists of the teacher or supervisor reviewing, reflecting, and analyzing the observation to make actionable steps to improve their teaching practices (Morin et al., 2019; Nagro et al., 2020, 2021). Some critical elements often included in virtual coaching are the same as discussed above across different coaching models, including the importance of modeling, practice, opportunities for reflection, and providing feedback (Joyce & Showers, 1982; Reid et al., 2021).

Quality PF given to educators during individual and group coaching sessions is critical to promoting continued professional development (Knight, 2014; Rock, 2019). PF has been identified as vital in most coaching and professional development models (Darling-Hammond et al., 2017; Desimone & Pak, 2017; Joyce & Showers, 1982).

Research has been utilizing BST via RVO to train educators, clinicians, behavior specialists, or parents in evidence-based practices to improve individuals with disabilities (Lee et al., 2015).

BST + RVO

Behavior skills training with remote video observation (BST+RVO) provides training to educators (Alnemary et al., 2015), clinicians (Fisher et al., 2014; Rios et al., 2020), or parents training (Lerman et al., 2020) in evidence-based practices for a variety of purposes. The main reason would be to provide expertise and training to these individuals in rural areas who may not have access to specialists in the local community (Lee et al., 2015). Other benefits of utilizing RVO for training purposes include improving efficiency (reduced time spent traveling to locations) and being cost-effective by reducing travel costs (Dyke et al., 2008; Hartshone et al., 2011; Heafner et al., 2011; Wash et al., 2014). BST+RVO is conducted via asynchronous or synchronous virtual observations or telehealth sessions (Machalicek et al., 2009; Rispoli & Machalicek, 2020). Asynchronous virtual observations are when the educator records themselves teaching for the supervisor to view later (Kane et al., 2015; Knight, 2014). Synchronous virtual observations are when the supervisor watches the educator teach in real-time and can see and hear the educator as they are engaged in the teaching practices. (Billingsley & Scheuermann, 2014; Kane et al., 2015; Rock, 2019). Telehealth sessions involve synchronous virtual observations where the supervisor engages with the teacher throughout the session (Ferguson et al., 2019; Randolph et al., 2020; Rispoli & Machalicek, 2020; Rock, 2019). The coach may provide feedback via delayed written

feedback (C. Knowles et al., 2017), immediate or delayed conference following the session (Suess et al., 2016), or instantaneous feedback BIE technology (Rios et al., 2020; Wacker et al., 2013).

BST + RVO is effective for training educators in functional analysis (Rios et al., 2020; Wacker et al., 2013), EBPs such as behavior-specific praise, opportunities to respond, and pre-correction (Knowles et al., 2017), and functional communication training (Suess et al., 2016). When it comes to utilizing BST+RVO in many studies, not all elements of BST may be conducted remotely. Some studies may include a mixture of in-person and RVO, such as initial in-person training sessions and later feedback sessions via RVO (Gibson et al., 2010; C. Knowles et al., 2017). While some research suggests BST+RVO is effective, more research is needed.

Synthesizing the Literature

Coaching and training educators continue to be an essential area of research as we try to determine the best approaches to improve outcomes for educators and students (Darling-Hammond et al., 2017; Desimone & Pak, 2017). As technology advances, RVO continues to be an effective mode of providing training and coaching to educators (Knight, 2014; O'Brien et al., 2021; Rock, 2019; Rowland et al., 2021). Future research should explore RVO with coaching models like BST to determine if it leads to sustainable improvements in educators utilizing evidence-based practices in various school settings.

Research Limitations and Future Direction

Research support for various RVO and PF strategies for training educators continues to grow. However, there are clear limitations to our current understanding of these strategies. While multiple forms of RVO, PF, and BST can improve teacher outcomes, there is little research evaluating the perceptions of those taking part in these interventions, the educators themselves. Further research should explore teachers' or teacher candidates' perceptions about RVO, including different types of RVO (Morin et al., 2019; Schaefer & Ottley, 2018), PF, including different types, components of PF, timing, and frequency (Cornelius & Nagro, 2014; Fallon et al., 2015; Schles & Robertson, 2019) and BST protocol ((Reid et al., 2021; Ward-Horner & Sturmey, 2012).

CHAPTER THREE

RESEARCH METHODS

Purpose of Study

This study examined teacher candidates' perceptions of remote video observation (RVO) practices and the quality of performance feedback (PF) they received from supervisors on their teaching performance. It included teacher candidates' perceptions about the use of technology and its capabilities to capture quality teacher observations. This study evaluated teacher candidates' reports of the types of PF and the quality of teacher candidates' feedback from supervisors. Finally, following these observations, the study examined the teacher candidates' perceptions of supervisors' strategies to train or coach teacher candidates, such as behavior skills training (BST).

Research Questions

This study aimed to develop a valid and reliable instrument to gather information on teacher candidates' perceptions about and experiences with RVO, PF, and BST. Through the development of this instrument, the researcher created and utilized a survey that covers teacher candidates' perceptions of RVO, PF, and BST. This survey will help answer the following broad research questions. See Table 4 for a list of detailed research questions addressed.

1. What are the teacher candidates' experiences with and perceptions of RVO?
2. What are the teacher candidates' experiences with and perceptions of PF, including its modalities or type, the timing of feedback, and critical components?

3. What are the teacher candidates' experiences with and perceptions of BST, including its key components?
4. Are there any factors identified within each section of the RVO+BST Tool or any items that should be eliminated from the RVO+BST Tool (based on factor analysis results)?
5. Are there any differences in RVO, PF, and BST perceptions between types of teacher candidates: “student teachers” completing a semester long clinical experience at the end of their program; “interning teachers” completing a year-long clinical experience at the end of their program; or “job-embedded teachers who are enrolled in an alternative licensure pathway at the EPP where candidates complete requirements for initial licensure while serving as paid teachers of record or paraprofessionals at partnering school districts?

Research Method

Rational for Survey Methodology

The rationale for using survey methodology for this study is that surveys are a cost-effective and efficient way to disseminate and gather data from various individuals. Conducting interviews or other data analysis forms could answer some of these research questions, but it would be challenging and time-consuming. Survey methodology is a better tactic to quickly gather data from a wide range of participants (Fowler, Jr., 2009; Groves et al., 2004; Nardi, 2006).

Data Collection Instrument

The researcher-developed survey instrument used in this study is the Teacher Candidates' Perceptions of Remote Video Observation and Behavior Skills Training (RVO+BST Tool). The survey covered three main topics: RVO, PF, and BST. The RVO section covers the technology elements used, concerns related to RVO, and types of RVO. The PF section covers the timing of feedback, type of PF, and protocol for PF. The BST section covers the critical elements of coaching or training for teachers. This 96-item RVO+BST Tool is made up mostly of 7-point Likert scale items to ask teacher candidates about their experiences across the three main topics and their perceptions of the benefits of improving their teaching skills and outcomes. See Figure 7 for RVO+BST Tool questions.

RVO+BST Tool can provide EPPs with information about the teacher candidates' reported experiences with RVO, PF, and BST and their perceptions of these elements. This tool will help EPPs evaluate their use of these elements with teacher candidates and determine if there are areas for EPPs to improve the use of RVO, PF, and BST to better support the teacher candidates' development in effective teaching strategies. For a complete list of all the items, including research support, see Table 6.

Validity of Survey Tool

While developing this tool, it was critical to evaluate its validity. Validity information speaks to how well a tool or instrument measures what it intends to measure. In this case, the RVO+BST Tool measured essential features of RVO, PF, and BST. The researcher evaluated construct validity. Construct validity supports how well the tool

translates the concept or idea intended (Drost, 2011). Content validity speaks to the meaning of the concepts as defined by the researcher (Drost, 2011; Fowler, Jr., 2009; Hinkle et al., 2003). In this case, the researcher developed the survey to ensure it covered all the essential elements and constructs of RVO+BST, supported by the existing literature. Specifically, the researcher developed survey items to address essential topic areas found in the published literature on RVO+BST, including RVO, PF, and BST. Topics related to RVO include the difficulty of conducting RVO and the type of observation (Center for Education Policy Research, 2015; Kane et al., 2020). PF-related topics include feedback type and timing (Fallon et al., 2015; Hattie & Timperley, 2007; Reid et al., 2021). Topics related to coaching or BST include training modality, the training protocol, and PF protocol as part of BST protocol (Darling-Hammond et al., 2017; Desimone & Pak, 2017; Joyce & Showers, 1982; Reid et al., 2021). Table 6 consists of a list of the essential topic areas, a description of survey items to address each topic area, and a description of the research supporting each topic area and items in the survey.

Participant Recruitment

The researcher recruited teacher candidates to complete this study via an invitation to participate and complete the RVO+BST Tool. Marketing materials were shared with the faculty of an EPP at a large university in the Southeast United States. Invitations were sent out via e-mail and shared on students learning management software systems (i.e., Canvas, Google Classroom, or Blackboard). A letter explaining

the purpose of the study, a graphic that shared information about the study, and the survey link were shared.

Finally, the lead researcher offered to attend classes via videoconferencing software (i.e., Zoom, Microsoft Teams) to share the study information directly with teacher candidates if EPPs or faculty requested this level of communication. The researcher used a script to share the study and encourage the teacher candidates to participate. See Appendix C for examples of the letter to EPPs, graphic to be shared with EPPs and teacher candidates, letter to teacher candidates, and script read to the researcher as needed.

Teacher candidates could enter a drawing for a $10 gift card. Participants did not have to complete the survey to enter the drawing. Those who provided contact information (e.g., name, e-mail, and phone number) could enter the drawing. The researcher then randomly selected one gift card winner for every 10 participants.

Sampling Procedures and Participants

The participants of this study were teacher candidates working towards their teaching license at an educator preparation program (EPP) at a large university in the Southeast United States. The EPP distributed the survey to teacher candidates at the end of the semester when they completed their clinical teaching experience. There were 86 responses to this survey. Six of the 86 responses were from participants who did not give permission to participate in the study. These responses were immediately removed from the dataset. The researcher then removed 18 participant responses that were less than 50% completed via listwise deletion. These items were deleted because those 18

participants had not answered any items related to RVO, BST, or PF and only provided demographic information. The final dataset included responses from 60 teacher candidates.

Of those 60 participating teacher candidates, 78% are female and 90% are white. Survey participants included different types of teacher candidates, including student teachers (20%), interning teachers (58%), and job-embedded teachers (22%). See Table 5 for the entire self-reported survey demographics.

This study utilized nonprobability sampling because participants were not randomly chosen. Nonprobability sampling is more time- and cost-effective. However, it is crucial to recognize that the results of this study cannot be generalized to the entire population since the sample was not chosen at random, and probability sampling was not utilized. The researcher shared this survey with teacher candidates through EPP supervisors and faculty. Thus, there was no randomization in which teacher candidates did or did not receive this survey at each EPP. Convenience sampling was utilized by selecting teacher candidates that were convenient to the researcher's contacts (Babbie, 2013; Nardi, 2006).

Data Collection Procedures

Participants filled out the RVO+BST Tool independently, allowing them to complete the survey at a convenient time. Each participant took approximately 15-20 minutes to complete the survey.

Data Cleaning Procedures

Once the data were collected, the researchers evaluated the data and performed data cleaning procedures before any analysis. Here, the researcher reviewed responses across survey items to make sure items were coded correctly and consistently. The items used in this study to answer the research questions were nominal and ordinal data, with the majority being Likert-scale ordinal items.

Evaluating Assumptions

Normality

Normality was assessed using visual analysis via Q-Q Plots and the Shapiro-Wilks Test for the Likert-scale ordinal item-level responses. Data for only approximately 50% of the Likert-scale items appear to be normally distributed. The remaining item-level data show skewness based on these tests. Reviewing the shape of the histograms for all of Likert-Scale items also indicates that the data is not normally distributed. Since the data do not meet typical assumptions (Tabachnick & Fidell, 2007), non-parametric statistical analyses were used to answer research questions.

Linearity

The next assumption to evaluate is linearity. Linearity looks at the relationship between two variables. Linearity is a straight-line relationship between the variables. There are two ways to assess linearity: residual plots and bivariate scatterplots. Residual plots predict nonlinearity when some plots are above and below the zero line at predicted values. Bivariate scatterplots evaluate linearity through the plot's shape, with linearity represented by an oval shape. Bivariate scatterplots can sometimes be challenging to

interpret, especially if the dataset involves many variables and potential combinations of variables. Bivariate scatterplot matrixes are reviewed for all variables (i.e., item-level responses) in this dataset. Given the large number of items, there is a lot of variability in determining the linearity between variables (Hinkle et al., 2003; Tabachnick & Fidell, 2007). These assumptions are further evidence to move forward, considering the dataset is non-parametric data.

Missing Data Analysis

Missing data is common in large datasets and can occur for various reasons (Tabachnick & Fidell, 2007). Evaluating the patterns of missing data, how much data is missing, and why it is missing are critical questions to assess. This dataset includes missing values across all items but is primarily for the RVO, PF, and BST items. Evaluating the missing data patterns is critical because this determines the options for handling missing data available to the researcher (Hinkle et al., 2003; Tabachnick & Fidell, 2007). The Little's R Test results indicated the missing values were missing completely at random, χ^2(1769, N=60) = 1412.862, p = 1.00. Since the data is missing completely at random, there were no specific patterns in the missing data, meaning casewise delete or listwise delete would have left very little data to use for the factor analysis procedures and for the response comparisons across groups.

According to the missing values analysis, only 9 participants' responses were considered complete responses. The percentage of missing data for each participant's response ranges from missing data on 1-38% of survey items. The median percentage of missing data across participants is missing data on 4.8% of survey items. However, it is

important to note that this missing data analysis included all potential survey items, including items where participants were prompted to provide "other" examples. Responses on those items and other items were not included in further analyses due to item reduction that occurred in principal component analysis. These "other" items were also not included in individual-item analyses due to unclear meanings of responses and contextual fit.

Imputed Data for Missing Values

Since there is variability in the missing data and the data is missing completely at random, the researcher used multiple imputations to address the missing data as described below. This strategy prevented the sample size from being reduced if listwise deletion was utilized. It is a more sophisticated approach to handling the data than entering mean values for missing values (Tabachnick & Fidell, 2007). Imputed data were used for the factor analysis procedures and the response comparisons across groups; item-level descriptive statistics were only reported using participants' initial responses (i.e., before imputed data were added to the data set). The multiple imputation process occurred after checking the other assumptions on the original dataset. As discussed above, the data is non-parametric and not normally distributed. While this lessens the power of the results, it is possible to continue performing the principal component analysis and further analysis with the dataset. When conducting the multiple imputations, the researcher utilized 5 data iterations. This means that the researcher imputed data for missing values in the original dataset and created five multiple imputed complete datasets, essentially copies of the data (Tabachnick & Fidell, 2007).

Data Analysis Procedures

Analysis of Item-Level Responses

Univariate descriptive statistics on item-level data were summarized by survey areas (i.e., RVO, PF, and BST to address Research Questions 1-3). For nominal survey items, percentages of participants selecting each item response option were presented. For Likert-Scale ordinal items, means and standard deviations and medians and interquartile ranges were presented. See Tables 7-14 for all descriptive statistics by survey areas.

Factor Analysis

A primary goal of this research study was for the researcher to develop and refine the RVO+BST Tool (Research Question 4). Factor analysis (FA) is one approach to help evaluate these variables, identify any potential correlations, and reduce the number of variables within each factor based on "different patterns of correlations among variables" (Tabachnick & Fidell, 2007, p. 611). Factor analysis is especially beneficial when a survey or questionnaire reduces many variables or items to fewer items and fewer sets of factors. Item reduction and the creation of common factors make it easier to focus on a few factors. FA is "useful for placing variables into meaningful categories" (Yong & Pearce, 2013, p. 80). The researcher was interested in identifying specific factors that evaluated teacher candidates' experiences and perceptions of using RVO, PF, and BST components. In other words, the researcher wanted to understand better which elements or steps of RVO, PF, and BST the teacher candidates found most valuable or essential to

their teaching performance and future improvements via coaching experiences with their university supervisors.

Since these three primary topics, RVO, PF, and BST, of the RVO+BST Tool are mostly unique concepts, the researcher conducted the FA on the items for each topic. In total, three individual FA processes were conducted with the goal of reducing survey items and identifying factors within each topic area. All items reviewed in the FA process were either 7-point (level of agreement) or 10-point (level of importance) Likert-scale ordinal items. None of the demographics or nominal data items were utilized in the factor analysis.

Utilizing Multiple Imputed Data with Factor Analysis. It is essential to understand that since there was an original data set plus five imputed data sets, further analyses, including the principal component analysis, would run on each data set. Thus, the researcher considered six different versions of the results for each statistical analysis process, including each factor created, evaluated, rotated, and examined across steps of the FA.

Evaluating Assumptions. Additional assumptions were evaluated specific to conducting the FA. First, sample size was considered. Typically, a sample size of at least 300 cases (i.e., participant survey responses) is a good FA; however, "solutions that have several high loading marker variables (> .80) do not require such large sample sizes (about 150 cases should be sufficient)" (Tabachnick & Fidell, 2007, p. 613). Given that this research study was the initial pilot study for using this tool, it includes a smaller sample size of 60 cases. It is essential to consider this when interpreting the results of this

study and to understand that the results of this pilot study should not be generalized to a larger population.

The researcher reviewed correlation matrices for all items for the three main topics: RVO, PF, and BST. Results indicate that PCA should continue for the three main topic areas since majority of the items show correlations between .30 and .90. Items that showed correlation above .90 were evaluated because it suggests multicollinearity between those items and potential redundancy. Variables that showed correlations below .30 were also reviewed because it suggested there was not a relationship between these items. These correlations were continuously reviewed as factors or components are created, and items are reduced through analysis (Beavers et al., 2013; Pett et al., 2003).

Another important assumption that should be checked when considering FA is Bartlett's sphericity test and Kaiser-Meyer-Olkin test of sampling adequacy. Bartlett's test of sphericity is a matrices test and a chi-square test. The Bartlett's test intends to test "the null hypothesis that the correlation matrix is an identify matrix (i.e., that there is no relationship among the items)" (Pett et al., 2003, p. 73). When the Barlett's test values are larger, the correlation matrix is not an identify matrix rejecting the null hypothesis. It is important to remember that larger sample sizes result in larger values of Bartlett's test. Thus, Bartlett's test is "used only as a minimum standard for assessing the quality of the correlation matrix" (Pett et al., 2003, p. 77). If Barlett's test is not significant, the matrix should not be used in FA (Beavers et al., 2013; Pett et al., 2003; Tabachnick & Fidell, 2007). The Bartlett's test of sphericity of the final items considered for the RVO factors (χ^2 = 308, 28, p < .001); PF factors (χ^2 = 401, 78, p < .001); and BST factors (χ^2 =

1517, 325, $p < .001$) are all significant results. This indicates that there are linear combinations of variables within these three main topics and the PCA process should continue.

The next test is the Kaiser-Meyer-Olkin (KMO) test. The KMO test measures the sampling adequacy by comparing the magnitudes of calculated correlations to partial correlation coefficients' magnitudes to measure the items' shared variances. The partial correlations are between all pairs of items after removing the linear effects of the other items. If there are common factors among the items, the partial correlation coefficients "would be small when the linear effects of other items have been removed" (Pett et al., 2003, p. 77). KMO values range between 0 and 1, with smaller values suggesting FA may not be appropriate (Beavers et al., 2013; Pett et al., 2003; Tabachnick & Fidell, 2007). The RVO factors KMO = 0.78, suggesting middling results for shared variance. The PF factors KMO = 0.71, suggesting middling results for shared variance. The BST factors KMO = 0.77, suggesting middling results for shared variance. These results all meet the minimum criteria of KMO greater than 0.60, suggesting we can continue with conducting the PCA for all three topics: RVO, PF, and BST.

A third test is the individual measures of sampling adequacy (MSA) for each item. The MSA indicates the correlation strength between each item and the other items in the matrix. It is ideal for individual MSAs to correlate > .70 (Beavers et al., 2013; Pett et al., 2003). All variables in the RVO factors individual MSAs correlate > .70. Most of the variables (9 out of 13) in the PF factors individual MSAs correlate > .70. Four variables have individual MSAs between 0.60 and 0.70. All variables in the BST factors

except two, individual MSAs correlate > .70. The two variables individual MSAs are between 0.60 and 0.70. The researcher decided to leave these items in the factor analysis because, conceptually, the items fit.

The results for the three topics Bartlett's, KMO, and MSA tests suggest that the matrices are factorable. When deciding this and evaluating the correlation matrix, the items must be neither too highly correlated (< .80) nor not correlated sufficiently (> .30). When items are too highly correlated or not adequately correlated, it can make conducting the FA difficult. If the items are too highly correlated, this leads to issues with multicollinearity. If the items are not correlated sufficiently, there is not enough shared or common variance, thus making it unlikely to generate factors. Once these assumptions are checked, the initial extraction of the FA will take place. Items that do not meet these assumptions were dropped from the PCAs for the three topics. (Beavers et al., 2013; Furr, 2018; Pett et al., 2003; Tabachnick & Fidell, 2007).

Initial Extraction. Since this is the initial use of the RVO+BST data tool, we do not have an existing set of factors that we are trying to check. Instead, we are trying to identify a new set of factors from the variables in this tool. Factor analysis was utilized to identify factors in the RVO+BST Tool. After these assumptions had been checked, The principal component analysis extraction process was used (Furr, 2018; Pett et al., 2003).

Principal Component Analysis. Principal component analysis (PCA) is the most well-known approach for initial extraction. PCA is appropriate when the goal is to reduce the variables to a few components to represent these variables or items. PCA's goal is to "summarize the interrelationships among a set of original variables in terms of a smaller

set of orthogonal (i.e., uncorrelated) principal components that are linear combinations of the original variables" (Pett et al., 2003, p. 90). PCA assumes that all variance is explained by the extracted components or factors, including error variance (Beavers et al., 2013; Furr, 2018; Pett et al., 2003; Tabachnick & Fidell, 2007).

The main benefit of PCA is that the process is easily understood and is a standard extraction method in FA. PCA is not necessarily a type of FA since it is a component analysis. However, it is commonly associated with FA as the processes for PCA follow the same main steps as an EFA. Another benefit to PCA is its goal to determine a concise number of uncorrelated components by extracting the variance in descending order. This benefit ensures the data are summarized practically, concisely, and clearly. The only concern with PCA is that it "does not separate out errors of measurement from shared variance" (Pett et al., 2003, p. 102). There is potential for overestimating "the linear patterns of relationships among sets of variables" (Pett et al., 2003, p. 102).

Examining Factors. The researcher followed several guidelines when evaluating and determining how many factors to retain. These guidelines evaluated eigenvalues, variance extracted, scree plots, and factor interpretability and usefulness. It is recommended that most or all of these guidelines be utilized when determining how many factors to retain (Beavers et al., 2013; Furr, 2018; Pett et al., 2003).

Eigenvalues were reviewed to determine which items included more than their share of the total variance for items in each potential factor. The researcher reviewed items with eigenvalues greater than .30 to determine the potential items apart from each

initial factor. These eigenvalues, factor loadings, were examined individually to determine if they were appropriate for each factor (Pett et al., 2003).

The percentage of variance extracted guideline assesses the percent of total variance explained by the factors, another approach to evaluating the number of factors to retain. The factor extraction process can end once this percentage reaches a set threshold. This percentage threshold can vary depending on the research from 50-60% to 90% or until the last factor represents less than 5% of the variance (Beavers et al., 2013; Pett et al., 2003; Tabachnick & Fidell, 2007). The total variance explained for RVO factors is 72%. The total variance explained for PF factors is 60%. The total variance explained for the BST factors is 58%. This process should not be used in isolation. Factors that make sense and account for an adequate percentage threshold of the variance are essential for researchers to consider when utilizing this guideline when determining the number of factors to retain (Pett et al., 2003).

Examining scree plots are another approach to evaluating factors. The scree plot is a graphical representation that shows the number of factors and their corresponding eigenvalues. The scree plot identifies the break between the larger eigenvalues represented by a steep slope and the smaller eigenvalues where the slope line trails off. The number of factors is specified above the line or approximately at the bend of the elbow of the scree plot. However, this can be a subjective process and leads to the over-extraction of components or factors. Suppose the scree plot is difficult to interpret and could lead to over-extraction. The scree plot results varied for the PCAs for the three topics but typically ranged between 2-4 factors. (Beavers et al., 2013; Pett et al., 2003).

The final guideline to consider when examining factors is factor interpretability and usefulness. While it is essential to utilize statistical approaches to help determine the number of factors, it is also necessary to make sure the number of factors makes theoretical sense. The most critical criterion is ensuring the factors make sense (Beavers et al., 2013; Pett et al., 2003). Pett et al. (2003) recommend utilizing several approaches to examining factors. Different approaches to examining FA include running the FA with a different number of factors and examining which solutions' factor loadings make the most sense.

Ideally, each factor will include "at least three to five items with strong loadings" (Beavers et al., 2013, p. 9). However, the size of the factor loadings can vary across the literature: not cross-loading greater than .32 (Tabachnick & Fidell, 2007), factors with five or more items with loadings .50 or greater (Costello & Osborne, 2005), or factors should have loadings be .60 or greater (Guadagnoli & Velicer, 1988). A factor loading of .70 or greater is typically desired because it indicates roughly 50% of the variance for those particular items can be explained by that factor (Beavers et al., 2013).

At this point, the researcher began to conduct some initial item reduction and removed items that did not load on any factor or loaded on factors at less than .30 (Pett et al., 2003). Once these items were removed, the factors were reviewed once again. The researcher also reviewed items that cross-loaded at lower levels, less than .50 for both cross-loadings. Items cross-loaded at this low level across more than one factor were also removed (Beavers et al., 2013; Pett et al., 2003). Each time the researcher removed items, the principal component analysis process was redone, and guidelines were re-evaluated.

Eventually, the factors began to take shape, and eigenvalues stabilized. The researcher chose these thresholds to examine eigenvalues because these were more conservative, kept more items loading on the factors, and allowed the researcher to systematically consider removing items based on the factor loadings, variance, and contextual interpretation of the items and factors (Beavers et al., 2013; Furr, 2018; Pett et al., 2003). The next step is to conduct a factor rotation and examine the rotated factors (Beavers et al., 2013; Pett et al., 2003; Tabachnick & Fidell, 2007).

Factor Rotations. Factor rotation is commonly used in factor analysis to help improve the interpretation of the factors. Factor rotations involve "turning the reference axes of the factors about their origin to achieve a simple structure and theoretically more meaningful factor solution" (Pett et al., 2003, p. 132). Beavers et al. (2013) discussed the intention of the simple structure. The simple structure occurs when items or variables load strongly on only one factor (.70 or higher) and not multiple factors (less than .40 on other factors).

The two main types of rotation methods are orthogonal and oblique. Orthogonal rotations are best for a factor analysis that utilizes principal component analysis. There are three kinds of orthogonal rotation: varimax, quartimax, and equamax. Varimax is the most common and best-regarded option for orthogonal rotation. The goal is to maximize the "variances of the loadings within the factors while also maximizing differences between the high and low loadings on a particular factor" (Pett et al., 2003, p. 141). The advantage of varimax rotation is that the information is clear about which items correlate

the strongest with a factor and helps reach a simple structure. The researcher used the varimax rotation for this purpose (Beavers et al., 2013; Pett et al., 2003).

Refining Factors. Once the factor rotation has occurred, further refinement was completed. One of the benefits of utilizing principal component analysis is refining factors to fit the underlying constructs being evaluated best. It is best to start this process by looking at the item-to-factor correlations. The researcher reviewed items that correlated highly (>.90) or too low (< .30) to determine if items were too unalike or too alike. Relationships between these items were reviewed to determine if there was redundancy and an item should be removed or if, conceptually, it made sense to keep both items.

The researcher continued to review and evaluate the various factors and the items for each factor using these guidelines before coming to their final items for each factor. When there were items that were correlated too highly or too low, the researcher considered the concepts of these items to determine if the individual items fit or if they should be removed. Results related to the development of the factors are discussed in Chapter 4 (Beavers et al., 2013; Pett et al., 2003; Tabachnick & Fidell, 2007). Table 13 provides a list and rationale for all variables that were removed from the factors for RVO, PF, and BST through the PCA.

Evaluating Factors. A final critical piece of determining the factors is to evaluate the reliability, including internal consistency and stability. Internal consistency is often measured utilizing Cronbach's coefficient alpha (α), which "represents the proportion of total variance in a given scale that can be attributed to a common source" (Pett et al.,

2003, p. 185). Once the factors were refined, the researcher evaluated them by conducting reliability analysis, reviewing Cronbach's alpha levels for each factor, and reviewing item-total statistics to decide further if the deletion of specific items improves Cronbach's alpha levels and thus improves the internal consistency of the factor.

Since the dataset includes multiple imputed data sets, determining the final factors involves pooling the result of each iteration of data together to create a final set of eigenvalues and results. This data pooling was done by conducting a mean varimax method. This involves taking the rotated matrix loadings eigenvalues and averaging them together. At the time, there are limited approaches for adequately pooling multiple imputation data iterations for a principal component analysis. This is one approach that is the simplest to understand and interpret. However, limitations of this approach are related to the concept that not all imputed data sets will necessarily have the items in the exact same order, the signs for the eigenvalues could be reversed in the pooling process just changing the meaning of the factor, or the rotation may not be ideal and could lead to more variability among each item than is necessary. The other approaches to pooling multiple imputation data are more complex and poorly tested. So, while the mean varimax method may have its limitations, this is the approach the researcher decided to use because it has the simplest interpretation (Van Ginkel, 2023; Van Ginkel & Kroonenberg, 2014).

Labeling and Summarizing Identified Factors. As factors were identified within the components of the RVO+BST tool (i.e., RVO, PF, and BST), the researcher developed labels (i.e., names) for each factor and calculated factor scores by summing

data (i.e., participants' responses across items) for all survey items loading to the particular factor. Means and standard deviations for all factor scores are discussed in the results.

Comparing Types of Teacher Candidates Using Non-Parametric Tests

The researcher evaluated the assumptions of these new scaled factors to determine if they were parametric or non-parametric. The research assessed the normality of the dataset by evaluating the histograms, skewness, and kurtosis of the scaled factors. All the factors except for the second PF factor appear normally distributed. However, the researcher evaluated the multicollinearity of the factor scales next. These results suggested all scale factors showed a high likelihood of multicollinearity. Multicollinearity can occur when you have a dataset with many items but a small sample size. Due to these results, it was determined to move forward with conducting non-parametric tests for both the scale factors and individual items (Hinkle et al., 2003; Tabachnick & Fidell, 2007).

The researcher conducted the non-parametric Kruskal-Wallis H test to compare the groups of different types of teacher candidates by their types of teacher candidates (student teacher, interning teacher, or job-embedded teacher) and the factors that were created during the principal component analysis and individual items to understand better the differences between their groups in terms of their experiences and perceptions of RVO, PF, and BST (Research Question 5). Then, the Dunn-Bonferroni test was conducted to determine if the pairs of means between groups were significantly different. These results will also be discussed (Hinkle et al., 2003; Tabachnick & Fidell, 2007).

Reliability

Internal Consistency

The researchers measured the internal consistency within the instrument and questions to determine if they were measuring the primary constructs discussed in the RVO+BST-Tool: RVO, PF, and BST. Aside from evaluating the internal consistency during the PCA process and the final six factors, it was measured for all items in the survey's three topics: RVO, PF, and BST. For a psychometric tool or test to have strong internal consistency, "estimates of reliability are based on the average intercorrelations among all the single items within a test" (Drost, 2011, p. 111). The most common approach to measuring internal consistency is the coefficient alpha or Cronbach's alpha. Ideally, Cronbach's alpha has a minimum of an acceptable range ($.80 > \alpha \geq .70$) (Drost, 2011; Hinkle et al., 2003). Cronbach's alpha measures unidimensional psychometric tools or tests (measures only one construct). Cronbach's alpha assesses the reliability of test items in a scale that creates a construct. Cronbach's alpha was calculated to determine which items best represent each construct or factor. The final results of the factors, including internal consistency, are discussed in Chapter 4 (Pett et al., 2003; Tabachnick & Fidell, 2007).

Split-Half Reliability

Split-half reliability measures internal consistency and the consistency of questions within a survey or tool to understand how well the items measure certain behaviors or characteristics of the test. When developing a tool such as the RVO+BST Tool, evaluating the internal consistency of items within the tool is beneficial. Split-half

reliability aims to show internal consistency by breaking a survey or tool in half and comparing the first half to the second half with a correlation coefficient. Since the data gathered in the survey is non-parametric, it makes the most sense to conduct the Spearman-Brown correlation coefficient. The Spearman-Brown correlation coefficient was calculated in two ways: correlations between the first and second half of items in the three main categories of the survey (RVO, BST, and PF) as well as correlations between the first and second half of items within each identified factor. Ideally, the correlation coefficient is in the strong association range ($r \geq .70$) (Drost, 2011). Results for the split-half reliability for the items for RVO, PF, and BST, along with the final factors, are discussed in Chapter 4.

CHAPTER FOUR

RESULTS

The researcher evaluated teacher candidates' experiences and perceptions on remote video observations (RVO), performance feedback (PF), and behavior skills training (BST) using the Remote Video Observation and Behavior Skills Training (RVO+BST Tool) (Research Questions 1-3) The researcher conducted a principal component analysis (PCA) to reduce the number of items in this tool and create factor scales to understand these teacher candidates' experiences better (Research Question 4). Then, the researcher completed a series of independent item analyses and analyses utilizing the newly created factors to better understand the differences in teacher candidates' experiences based on type of teacher candidate (i.e., student teaching, interning teacher, and job-embedded teachers) (Research Question 5).

Research Question 1: Remote Video Observation

The researcher evaluated descriptive statistics for all the items in the RVO+BST tool to understand the experiences and perceptions using RVO for the teacher candidates; data reported here include only initial responses and not imputed values for missing data. All participants stated they did have experience with RVO. The results of teacher candidates' responses across the items to understand how difficult different elements of RVO tend to be for teacher candidates reported mixed results for how easy or difficult it is to conduct different elements of RVO. See Table 7 for all the descriptive statistics for RVO-related items. Teacher candidates' main concerns associated with using RVO are access to reliable video recording equipment (40%), the time needed to complete

recording and upload videos (38%), internet connection for uploading videos to be shared with educator preparation program (27%), and PreK-12th grade students privacy concerns (25%). Majority of the teacher candidates (60%) reported that the approximate amount of time spent setting up the equipment and video recording the classroom instruction added an average of 0-10 minutes to an average day when they video recorded. Teacher candidates' experiences with RVO were primarily using only asynchronous RVO (53%) and 47% of teacher candidates preferred only asynchronous RVO. See Table 8 for a complete frequency table on RVO items.

These descriptive statistics and frequency tables summarize the teacher candidates' experiences and perceptions of RVO. The factor analysis results regarding the teacher candidates' perceptions of RVO will be discussed further.

Research Question 2: Performance Feedback

The researcher evaluated descriptive statistics for all the items in the RVO+BST tool to understand the experiences and perceptions using PF for the teacher candidates; data reported here include only initial responses and not imputed values for missing data. Teacher candidates most frequently received PF from conversations, observation notes, or evaluation rubrics. Teacher candidates received PF from recorded voice or video feedback, time-stamped video commentary by the supervisor along the video recording timeline to provide commentary, or bug in the ear (BIE) technology the least frequently or never received this type of PF. Most teacher candidates preferred conversations, observation notes, and evaluation rubrics as the type of PF they received. However, their responses were more mixed and inconclusive regarding receiving feedback from recorded

voice or video feedback and time-stamped video commentary by the supervisor along the video recording timeline to provide commentary. Most teacher candidates did not prefer BIE technology to receive PF (40%). The majority of the teacher candidates indicated that they “agreed” or “strongly agreed” that having conversations was an effective type of PF (83%).

The majority of teacher candidates indicated that they “agree” or “strongly agree” that they always received the following PF features: provided feedback in private (88.4%), started feedback with a positive or empathetic statement (85%), specified what they did well in the observation (85%), determined what they did incorrectly or needed to improve upon (88.3%), ask questions about their observation and experience (71.7%), share data from the observation process and outcomes of the observation in either verbal or written forms (80%) and ended the feedback with a positive or empathetic statement (80%). Results for other features of PF were more mixed, including the supervisor engaging in a problem-solving discussion about the observation with the teacher candidate, discussing the impact of the teacher candidate’s observation and implementation of interventions or teaching strategies on student outcomes, and informing the teacher candidate about the action steps for areas to improve the targeted skills or behavior.

The majority of the teacher candidates “strongly agree” or “agree” that immediate feedback (60%) or a 1-2 days delay (81.7%) for feedback is most effective.
Timing of the PF is another critical feature of quality feedback to support teacher candidates' learning and professional development. The Majority of teacher candidates

received PF within 1-2 days following their observations (48.3%). See Tables 9 and 10 for complete descriptive statistics and frequency tables on PF items. These descriptive statistics and frequency tables summarize the teacher candidates' experiences and perceptions of PF. The results of the factor analysis will be discussed further regarding the teacher candidates' perceptions of PF.

Research Question 3: Behavior Skills Training (Coaching)

Descriptive statistics and frequency tables were reviewed to understand better the teacher candidates' experiences and perceptions with coaching or BST; data reported here include only initial responses and not imputed values for missing data. The modes supervisors utilized when providing extra training or support in areas that need improvement were in-person training opportunities (31.7%), providing written summary of areas the teacher candidate needed extra training or support with (63.3%), sharing online training content (i.e., modules, webinars, etc.) (21.7%), having a conversation with the teacher candidate related to the areas they need extra training or support with (65%), or utilizing bug in the ear technology during synchronous RVO (0%). Most of the teacher candidates stated they preferred having a conversation with the teacher candidate about the areas they need extra training or support (68.3%) and providing a written summary of areas where the teacher candidate needed extra training or support (56.7%).

Teacher candidates' responses to the key elements of BST and training they received for specific teacher strategies, including the supervisor describing the skills, intervention, or teaching strategy, providing the teacher candidate with a written summary of the teaching strategy, modeled or demonstrating the target teaching strategy,

have teacher candidate practice performing the teaching strategy and supervisor providing feedback, and supervisor repeats these steps of explaining, modeling, and practice until teacher candidate demonstrates competence in the performing the target skills varied. See Tables 11 and 12 for complete descriptive statistics and frequency tables on BST items. These descriptive statistics and frequency tables summarize the teacher candidates' experiences and perceptions of BST. The results of the factor analysis will be discussed further in relation to the teacher candidates' perceptions of BST.

Research Question 4: Factors Development Results

The researcher used the PCA (which included imputed values for missing data) to reduce the number of items and develop factors in the three main categories of the survey: RVO, PF, and BST. After the PCA was completed, the final set of factors were identified. Each category has 2-3 factors identified through the PCA. The first RVO factor is "Remote Video Observation: Capturing Observations and Receiving Feedback," which focuses primarily on the processes needed to set up the camera and equipment to record the observation and the accessibility to the feedback the teacher candidates received from their supervisor(s). The second RVO factor is "Remote Video Observation: Uploading and Viewing Observations," which is focused primarily on the processes for uploading observations to a cloud storage system and being able to watch the observations on online platforms. See Table 14 for factor analysis results for the RVO factors and Table 15 for descriptive statistics and descriptions of the RVO factors. Results indicate that both factors have a strong loading for most factors; however, there is a cross-loading for a couple of the items. These items are determined to be included in

the factor they load strongest on, Factor 1. However, there could be an argument that these two items could be removed from both factors to have the factors load more cleanly.

A split-half reliability analysis was conducted across the original dataset and multiple imputed data sets. The researcher pooled the Spearman-Brown Coefficients together and calculated the mean. This mean determined the final results for reliability analysis. The first RVO factor, the Spearman-Brown Coefficient, was 0.74, suggesting good reliability. The second RVO factor, Spearman-Brown Coefficient was 0.77, suggesting good reliability (Beavers et al., 2013; Pett et al., 2003; Van Ginkel, 2023). See Table 20 for full reliability analysis results for three topic areas of the survey and final factors.

There are two factors related to performance feedback items. The first PF factor is "Performance Feedback: What is currently in practice" and focuses primarily on the features of performance feedback that are typically used by supervisor(s), including sharing evaluation rubric results, observation notes, and the teacher candidate having access to this feedback 1-2 days following the observation. The second PF factor is "Performance Feedback: What NOT to Do" and focuses primarily on the features of performance feedback that teacher candidates did not desire and did not feel were effective, including a long delay in receiving the feedback, the use of bug-in-the-ear as a PF and coaching strategy, and using technology type of approaches including recording observation PF or creating a time stamp video commentary PF shared with the teacher

candidate. See Table 16 for factor analysis results for the PF factors and Table 17 for descriptive statistics and descriptions of the PF factors.

Just like with the RVO factors, split-half reliability analysis was conducted across the original dataset and multiple imputed data sets. The researcher pooled the Spearman-Brown Coefficients together and calculated the mean. This mean determined the final results for reliability analysis. The first PF factor, Spearman-Brown Coefficient was 0.83, suggesting good reliability. The second PF factor, Spearman-Brown Coefficient was 0.80, suggesting good reliability (Beavers et al., 2013; Pett et al., 2003; Van Ginkel, 2023). See Table 20 for full reliability analysis results for three topic areas of the survey and final factors.

There are two factors related to coaching and behavior skills training. The first BST factor is "Coaching: Behavior Skills Training Protocol and Performance Feedback Protocol Practices in Place" and focuses on the elements of behavior skills training and performance feedback protocols, including the elements associated with how the supervisor will engage in the conversations for feedback and coaching expected in BST such as having the supervisor ask the teacher candidate questions, sharing feedback with the teacher candidate, and providing behavior specific praise throughout the BST and feedback session as well as the specific critical steps of BST including describing the strategy, a written summary of the strategy, modeling the strategy, having the teacher candidate practicing the strategy, and repeating these steps as needed. The second factor is "Coaching: Most Important Components of Behavior Skills Training," which focuses on the importance that teacher candidates receive these key elements while supervisors

provide coaching and feedback, including the supervisor asking questions about the teacher candidate about the observation, sharing data verbally, engaging in problem-solving and action planning for next steps, providing behavior specific praise and corrective feedback to the teacher candidate to help them improve their teaching. This factor focuses on the importance of the teacher candidate having access to quality coaching from their supervisor. It includes all the critical steps of BST, including describing the strategy, providing a written summary of the teaching strategy, modeling the strategy, allowing opportunities for the teacher candidate to practice the strategy, and repeating these steps as needed. See Table 18 for factor analysis results for the BST factors and Table 19 for descriptive statistics and descriptions of the BST factors.

Split-half reliability analysis was conducted across the original dataset and multiple imputed data sets. The researcher pooled the Spearman-Brown Coefficients together and calculated the mean. This pooled mean determined the final results for reliability analysis. The first BST factor, the Spearman-Brown Coefficient, was 0.84, suggesting good reliability. The second BST factor, the Spearman-Brown Coefficient, was 0.86, suggesting good reliability. See Table 20 for full reliability analysis results for three topic areas of the survey and final factors.

The final six-factor scores were created from the PCA results. The PCA process and creation of the factor scores represent the constructs related to the latent variables; RVO, PF, and BST. The items that compose these factors are the observed variables or survey responses that help us define the key characteristics of RVO, PF, and BST that can be further refined and evaluated. The factor scores can also be utilized in further

analyses to represent these larger constructs related to RVO, PF, and BST (Furr, 2018; Pett et al., 2003). See Table 21 for means, standard deviation, median, and interquartile ranking for the final factor scores.

Research Question 5: Differences in Perceptions: Individual Item Analysis Results

The Kruskal-Wallis H non-parametric test was conducted on the six-factor scores (computed sum scores from the individual items included in each factor) as well as all individual Likert-scale items related to RVO, BST, and PF. Individual Likert-scale items were all 7-Point and 10-Point Likert Scale items across RVO, BST, PF. The Kruskal-Wallis H non-parametric test was utilized to determine if there were differences between the type of teacher candidates (student teacher, interning teacher, or job-embedded teacher) based on their experiences and perceptions related to RVO, PF, and BST. For all the tests, results indicated you should retain the null hypothesis. Across the factor scores and individual items, there did not appear to be statistically significant differences between the different types of teacher candidates.

CHAPTER 5

DISCUSSION AND CONCLUSION

The development of this survey was intended to help educator preparation programs (EPP) better understand the experiences and perceptions teacher candidates have related to some key elements that support the quality of their teaching experiences, including remote video observations (RVO), performance feedback (PF), and behavior skills training (BST). The researcher utilized the existing literature on these topics to help identify key areas to focus on for this survey and the development of the specific items. The results discussed are from the initial pilot administration.

Item-Level Descriptive Statistics: Research Questions 1-3

The initial findings from this study derive from a series of nominal and ordinal data survey questions and provide some initial demographics and descriptive statistics for these three topic areas: RVO, PF, and BST. RVO results indicate that most teacher candidates required less than 10 minutes to set up equipment and video record their instruction and preferred asynchronous RVO. These results suggest that using RVO could add little time or interference to teacher candidates' instructional practices, and allowing observations to be conducted asynchronously could provide more flexibility for teacher candidates and supervisors to conduct and review observations and provide quality feedback to the teacher candidates (Center for Education Policy Research, 2015; Kane et al., 2020; Knight, 2014). Making this a potentially promising practice for teacher candidates to use for teacher observations. This type of RVO would work well with the timing of performance feedback teacher candidates are most likely to receive and most

preferred (1-2 days following observations) (Fallon et al., 2015; Hattie & Timperley, 2007; Knight, 2014).

Further, teacher candidates identified written summaries and conversations of areas needing extra training or support as the best modes of training or support provided by EPP supervisor(s). Teacher candidates preferred all key features of BST, including describing the skill, providing a written summary, modeling the teaching strategy, practicing the teaching strategy, and repeating the steps as needed. These preferences by teacher candidates have the potential to work well together when EPPs conduct observations and provide performance feedback and additional coaching (Reid et al., 2021).

Factors Development: Research Question 4

The results of the final six factors provide insights into the teacher candidates' preferences for RVO, PF, and BST. The two factors created for RVO primarily focus on creating the observation (recording the video, audio, and getting access to the feedback from the supervisor) and reviewing the observation (uploading and watching the observation). Both factors indicate teacher candidates do not find conducting these RVO elements too challenging. RVO appears to be a good option for observations with teacher candidates.

The two factors created for PF focus on the characteristics of PF that teacher candidates are currently receiving and the characteristics of PF that they do not desire. The characteristics of PF, the teacher candidates, are currently receiving (observation notes, evaluation rubric, and providing feedback 1-2 days following the observation) tend

to relate to the expectation for current evaluation protocols as expected by the local state Department of Education teacher observation requirements and as required for teacher licensure (Danielson, 2007; Tennessee Department of Education, 2018).

The characteristics of PF the teacher candidates do not desire (delay in feedback longer than 5 days, the bug in the ear, time stamp video feedback format, and recorded video or audio feedback format) suggest that these are formats for performance feedback and providing feedback for long delays not to be popular options with teacher candidates. EPPs should consider these nonpreferred characteristics of PF when providing expectations and protocols for supervisors when it comes to delivering PF to teacher candidates. For example, it would be ideal to have a protocol ensuring all teacher candidates receive access to their feedback within 1-2 days of their observation. Regarding some of the PF formats that the teacher candidates did not prefer (i.e., bug in the ear, time stamp video), most teacher candidates in this sample did not have experience using these formats of PF. Before writing off bug in the ear or time stamp videos as formats for PF, opportunities for teacher candidates to experience these formats and then express their preferences may be beneficial (Center for Education Policy Research, 2015; Knight, 2014; Rock, 2019). However, it is still essential to remember that most teacher candidates do not prefer these formats, and this should be considered when setting expectations for supervisors when it comes to providing PF.

The two factors created for coaching, specifically behavior skills training, focus primarily on the components of BST teacher candidates have experienced (the supervisor asking questions, sharing data, engaging in problem-solving, action steps, and providing

feedback that includes behavior-specific praise, and components of BST protocol). BST components teacher candidates view as most important (the supervisor asking questions, sharing data, creating action steps, providing behavior-specific praise and corrective feedback, and utilizing the BST protocol components). Understanding both the current features BST teacher candidates are experiencing and the features BST teacher candidates perceive as necessary allows the EPP to think through the expectations and protocols EPPs expect supervisors to utilize when providing coaching and feedback to teacher candidates. Providing these expectations can ensure consistent protocols are put in place to ensure all teacher candidates get access to those key features of BST teacher candidates prefer, which are essential for improving their teaching outcomes (Brock et al., 2017; Hattie & Timperley, 2007; Reid et al., 2021; Ward-Horner & Sturmey, 2012).

Differences in Perceptions: Individual Items Analysis—Research Question 5

The individual item analyses' results were used to examine the differences between different types of teacher candidates (student teacher, interning teacher, and job-embedded teachers) on the six created factors, and individual survey items showed no statistically significant job-embedded teacher. The type of school-based experiences these different types of teacher candidates receive (i.e., across teacher candidate types) as part of their EPP does not impact the survey results. The RVO+BST Tool could be an appropriate survey for all teacher candidates. The survey may help EPPs understand these perceptions of all teacher candidates and make it easier for EPPs to gather these results and create action steps to improve teacher candidates' experiences with RVO, PF, and BST.

Limitations

Despite these initial results, this research study has some clear limitations. The first is the small sample size. A larger sample size that includes a broader range of EPPs and teacher candidates from different demographics, including race, gender, EPP program, age of students taught, etc., is necessary as this survey development continues. It is also clear there is heterogeneity within the sample based on the dataset not meeting the assumptions for normality and linearity, as well as when looking at the descriptive statistics for items and seeing the large standard deviations across items based on the sample results. The other consideration for the small sample size to keep in mind is the results of the individual-item analysis. There is potential for these results to exhibit type II error, in that while these results suggest the survey results and recommendations for improving implementation of RVO, PF, and BST are the same for all teacher candidates. A larger sample size could potentially alter these results. Due to this, it is important not to generalize the results of this study beyond the participants. Future research should increase the sample size and evaluate the analysis of these individual items again to see if these results are consistent.

The researcher did not conduct test-retest reliability to determine internal consistency. Future research should conduct better reliability analysis. The data in this study is not normally distributed and does not meet assumptions for parametric statistical analyses. Since the dataset is non-parametric, results cannot be generalized to the larger population. Collecting more responses from teacher candidates is critical to further refining the RVO+BST Tool. Finally, due to the missing data and use of multiple

imputations, this could potentially skew results and should be considered when reviewing results. Future research should be conducted to address these limitations.

Future Research and Research Implications

The results of this research are promising as an initial pilot study for the RVO+BST Tool. Results suggest some potential key features EPPs should consider setting as expectations and provide guidance to supervisors to ensure the supervisors provide quality observation, feedback, and coaching experiences. Future research should continue to evaluate and refine this survey tool. Further research questions and in-depth analysis should be considered, including the potential of conducting mixed-methodology, focus groups, and interviews to gather further analysis from teacher candidates regarding their experiences and perceptions of RVO, PF, and BST. Additional analysis to evaluate the differences between different types of EPP programs, ages of students teacher candidates teach, gender, race, or other characteristics to determine if there are any differences teacher candidates' perceptions and experiences of RVO, PF, and BST could also be considered. These future research questions were beyond the scope of this initial study.

The RVO+BST Tool is a survey research tool that can help understand the experiences and perceptions of RVO, PF, and BST for all teacher candidates. We know that the use of RVO continues to grow as teacher candidates' geographic locations continue to vary; the feasibility of EPP being able to conduct all observations in person is time-consuming and challenging. Finally, doing asynchronous RVO provides further flexibility and autonomy to the teacher candidates and EPP supervisor(s) when recording

and reviewing the observation. Allowing RVO options to occur with any teacher candidate, despite school-based experience enrollment, could benefit the teacher candidate and supervisor(s) (Center for Education Policy Research, 2015; Knight, 2014; Morin et al., 2019; Nagro et al., 2021).

PF and BST protocols are beneficial to improving the quality of the teaching candidate's experience (Andzik et al., 2021; Brock et al., 2017; Reid et al., 2021). Since there are no differences between the school-based experiences of the different types of teacher candidates, EPPs could create recommendations and implement protocols that ensure the characteristics of PF and BST the teacher candidates prefer are essential and provided to all teacher candidates. Creating one set of recommendations or protocols can ensure consistency of implementation across all teacher candidates, regardless of school-based experiences enrollment, and make it easier to assess and evaluate the quality of supervision provided by EPP supervisors.

Conclusion

Results indicate that the teacher candidates preferred performance feedback and behavior skills training features. The teacher candidates want feedback that includes behavior-specific praise and corrective feedback to improve their teaching practices. Teacher candidates also want supervisors to ask them questions about the observation and for clarification and share data from the observation process to add to the quality of the feedback they receive. They also want the feedback to be timely, within 1-2 days of the observation.

In conclusion, the results of this study provide some early findings that provide some key components of RVO, PF, and BST that teacher candidates prefer and do not prefer. There were no statistically significant differences in these findings between types of teacher candidates completing their school-based experiences by student teacher, interning teacher, or job-embedded teachers. Given that there is no difference between the types of teacher candidates, EPPs can consider these preferences and non-preferences when evaluating and developing observations and coaching protocols by university supervisors.

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APPENDICES

Appendix A: Tables

Table 1

Evidence-Based Protocol for Training Staff How to Perform Specified Job Duties

Step	Description of Step
1	Describe the skills to be trained.
2	Provide the staff trainees with a written summary of the skills to be trained.
3	Demonstrate the target skills for staff.
4	Have staff practice performing the target skills and provide feedback.
5	Repeat steps 1, 3, and 4 until staff demonstrate competence in performing the target skills.

Note. This is the protocol commonly used for the steps for behavior skills training (BST) (Reid et al., 2012, p. 53).

Table 2

Bandura's Self Efficacy Information Sources

Information source	*Description*
Enactive attainment	Enactive attainment is based on "authentic mastery experiences" (Bandura, 1986, p. 399). When these experiences are successful, they increase self-efficacy, whereas repeated failure lowers self-efficacy. Individuals with stronger self-efficacy are likelier to persist through challenging tasks than those with lower self-efficacy.
Vicarious experiences	Vicarious experiences, including seeing, visualizing, or viewing models of others performing the skill successfully can improve self-efficacy to complete similar activities. Seeing others be successful at a task can improve people's perception that they can also be successful. When participants view a model that they can imitate and match the behavior to gain access to the same or similar reinforcer as the model, this can improve the participants' self-efficacy and motivating operation to increase the frequency of their response to keep getting access to the reinforcer (Baer et al., 1968, 1987; Cooper et al., 2020; Michael, 1988, 1993; Skinner, 1953).

Table 2 (continued).

Information source	*Description*
Verbal persuasion	Verbal persuasion is when someone tries to convince or talk the participant "into believing they possess capabilities that will enable them to achieve what they seek" (Bandura, 1986, p. 400). When others convince participants they can complete a task, they may engage in more effort to perform the task, and then this success can lead to future self-efficacy.
Physiological state	The physiological state is the last and least influential source of information that impacts self-efficacy. In particular, the participant's high arousal state can often harm their performance, whereas those with aversive arousal are more likely to experience or expect success.

Note. Information sources come from Albert Bandura's work on self-efficacy (Bandura, 1986)

Table 3

Evidence-Based Protocol for Providing Feedback to Staff

Step	*Description of Step*
1	Begin feedback with a positive or empathetic statement.
2	Specify what staff performed correctly.
3	Specify what staff performed incorrectly, if applicable.
4	Specify what staff need to do to correct the work behavior identified in Step 3.
5	Solicit questions from staff about the information provided.
6	Inform staff about subsequent supervisory actions regarding the target work behavior.
7	End feedback with a positive or empathetic statement.

Note. This is the protocol commonly used for the steps for providing performance feedback (Reid et al., 2012, p. 115).

Table 4

Detailed Research Questions for Study

	Research Question
1	What are the teacher candidates' experiences with RVO?
2	What types of RVO do teacher candidates prefer?
3	Which elements of RVO were easy for teacher candidates to execute? Difficult to execute?
4	Which modalities of PF did teacher candidates have experience with?
5	Which modalities of PF did teacher candidates prefer?
6	Which elements of PF did teacher candidates experience?
7	Which elements of PF did teacher candidates prefer?
8	Which elements of BST were utilized with teacher candidates?
9	Which elements of BST were most important to teacher candidates?
10	Which items should be eliminated from the survey?
11	How many factors does the data suggest are known in the survey?
12	Describe the items that go with each factor.
13	Are there differences between the types of teacher candidates' responses based on their type of education preparation program?

Note. These questions will help answer the overarching research questions via descriptive statistics and factor analysis.

Table 5

Participants' Demographics and Characteristics

		N	*%*
Self-Identify	Female	47	78%
Label	Male	11	18%
	Non-binary	2	3%
	Transgender female	0	0%
	Transgender male	0	0%
	Prefer not to answer	0	0%
Race	American-Indian or Alaska Native	1	1.6%
	Asian	0	0%
	Black or African American	3	5%
	Native Hawaiian or Other Pacific Islander	0	0%
	White	54	90%
	Other	0	0%
	Prefer not to answer	1	1.6%
	Missing	1	1.6%
Ethnicity	Hispanic, Latino, or Spanish Origin	3	5%

Table 5 (continued).

		N	*%*
School	Urban	21	35%
Placement	Suburban	21	35%
	Rural	16	26.7%
	Missing	2	3.3%
Grade Level[a]	PreK	2	3%
	K	13	22%
	1st	17	28%
	2nd	10	17%
	3rd	13	22%
	4th	10	17%
	5th	12	20%
	6th	13	22%
	7th	12	20%
	8th	10	17%
	9th	23	38%
	10th	30	50%
	11th	28	47%
	12th	25	42%

Table 5 (continued).

		N	*%*
Type of School	Regular Public School	49	82%
	Alternative School	1	2%
	Career or Technical School or Magnet School	6	10%
	Other	4	7%
Teacher Licensure Program[a]	Agriculture (6-12)	2	3%
	American Sign Language (ASL) (Prek-12)	0	0%
	Art (K-12)	3	5%
	Deaf and Hard of Hearing (Prek-12)	1	2%
	Deaf and Hard of Hearing (Prek-3)	0	0%
	Early Childhood Education (Prek-3)	2	3%
	Early Development and Language (Prek-K)	1	2%
	Elementary (K-5)	18	30%
	English as a Second Language (ESL) (Prek-12)	5	8%
	Middle Grades: Mathematics (6-8)	1	2%
	Middle Grades: Science (6-8)	1	2%

Table 5 (continued).

		N	*%*
Teacher Licensure Program[a]	Music: Instrument (K-12)	3	5%
	Music: Vocal (K-12)	2	3%
	School Librarian, Library Information Specialist (Prek-12)	0	0%
	Secondary English (6-12)/English as a Second Language (Prek-12)	0	5%
	Secondary Mathematics (6-12)	3	2%
	Secondary Science (6-12)	1	7%
	Secondary Social Studies (6-12)	4	5%
	Special Education: Interventionist (K-18 & 6-12)/Comprehensive (K-12)	18	30%
	World Language: French (Prek-12)	1	2%
	World Language: German (Prek-12)	1	1%
	World Language: Latin (Prek-12)	1	2%
	World Language: Spanish (Prek-12)	3	5%
Type of Teacher Candidates	Interning Teacher	35	58%
	Student Teacher	12	20%
	Job-Embedded Teacher	13	22%

Table 5 (continued).

		N	*%*
School-Based Experiences Setting	In-Person Instruction	52	87%
	Virtual Instruction	8	13%

Note. All descriptive statistics are based on original data set.

[a] Survey participants could select multiple options for this item. Due to this, total percentages may be greater than 100%.

Table 6

RVO+BST Tool Items Research Support

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
School and Teacher Demographics	Teacher candidate's individual characteristics	These items were to understand the demographics of the teacher candidates. This includes self-identify label, race, and ethnicity.	3
School and Teacher Demographics	Teacher candidate's school characteristics (i.e., school community, type of school, grade level)	These items were to understand the school demographics of the teacher candidates' teaching experiences. The descriptions for these demographics were based on the National Center for Education Statistics (NCES) Common Core of Data (CCD) descriptions of school-level demographics (National Center for Education Statistics, 2021).	3

Table 6 (continued).

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
School and Teacher Demographics	Teacher candidates' EPP characteristics	These items were based on Tennessee education preparation program (EPP) licensure and teaching experience program information (Tennessee State Board of Education, 2021).	2
Remote Video Observation (RVO)	Level of difficulty to setting up RVO and conducting these observations for teacher candidates	These items come from the educator survey, a part of the Best Foot Forward Project that studies the effectiveness of remote video observation for educators. These items aim to understand better the challenges related to the technology when conducting RVO (Center for Education Policy Research, 2015; Kane et al., 2015, 2020).	13

Table 6 (continued).

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
Remote Video Observation (RVO)	Type of RVO (i.e., synchronous, asynchronous)	These items come from the educator survey, a part of the Best Foot Forward Project that studies the effectiveness of remote video observation for educators. These items' purpose is to better understand the type of RVO that was utilized and preferred by teacher candidates.	22
Performance Feedback (PF)	Modality or Type of PF	These items were used to understand the experience and preferences for different modalities or types of PF that are available to teacher candidates, as discussed in literature reviews (Fallon et al., 2015; Hattie & Timperley, 2007)	6

Table 6 (continued).

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
Performance Feedback (PF)	Timing of feedback (instantaneous, immediate, or delayed)	These items come from the research related to the effectiveness of the timing of PF. Feedback is often considered most effective when there is little to no delay (Coogle et al., 2020; Fallon et al., 2015; Hattie & Timperley, 2007; Knight, 2014). These items help identify teacher candidates' experiences and preferences in relation to PF timing.	6

Table 6 (continued).

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
Coaching & Training (Behavior Skills Training)	Modality of Training (i.e., in-person, written summary, online training content, conversation, bug-in-the-ear)	The effectiveness of the modalities of training and coaching that is provided to educators that has been researched (Coogle et al., 2019; Darling-Hammond et al., 2017; Joyce & Showers, 1982; Kane et al., 2020; Knight, 2014; Kunemund et al., 2021; Morin et al., 2019; Nagro et al., 2017; Rock, 2019). These items will help the researcher evaluate the teacher candidates' experiences and perceptions related to these modalities.	2

Table 6 (continued).

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
Coaching & Training (Behavior Skills Training)	Evidence-based Protocol of BST	Reid et al. (2021) discuss the evidence-based protocol for BST that promotes quality coaching and training opportunities. Further research discusses critical elements of effective coaching that align with these critical steps of BST (Brock et al., 2017; Darling-Hammond et al., 2017; Desimone & Pak, 2017; Joyce & Showers, 1982; Knight, 2014; Kunemund et al., 2021; Rowland et al., 2021; Simonsen et al., 2020). These items help the researcher understand which elements of the BST and quality coaching the teacher candidates experience and prefer to improve their instructional practices.	10

Table 6 (continued).

Topic Area	RVO+BST Tool Items	*Research Support for Items*	*Number of Items in the Survey*
Coaching & Training (Behavior Skills Training)	Evidence-based the BST Protocol of PF	Reid et al. (2021) discuss the critical steps or elements that promote quality performance feedback within the coaching BST protocol. These items help determine if the teacher candidates experience these critical elements of PF and their perceptions on if they are important to improving the teacher candidates' performance.	24

Note. The research support for remote video observation, performance feedback, and behavior skills training are discussed.

Table 7

Remote Video Observation Likert-Scale Survey Items Descriptive Statistics

	M (SD)	*Mdn (IQR)*
How difficult were the following aspects of remote video observation process?		
Setting up the camera equipment and software in your classroom.	2.08 (1.34)	2 (1)
Recording video to capture your classroom activities.	3.25 (1.87)	3 (3)
Recording audio to capture your classroom activities.	3.35 (1.96)	3 (4)
Saving the video recordings to your computer and/or cloud storage.	2.60 (1.95)	2 (3)
Watching your video on your computer.	1.75 (1.19)	2 (1)
Deciding which video that you recorded to submit to your supervisor.	2.10 (1.66)	2 (2)
Uploading the video to the appropriate storage system to be shared with your supervisor.	2.47 (1.93)	2 (3)
Accessing the feedback provided to you by your supervisor.	1.98 (1.30)	2 (1)
Understanding the feedback provided to you by your supervisor.	1.93 (1.40)	1 (1.75)

Table 7 (continued).

	M (SD)	*Mdn (IQR)*
How difficult were the following aspects of remote video observation process?		
Accessing help or support for conducting the remote video observations from your supervisor.	2.32 (1.72)	2 (3)
Accessing help or support for technology-related issues.	2.32 (1.89)	2 (3)

Note. All descriptive statistics based upon original dataset. All items were on a 7-Point Likert Scale with the following answer options: (0) not Applicable, (1) extremely easy, (2) moderately easy, (3) slightly easy, (4) neither easy nor difficult, (5) slightly difficult, (6) moderately difficult, and (7) extremely difficult.

Table 8

Remote Video Observation Frequency Table

	N	*%*
During the current school year, did you participate in any remote video observations with a university supervisor from your educator preparation program during one or more of your school-based experiences?		
Yes	60	100%
No	0	0%
Primary concerns associated with using remote video observations:		
Technological access to reliable video recording equipment	24	40%
Internet connection for uploading videos to be shared with educator preparation program	16	27%
PreK-12th grade student privacy concerns	15	25%
Teacher candidate concerns with others viewing their videotaped lessons	3	5%
Teacher candidate self-consciousness with being videotaped	9	15%

Table 8 (continued).

	N	*%*
Primary concerns associated with using remote video observations:		
Time needed to complete recording and upload videos	23	38%
No concerns shared	12	20%
Approximate amount of time spent setting up equipment and video recording the classroom instruction added to an average date video recording occurred:		
0-10 minutes	36	60%
10-20 minutes	15	25%
20-30 minutes	3	5%
30-40 minutes	3	5%
40-50 minutes	0	0%
50-60 minutes	1	1.7%

Table 8 (continued).

	N	*%*
Approximate amount of time spent setting up equipment and video recording the classroom instruction added to an average date video recording occurred:		
More than 60 minutes	1	1.7%
Type of remote video observations		
Synchronous remote video observations only	16	27%
Asynchronous remote video observations only	32	53%
Mixture of synchronous and asynchronous remote video observations	13	22%
Not applicable	1	1.7%
Preferred type of remote video observation		
Only synchronous remote video observation	14	23%

Table 8 (continued).

	N	*%*
Preferred type of remote video observation		
Only asynchronous remote video observation	28	47%
Mixture of synchronous and asynchronous remote video observations	11	18%
Not applicable	7	12%

Note. Survey participants could select multiple options for the following items: concerns associated with using remote video observation. The total percentages may be greater than 100%—all numbers and percentages are based upon the original dataset.

Table 9

Performance Feedback Likert-Scale Survey Items Descriptive Statistics

	M (SD)	*Mdn (IQR)*
Teacher candidates' experience and how *frequently* they received different types of performance feedback from their educator preparation program supervisor(s) following remote video observation.		
Verbal conversations that occurred either face-to-face or virtual meeting [a]	5.81 (1.10)	7 (2)
Observation notes, such as written notes from the observation, including a script, notes, comments, or questions [a]	5.69 (1.78)	7 (2)
Copy of teacher evaluation rubric and summary notes [a]	5.86 (1.48)	6 (2)
Recorded voice or video feedback [a]	2.31 (2.23)	1 (3)
Time-stamped video commentary by supervisor along the video recording timing to provide commentary [a]	2.17 (2.04)	1 (2)

Table 9 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' experience and how *frequently* they received different types of performance feedback from their educator preparation program supervisor(s) following remote video observation.		
Bug in the ear technology where teacher wears a small earpiece and supervisor provides feedback to the teacher in real-time [a]	1.73 (1.68)	1 (0)
Other types of feedback [a]	2.76 (2.49)	1 (4)
Teacher candidates' *preference* for the different type of performance feedback they receive from their educator preparation program supervisor(s) following remote video observation.		
Verbal conversations that occurred either face-to-face or virtual meeting [b]	6.36 (1.18)	7 (1)
Observation notes, such as written notes from the observation, including a script, notes, comments, or questions [b]	5.79 (1.41)	6 (2)

Table 9 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' *preference* for the different type of performance feedback they receive from their educator preparation program supervisor(s) following remote video observation.		
Copy of teacher evaluation rubric and summary notes [b]	5.69 (1.26)	6 (2)
Recorded voice or video feedback [b]	3.33 (2.08)	3 (3.50)
Time-stamped video commentary by supervisor along the video recording timing to provide commentary [b]	3.78 (1.97)	4 (2.25)
Bug in the ear technology where teacher wears a small earpiece and supervisor provides feedback to the teacher in real-time [b]	2..43 (2.21)	1 (3)
Other types of feedback [b]	4.50 (2.15)	4 (3.50)

Table 9 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about different types of performance feedback are *most effective* to receive from their educator preparation program supervisor(s) following remote video observation.		
Verbal conversations that occurred either face-to-face or virtual meeting [b]	6.37 (1.06)	7 (1)
Observation notes, such as written notes from the observation, including a script, notes, comments, or questions [b]	5.75 (1.24)	6 (2)
Copy of teacher evaluation rubric and summary notes [b]	5.54 (1.41)	6 (2)
Recorded voice or video feedback [b]	3.70 (1.93)	4 (3)

Table 9 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about different types of performance feedback are *most effective* to receive from their educator preparation program supervisor(s) following remote video observation.		
Time-stamped video commentary by supervisor along the video recording timing to provide commentary [b]	3.98 (1.89)	4.50 (3)
Bug in the ear technology where teacher wears a small earpiece and supervisor provides feedback to the teacher in real-time [b]	2.71 (2.10)	2 (3)
Other types of feedback [b]	4.36 (2.02)	4 (2.75)

Table 9 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the timing of performance feedback that is *most effective* to receive from their educator preparation program supervisor(s) following remote video observation.		
Feedback provided immediately (i.e., on the same day) following an observation. [b]	5.62 (1.27)	6 (2)
Feedback provided 1-2 days following an observation. [b]	6.10 (1.09)	6 (1)
Feedback provided 3-4 days following an observation. [b]	4.90 (1.67)	5 (2)
Feedback provided 5-6 days following an observation. [b]	3.54 (1.66)	4 (3)
Feedback provided 7 or more days following an observation. [b]	2.92 (1.48)	3 (2)

Table 9 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the timing of performance feedback that is *most effective* to receive from their educator preparation program supervisor(s) following remote video observation.		
Feedback is provided only when it is necessary for me to make changes to my teaching following an observation. [b]	2.66 (1.69)	2 (3)

Note. Descriptive statistics based upon the original dataset.

[a] 7-Point Likert Scale with the following answer options: (1) never, (2) very rarely, (3) rarely, (4) occasionally, (5) often, (6) very frequently, and (7) always.

[b] 7-Point Likert Scale with the following answer options: (0) not applicable, (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree or disagree, (5) somewhat agree, (6) agree, and (7) strongly agree.

Table 10

Performance Feedback Frequency Table

	N	*%*
Timing of performance feedback teacher candidates typically received from educator preparation program supervisor		
Same day as the observation (immediate feedback)	5	8.3%
1-2 days following observation	29	48.3%
3-4 days following observation	12	20%
5-7 days following observation	8	13.3%
More than 7 days following observation	5	8.3%

Note. All numbers and percentages based on original dataset.

Table 11

Behavior Skills Training Frequency Table

	N	*%*
The mode *utilized* with teacher candidates when receiving extra training or support in areas that need improvement by the education preparation program supervisor(s).		
In-person training opportunities (including modeling of strategies, observation, and feedback)	19	31.7%
Written summary of areas the teacher candidate needed extra training or support	38	63.3%
Online training content (i.e., modules, webinars, etc)	13	21.7%
Conversation (face-to-face or virtual) with you related to the areas you needed extra training or support	39	65%
Bug in the ear technology	0	0%
None of these options	5	8.3%
No additional training provided	2	3.4%

Table 11 (continued).

	N	*%*
The model *preferred* by teacher candidates when receiving extra training or support in areas that need improvement by the education preparation program supervisor(s).		
In-person training opportunities (including modeling of strategies, observation, and feedback)	22	36.7%
Written summary of areas the teacher candidate needed extra training or support	34	56.7%
Online training content (i.e., modules, webinars, etc.)	17	28.3%
Conversation (face-to-face or virtual) with you related to the areas you needed extra training or support	41	68.3%
Bug in the ear technology	2	3.3%
None of these options	2	3.3%
No additional training provided	1	1.7%

Note. Survey participants were able to select more than one option on the above items. The total percentages may be greater than 100%. All numbers and percentages based upon original dataset.

Table 12

Behavior Skills Training Likert-Scale Survey Items Descriptive Statistics

	M (SD)	*Mdn (IQR)*
Teacher candidates' *experience* with quality indicators for behavior skills training coaching protocol received from educator preparation program supervisor(s) when trained in specific teaching strategies.		
The supervisor always described the skills, intervention, or teaching strategy they want the teacher candidate to implement. [a]	5.42 (1.63)	6 (2)
The supervisor(s) always provided the teacher candidate with a written summary of the teaching strategy the supervisor wants the teacher candidate to implement. [a]	4.91 (1.85)	5 (2)
The supervisor(s) always modeled or demonstrated the target teaching strategy for the teacher candidate to view. [a]	4.55 (1.86)	5 (3)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' *experience* with quality indicators for behavior skills training coaching protocol received from educator preparation program supervisor(s) when trained in specific teaching strategies.		
The supervisor(s) always had the teacher candidate practice performing the teaching strategy and provided feedback. [a]	4.45 (2.01)	5 (3)
The supervisor(s) would repeat these steps of explaining, modeling, and practicing the teaching strategy until the teacher candidate demonstrated competence in performing the targeted skills. [a]	4.40 (2.02)	5 (3)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the *level of importance* with quality indicators for behavior skills training coaching protocol received from educator preparation program supervisor(s) when trained in specific teaching strategies.		
The supervisor describing the skills, intervention, or teaching strategy they want the teacher candidate to implement. [b]	8.16 (1.94)	9 (3)
The supervisor(s) providing the teacher candidate with a written summary of the teaching strategy the supervisor wants the teacher candidate to implement. [b]	8.11 (1.73)	8 (3)
The supervisor(s) modeling or demonstrating the target teaching strategy for the teacher candidate to view. [b]	7.60 (2.31)	8 (4)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the *level of importance* with quality indicators for behavior skills training coaching protocol received from educator preparation program supervisor(s) when trained in specific teaching strategies.		
The supervisor(s) having the teacher candidate practice performing the teaching strategy and provided feedback. [b]	7.45 (2.32)	8 (3)
The supervisor(s) repeating these steps of explaining, modeling, and practicing the teaching strategy until the teacher candidate demonstrated competence in performing the targeted skills. [b]	7.53 (2.23)	8 (3)
The supervisor(s) briefly met with teacher candidate prior to the observation(s). [b]	4.18 (1.98)	4 (4)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the *level of importance* with quality indicators for behavior skills training coaching protocol received from educator preparation program supervisor(s) when trained in specific teaching strategies.		
The supervisor(s) always tried to ensure the feedback being provided was done privately with the teacher candidate. [b]	6.39 (0.98)	7 (1)
Teacher candidates' *experience* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) always began their feedback with a positive or empathetic statement with the teacher candidate. [a]	6.19 (1.29)	7 (1)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' *experience* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) always specified what I did well in the teacher candidates' observation(s). [a]	6.42 (0.93)	7 (1)
The supervisor(s) always specified what the teacher candidate may of done incorrectly or needed to improve upon. [a]	6.42 (0.82)	7 (1)
The supervisor(s) always specified what the teacher candidate needed to do to make improvements for areas they needed to improve upon or did incorrectly. [a]	6.39 (0.84)	7 (1)
The supervisor(s) always solicited questions from the teacher candidate about the information being provided. [a]	5.86 (1.60)	6 (2.50)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' *experience* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) shared their data from the observation process and the outcomes of the observation in either verbal and/or written forms with the teacher candidate. [a]	6.11 (1.36)	7 (1)
The supervisor(s) engaged in a problem-solving discussion with the teacher candidate about their observation(s). [a]	5.60 (1.61)	6 (2)
The supervisor(s) discussed the impact of my observation and implementation of interventions or teaching strategies on student outcomes with the teacher candidate. [a]	5.71 (1.69)	6 (2)
The supervisor(s) always informed me about the next action steps for areas to improve the targeted skills or behavior. [a]	5.82 (1.57)	6 (2)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' *experience* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) always ended the feedback with a positive or empathetic statement. [a]	6.25 (1.18)	7 (1)
Teacher candidates' perceptions about the *level of importance* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) briefly meeting with me prior to the observations. [b]	5.42 (3.11)	6 (5.50)
The supervisor(s) beginning their feedback with a positive or empathetic statement. [b]	7.75 (2.67)	9 (3)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the *level of importance* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) specifying what I did well in my observation. [b]	9.30 (1.07)	10 (1)
The supervisor(s) specifying what I may of done incorrectly or needed to improve upon. [b]	9.26 (1.11)	10 (1)
The supervisor(s) specifying what I need to do to make improvements for areas I needed to improve upon or did incorrectly. [b]	9.33 (0.97)	10 (1)
The supervisor(s) soliciting questions from me about the information being provided. [b]	8.35 (1.93)	9 (3)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the *level of importance* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) sharing their data from the observation process and the outcomes of the observation in **verbal** forms. [b]	8.35 (1.94)	9 (3)
The supervisor(s) sharing their data from the observation process and the outcomes of the observation in **written** forms. [b]	8.47 (1.89)	9 (2)
The supervisor(s) engaging in problem solving discussion with the teacher candidate to improve their teaching and student outcomes. [b]	8.67 (1.57)	9 (2)

Table 12 (continued).

	M (SD)	*Mdn (IQR)*
Teacher candidates' perceptions about the *level of importance* with quality indicators for performance feedback received from educator preparation program supervisor(s) following remote video observation.		
The supervisor(s) discussing the impact of the observation and implementation of interventions or teaching strategies on student outcomes with the teacher candidate. [b]	8.45 (1.81)	9 (3)
The supervisor(s) informing the teacher candidate about the next action steps for areas to improve the targeted skill or behavior. [b]	8.75 (1.48)	9 (2)
The supervisor(s) ending the feedback with a positive or empathetic statement. [b]	8.47 (2.22)	9 (2)

Note. All descriptive statistics are based upon original dataset.
[a] 7-Point Likert Scale with the following answer options: (0) not applicable, (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree or disagree, (5) somewhat agree, (6) agree, and (7) strongly agree [b] 10-Point Likert Scale ranges from (1) not at all important to (10) extremely important. Participants used this 10-Point Likert Scale to specify their level of importance along this scale.d

Table 13

Factor Analysis Removed Items

Item	*Rationale for Removal*
Deciding which video that you recorded to submit to your educator preparation program supervisor(s) for your video observation.	Reliability analysis suggests removal of this item will improve Cronbach's Alpha level and factor interpretation.
Accessing help or support for conducting the remote observations (were you supervisor(s) able to help you if you were struggling with any part of the remote observation process).	Item factor loadings cross-loads across two factors at greater than .40 levels.
Accessing help or support for technology-related issues (were technology supports available to you to help you if you were struggling with any part of the technology requirements for your remote video observations).	Item factor loadings cross-loads across two factors at greater than.50 levels.

Table 13 (continued).

Item	*Rationale for Removal*
Conversation (verbal communication in either face-to-face or virtual meeting about the perceptions or feedback they wish to provide to the teacher).	Due to factor loadings, determined to remove the third factor, the factor this item loaded onto. This factor was also removed because the interpretation of the factor was weaker.
Observation notes (written notes from the observation such as a script, notes, comments, or questions about the perceptions or feedback they wish to provide to the teacher).	Item factor loading cross-loads across two factors at greater than .40 levels.
Teacher evaluation rubric (copy of a completed teacher evaluation rubric along with summary notes for feedback they wish to provide to the teacher).	Item factor loading cross-loads across two factors at greater than .40 levels.

Table 13 (continued).

Item	*Rationale for Removal*
Other types of feedback (please specify kind of feedback).	The other types of feedback items were all removed since they are not clearly defined to fit a factor.
I prefer conversations with my supervisor to receive feedback from my remote video observation.	Due to factor loadings, determined to remove the third factor, the factor this item loaded onto. This factor was also removed because the interpretation of the factor was weaker.
I prefer to review a recorded voice or video message from my supervisor to receive feedback from my remote video observation.	Item factor loading cross-loads across two factors at greater than .40 levels.
I prefer to review time-stamped video commentary my supervisor completed while reviewing my video recorded lesson to receive feedback from my remote video observation.	Correlation matrix shows this item correlates at less than 0.30 across variables, suggested that this item may not correlate with the other items within the factor.

Table 13 (continued).

Item	*Rationale for Removal*
I prefer other types of feedback (please specify kind of feedback).	The other types of feedback items were all removed since they are not clearly defined to fit a factor.
I believe conversations with my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	Due to factor loadings, determined to remove the third factor, the factor this item loaded onto. This factor was also removed because the interpretation of the factor was weaker.
I believe reviewing a recorded voice or video message from my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	Item factor loading cross-loads across two factors at greater than .40 levels.

Table 13 (continued).

Item	*Rationale for Removal*
I believe reviewing time-stamped video commentary my supervisor completed while reviewing my video recorded lesson to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	Item factor loading cross-loads across two factors at greater than .40 levels.
I prefer other types of feedback (please specify the kind of feedback).	The other types of feedback items were all removed since they are not clearly defined to fit a factor.
Feedback provided immediately (i.e., on the same day) following an observation is most effective for helping to improve my teaching.	Item factor loading cross-loads across two factors at greater than .40 levels.
My supervisor(s) always briefly met with me prior to the observation(s).	Correlation matrix shows this item correlates at less than 0.30 across variables, suggested that this item may not correlate with the other items within the factor.

Table 13 (continued).

Item	*Rationale for Removal*
My supervisor(s) always tried to ensure the feedback being provided was done privately with me.	Correlation matrix shows this item correlates at less than 0.30 across variables, suggested that this item may not correlate with the other items within the factor.
My supervisor(s) always specified what I may of done incorrectly or needed to improve upon.	Item factor loading cross-loads across two factors at greater than .40 levels.
My supervisor(s) briefly meeting with me prior to the observation.	Correlation matrix shows this item correlates at less than 0.30 across variables, suggested that this item may not correlate with the other items within the factor.
My supervisor(s) beginning their feedback with a positive or empathetic statement.	Correlation matrix shows this item correlates at less than 0.30 across variables, suggested that this item may not correlate with the other items within the factor.

Table 13 (continued).

Item	*Rationale for Removal*
My supervisor(s) specifying what I need to do to make improvements for areas I needed to improve upon or did incorrectly.	Correlation matrix shows this item correlates at less than 0.30 across variables, suggested that this item may not correlate with the other items within the factor.
My supervisor(s) sharing their data from the observation process and the outcomes of the observation in written forms.	Item factor loading cross-loads across two factors at greater than .40 levels.

Table 14

Remote Video Observation Factor Loadings and Communalities for Varimax Rotated Two-Factor Solution for 8 RVO Items

(N = 60, 5 iterations of pooled multiple imputed data)

RVO+BST Tool: RVO Items	*Factor Loadings*		
	1	*2*	*Communalities*
How difficult were each of the following aspects of the remote video observation process?			
Understanding the feedback provided to you by the educator preparation program supervisor(s) (did the feedback make sense, easy to understand, was it stated clearly and easy to follow)	**0.91**	0.08	0.83
Accessing the feedback provided to you by the educator preparation program supervisor(s) (i.e., video conference, email, online discussion, video time-stamped feedback, etc)	**0.90**	0.14	0.82

Table 14 (continued).

RVO+BST Tool: RVO Items	*Factor Loadings*		
	1	*2*	*Communalities*
How difficult were each of the following aspects of the remote video observation process?			
Setting up the camera equipment and software in your classroom.	**0.77**	0.27	0.67
Recording audio to capture all your classroom activities (did the audio capture all parts of your instruction as you desired).	**0.68**	0.44	0.66
How difficult were each of the following aspects of the remote video observation process?			
Recording video to capture your classroom activities (did the video capture all the parts of your instruction as you desired).	**0.56**	0.45	0.52

Table 14 (continued).

RVO+BST Tool: RVO Items	*Factor Loadings*		
	1	*2*	*Communalities*
How difficult were each of the following aspects of the remote video observation process?			
Uploading the video to the appropriate storage system (i.e., Google Drive, One Drive, Canvas, Microsoft Teams, etc) to be shared with your educator preparation program supervisor(s).	0.05	**0.92**	0.85
Saving the video recordings to your computer and/or cloud storage (i.e., Google Drive, One Drive, Canvas, etc).	0.28	**0.86**	0.82
Watching your video on your computer.	0.29	**0.70**	0.57

Note. Eigenvalues are pooled across multiple imputation datasets utilizing mean varimax method (Van Ginkel, 2023).

Table 15

Remote Video Observation Factors

Factor	Item	*M (SD)*	*Mdn (IQR)*
Remote Video Observation: Capturing Observations and Receiving Feedback	How difficult were each of the following aspects of the remote video observation process?		
	Setting up the camera equipment and software in your classroom.	2.08 (0.17)	2 (1)
	Recording audio to capture all your classroom activities (did the audio capture all parts of your instruction as you desired).	3.35 (0.25)	3 (4)
	Recording video to capture your classroom activities (did the video capture all the parts of your instruction as you desired).	3.25 (0.24)	3 (3)
	Understanding the feedback provided to you by the educator preparation program supervisor(s) (did the feedback make sense, easy to understand, was it stated clearly and easy to follow)	1.93 (0.18)	1 (1.75)

Table 15 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Remote Video Observation: Capturing Observations and Receiving Feedback	How difficult were each of the following aspects of the remote video observation process?		
	Accessing the feedback provided to you by the educator preparation program supervisor(s) (i.e., video conference, email, online discussion, video time-stamped feedback, etc)	1.98 (0.17)	2 (1)
Remote Video Observation: Uploading and Viewing Observations	How difficult were each of the following aspects of the remote video observation process?		
	Uploading the video to the appropriate storage system (i.e., Google Drive, One Drive, Canvas, Microsoft Teams, etc) to be shared with your educator preparation program supervisor(s).	2.47 (0.25)	2 (3)
	Saving the video recordings to your computer and/or cloud storage (i.e., Google Drive, One Drive, Canvas, etc).	2.60 (0.25)	2 (3)

Table 15 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Remote Video Observation: Uploading and Viewing Observations	How difficult were each of the following aspects of the remote video observation process?		
	Watching your video on your computer.	1.75 (0.25)	2 (1)

Note. All descriptive statistics based upon original dataset. All items were on a 7-Point Likert Scale with the following answer options: (0) not Applicable, (1) extremely easy, (2) moderately easy, (3) slightly easy, (4) neither easy nor difficult, (5) slightly difficult, (6) moderately difficult, and (7) extremely difficult.

Table 16

Performance Feedback Factor Loadings and Communalities for Varimax Rotated Two-Factor Solution for 13 PF Items (N = 60, 5 iterations of pooled multiple imputed data)

RVO+BST Tool: Performance Feedback Items	Factor Loadings		
	1	*2*	*Communalities*
How frequently did your educator preparation program supervisor(s) provide feedback via video recorded voice or video feedback (the supervisor submits a recording of their perceptions or feedback they wish to provide to the teacher)?	**0.84**	0.00	0.70
How frequently did your educator preparation program supervisor(s) provide feedback via bug in the ear (during synchronous remote observations, the teacher wears a small earpiece, and throughout the lesson, the supervisor provides feedback to the teacher in real time)?	**0.81**	0.08	0.66
Feedback provided 7 or more days following an observation is most effective for helping to improve my teaching.	**0.78**	0.13	0.64

Table 16 (continued).

RVO+BST Tool: Performance Feedback Items	Factor Loadings		
	1	*2*	*Communalities*
Feedback provided only when it is necessary for me to make changes to my teaching is most effective for helping to improve my teaching.	**0.72**	-0.00	0.53
How frequently did your educator preparation program supervisor(s) provide feedback via time-stamped video commentary software options (i.e., Canvas Studio, VidHub, Swivl Platform) to add comments as time-stamps along the video recording timeline to provide commentary including perceptions, notes, comments, or questions about the observation for the teacher candidate to view while reviewing the recorded video capturing their lesson?	**0.72**	0.11	0.53
I prefer bug in the ear synchronous remote observations and receiving feedback from my supervisor in real-time.	**0.68**	0.17	0.53

Table 16 (continued).

RVO+BST Tool: Performance Feedback Items	Factor Loadings		
	1	*2*	*Communalities*
Feedback provided 5-6 days following an observation is most effective for helping to improve my teaching.	**0.64**	0.18	0.45
I believe bug in the ear synchronous remote observations and receiving feedback from my supervisor in real-time is the most effective for helping to improve my teaching.	**0.63**	0.08	0.43
I prefer reviewing the teacher evaluation rubric scores from my supervisor to receive feedback from my remote video observation.	0.09	**0.79**	0.63
I believe conversations with my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	0.16	**0.77**	0.63

Table 16 (continued).

RVO+BST Tool: Performance Feedback Items	Factor Loadings		
	1	*2*	*Communalities*
I prefer reviewing observation notes from my supervisor to receive feedback from my remote video observation.	0.17	**0.77**	0.63
I believe reviewing teacher evaluation rubric scores from my supervisor to receive feedback from my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	0.05	**0.73**	0.60
Feedback provided 1-2 days following an observation is most effective for helping to improve my teaching.	-0.07	**0.66**	0.45

Note. Eigenvalues are pooled across multiple imputation datasets utilizing mean varimax method (Van Ginkel, 2023).

Table 17

Performance Feedback Factors

Factor	Item	*M (SD)*	*Mdn (IQR)*
1) Performance Feedback: What is currently in practice	I believe conversations with my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching. [a]	5.75 (0.17)	6 (2)
	I prefer reviewing observation notes from my supervisor to receive feedback from my remote video observation. [a]	5.79 (0.19)	6 (2)
	I prefer reviewing the teacher evaluation rubric scores from my supervisor to receive feedback from my remote video observation. [a]	5.69 (0.17)	6 (2)
	I believe reviewing teacher evaluation rubric scores from my supervisor to receive feedback from my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching. [a]	5.54 (0.19)	6 (2)

Table 17 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Performance Feedback: What is currently in practice	Feedback provided 1-2 days following an observation is most effective for helping to improve my teaching. [b]	6.10 (0.14)	6 (1)
Performance Feedback: What NOT to do	Feedback provided 7 or more days following an observation is most effective for helping to improve my teaching. [b]	2.92 (0.19)	3 (2)
	Feedback provided only when it is necessary for me to make changes to my teaching is most effective for helping to improve my teaching. [b]	2.66 (0.22)	2 (3)
	Feedback provided 5 to 6 days following an observation is most effective for helping to improve my teaching. [b]	3.54 (0.22)	4 (3)
	I prefer bug in the ear synchronous remote observations and receiving feedback from my supervisor in real-time. [b]	2.43 (0.35)	1 (3)

Table 17 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Performance Feedback: What NOT to do	How frequently did your educator preparation program supervisor(s) provide feedback via bug in the ear (during synchronous remote observations, the teacher wears a small earpiece, and throughout the lesson, the supervisor provides feedback to the teacher in real time)? [a]	1.73 (0.22)	1 (0)
	I believe bug in the ear synchronous remote observations and receiving feedback from my supervisor in real-time is the most effective for helping to improve my teaching. [b]	2.71 (0.33)	2 (3)
	How frequently did your educator preparation program supervisor(s) provide feedback via video recorded voice or video feedback (the supervisor submits a recording of their perceptions or feedback they wish to provide to the teacher)? [a]	2.31 (0.29)	1 (3)

Table 17 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Performance Feedback: What NOT to do	How frequently did your educator preparation program supervisor(s) provide feedback via time-stamped video commentary software options (i.e., Canvas Studio, VidHub, Swivl Platform) to add comments as time-stamps along the video recording timeline to provide commentary including perceptions, notes, comments, or questions about the observation for the teacher candidate to view while reviewing the recorded video capturing their lesson? [a]	2.17 (0.27)	1 (2)

Note. Descriptive statistics based upon the original dataset.

[a] 7-Point Likert Scale with the following answer options: (1) never, (2) very rarely, (3) rarely, (4) occasionally, (5) often, (6) very frequently, and (7) always.

[b] 7-Point Likert Scale with the following answer options: (0) not applicable, (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree or disagree, (5) somewhat agree, (6) agree, and (7) strongly agree.

Table 18

Coaching: Behavior Skills Training Factor Loadings and Communalities for Varimax Rotated Two-Factor Solution for 27 BST Items (N = 60, 5 iterations of pooled multiple imputed data)

Item	Factor Loadings		
	1	*2*	*Communalities*
My supervisor(s) always informed me about the next action steps for areas to improve the targeted skills or behavior.	**0.89**	0.09	0.68
My supervisor(s) always began their feedback with a positive or empathetic statement.	**0.85**	0.08	0.73
My supervisor(s) always solicited questions from me about the information being provided.	**0.85**	0.15	0.74
My supervisor(s) discussed the impact of my observation and implementation of interventions or teaching strategies on student outcomes.	**0.84**	0.06	0.70

Table 18 (continued).

Item	Factor Loadings		
	1	*2*	*Communalities*
My supervisor(s) engaged in a problem-solving discussion with me about my observation.	**0.81**	0.14	0.68
My supervisor(s) shared their data from their observation process and the outcomes of the observation in either verbal and/or written forms.	**0.77**	0.15	0.62
My supervisor(s) always ended the feedback with a positive or empathetic statement.	**0.76**	0.12	0.59
The supervisor(s) always provided me with the written summary of the teaching strategy they want me, the teacher, to implement.	**0.72**	0.07	0.52

Table 18 (continued).

Item	Factor Loadings		
	1	*2*	*Communalities*
The supervisor(s) always modeled or demonstrated the target teaching strategy for me to view.	**0.71**	0.27	0.58
The supervisor(s) would repeat these steps of explaining, modeling, and practicing the teaching strategy until I demonstrated competence in performing the target skills.	**0.69**	0.21	0.52
The supervisor(s) always had me practice performing the teaching strategy and provided feedback to me.	**0.68**	0.15	0.49
My supervisor(s) always specified what I did well in my observation.	**0.67**	0.06	0.46

Table 18 (continued).

Item	Factor Loadings		
	1	*2*	*Communalities*
The supervisor(s) always described the skills, intervention or teaching they want me, the teacher, to implement.	**0.67**	0.16	0.48
It is important for my supervisor(s) to inform me about the next action steps for areas to improve the targeted skills or behavior.	0.17	**0.80**	0.68
It is important for the supervisor(s) to repeat steps of explaining, modleing, and practicing the teaching strategy until I demonstrated competence in performing the target skills.	0.05	**0.79**	0.63
It is important for my supervisor(s) to solicit questions form me about the information being provided.	0.18	**0.76**	0.61

Table 18 (continued).

Item	Factor Loadings		
	1	*2*	*Communalities*
It is important for the supervisor(s) to model or demonstrate the target teaching strategy for me to view.	0.08	**0.75**	0.57
It is important for my supervisor(s) to share their data from the obsersvation process and the outcomes of the observation in written forms.	0.13	**0.74**	0.57
It is important for the supervisor(s) to practice performing the teaching strategy and provided feedback to me.	0.08	**0.74**	0.56
It is important for my supervisor(s) engaging in problem solving discussion with me to improve my teaching and student outcomes.	0.31	**0.73**	0.64

Table 18 (continued).

Item	Factor Loadings		
	1	*2*	*Communalities*
It is important for my supervisor(s) to describe the skills, intervention or teaching strategy they want me, the teacher, to implement.	0.13	**0.73**	0.56
It is important for my supervisor(s) to specify what I may of done incorrectly or needed to improve upon.	0.04	**0.73**	0.53
It is important for my supervisor(s) to discuss the impact of my observation and implementation of interventions or teaching strategies on student outcomes.	0.33	**0.69**	0.60
It is important for my supervisor(s) to specify what I did well in my observation.	0.09	**0.64**	0.42

Table 18 (continued).

Item	Factor Loadings		
	1	*2*	*Communalities*
It is important for the supervisor(s) to provide me with the written summary of the teaching strategy they want me, the teacher, to implement.	-0.01	**0.62**	0.38
It is important for my supervisor(s) ending the feedback with a positive or empathetic statement.	0.35	**0.54**	0.42

Note. Eigenvalues are pooled across multiple imputation datasets utilizing mean varimax method (Van Ginkel, 2023).

Table 19

Coaching: Behavior Skills Training Factors

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Behavior Skills Training Protocol and Performance Feedback Protocol Practices in Place	My supervisor(s) always solicited questions from me about the information being provided. [a]	5.86 (0.21)	6 (1.50)
	My supervisor(s) shared their data from their observation process and the outcomes of the observation in either verbal and/or written forms. [a]	6.11 (0.18)	7 (1)
	My supervisor(s) engaged in a problem-solving discussion with me about my observation. [a]	5.60 (0.21)	6 (2)
	My supervisor(s) discussed the impact of my observation and implementation of interventions or teaching strategies on student outcomes. [a]	5.71 (0.23)	6 (2)

Table 19 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Behavior Skills Training Protocol and Performance Feedback Protocol Practices in Place	My supervisor(s) always informed me about the next action steps for areas to improve the targeted skills or behavior. [a]	5.82 (0.21)	6 (2)
	My supervisor(s) always began their feedback with a positive or empathetic statement. [a]	6.19 (0.17)	7 (1)
	My supervisor(s) always specified what I did well in my observation. [a]	6.42 (0.12)	7 (1)
	It is important for my supervisor(s) ending the feedback with a positive or empathetic statement. [a]	6.25 (0.16)	7 (1)
	The supervisor(s) always described the skills, intervention or teaching they want me, the teacher, to implement. [a]	5.42 (0.22)	6 (2)

Table 19 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Behavior Skills Training Protocol and Performance Feedback Protocol Practices in Place	The supervisor(s) always provided me with the written summary of the teaching strategy they want me, the teacher, to implement. [a]	4.91 (0.25)	5 (2)
	The supervisor(s) always modeled or demonstrated the target teaching strategy for me to view. [a]	4.55 (0.25)	5 (3)
	The supervisor(s) always had me practice performing the teaching strategy and provided feedback to me. [a]	4.45 (0.27)	5 (3)
	The supervisor(s) would repeat these steps of explaining, modeling, and practicing the teaching strategy until I demonstrated competence in performing the target skills. [a]	4.40 (0.27)	5 (3)

Table 19 (continue).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Most Important Components of Behavior Skills Training	It is important for my supervisor(s) to solicit questions form me about the information being provided. [b]	8.35 (0.26)	9 (3)
	It is important for my supervisor(s) to share their data from the observation process and the outcomes of the observation in verbal forms. [b]	8.35 (0.26)	9 (3)
	It is important for my supervisor(s) engaging in problem solving discussion with me to improve my teaching and student outcomes. [b]	8.67 (0.21)	9 (2)
	It is important for my supervisor(s) to inform me about the next action steps for areas to improve the targeted skills or behavior. [b]	8.75 (0.20)	9 (2)

Table 19 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Most Important Components of Behavior Skills Training	It is important for my supervisor(s) to discuss the impact of my observation and implementation of interventions or teaching strategies on student outcomes. [b]	8.45 (0.24)	9 (3)
	My supervisor(s) always specified what I did well in my observation. [b]	9.30 (0.14)	10 (1)
	It is important for my supervisor(s) to specify what I may of done incorrectly or needed to improve upon. [b]	9.26 (0.15)	10 (1)
	It is important for my supervisor(s) ending the feedback with a positive or empathetic statement. [b]	8.47 (0.29)	9 (2)

Table 19 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Most Important Components of Behavior Skills Training	It is important for my supervisor(s) to describe the skills, intervention or teaching strategy they want me, the teacher, to implement. [b]	8.16 (0.26)	9 (3)
	It is important for the supervisor(s) to provide me with the written summary of the teaching strategy they want me, the teacher, to implement. [b]	8.11 (0.23)	8 (3)
	It is important for the supervisor(s) to model or demonstrate the target teaching strategy for me to view. [b]	7.60 (0.31)	8 (4)
	It is important for the supervisor(s) to practice performing the teaching strategy and provided feedback to me. [b]	7.45 (0.31)	8 (3)

Table 19 (continued).

Factor	Item	*M (SD)*	*Mdn (IQR)*
Coaching: Most Important Components of Behavior Skills Training	It is important for the supervisor(s) to repeat steps of explaining, modeling, and practicing the teaching strategy until I demonstrated competence in performing the target skills. [b]	7.53 (0.30)	8 (3)

Note. All descriptive statistics are based upon original dataset.

[a] 7-Point Likert Scale with the following answer options: (0) not applicable, (1) strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree or disagree, (5) somewhat agree, (6) agree, and (7) strongly agree.

[b] 10-Point Likert Scale ranges from (1) not at all important to (10) extremely important. Participants used this 10-Point Likert Scale to specify their level of importance along this scale.

Table 20

Split-Half Reliability for RVO+BST Tool Items

Items		*Total Number of Items*	*Correlation Between Forms*	*Spearman-Brown Coefficient*
RVO	All Items	12	0.80	0.89
	Factor 1: Remote Video Observation: Capturing Observations and Receiving Feedback	5	0.60	0.76
	Factor 2: Remote Video Observation: Uploading and Viewing Observations	3	0.62	0.78
PF	All Items	27	0.70	0.82
	Factor 3: Performance Feedback: What is currently in practice	5	0.64	0.78
	Factor 4: Performance Feedback: What NOT to do	7	0.80	0.89

Table 20 (continued).

Item		*Total Number of Items*	*Correlation Between Forms*	*Spearman-Brown Coefficient*
BST	All Items	34	0.69	0.81
	Factor 5: Coaching: Critical Components of Behavior Skills Training Teacher Candidates Experience	13	0.72	0.84
	Factor 6: Coaching: Important Components of Behavior Skills Training	13	0.75	0.86

Note. All reliability analyses scores were calculated by calculating the average across the imputed datasets (Van Ginkel, 2023).

Table 21

Final Six Factors Descriptive Statistics

Factor Scale	*N* (*Missing*)	*M (SD)*	*Skewness*	*Kurtosis*	*Mdn (IQR)*
Factor 1: Remote Video Observation: Capturing Observations and Receiving Feedback	60 (0)	12.6 (6.48)	0.58	0.14	11.5 (9.5)
Factor 2: Remote Video Observation: Uploading and Viewing Observations	60 (0)	6.8 (4.46)	0.66	0.04	6 (6)
Factor 3: Performance Feedback: What is currently in practice	55 (5)	28.9 (4.89)	-0.87	0.52	29 (7)

Table 21 (continued).

Factor Scale	*N* (*Missing*)	*M (SD)*	*Skewness*	*Kurtosis*	*Mdn (IQR)*
Factor 4: Performance Feedback: What NOT to do	40 (20)	19.05 (10.8)	1.32	0.73	14.5 (12.5)
Factor 5: Coaching: Behavior Skills Training Protocol and Performance Feedback Protocol Practices in Place	54 (6)	75.98 (16.09)	-0.90	0.29	81 (21.25)
Factor 6: Coaching: Most Important Components of Behavior Skills Training	54 (6)	108.76 (17.35)	-0.53	-0.63	113 (27.5)

Note. Factor scale scores were computed from the sum of all the items in each factor. The scores here were calculated frm the original dataset.

Appendix B:

Figures

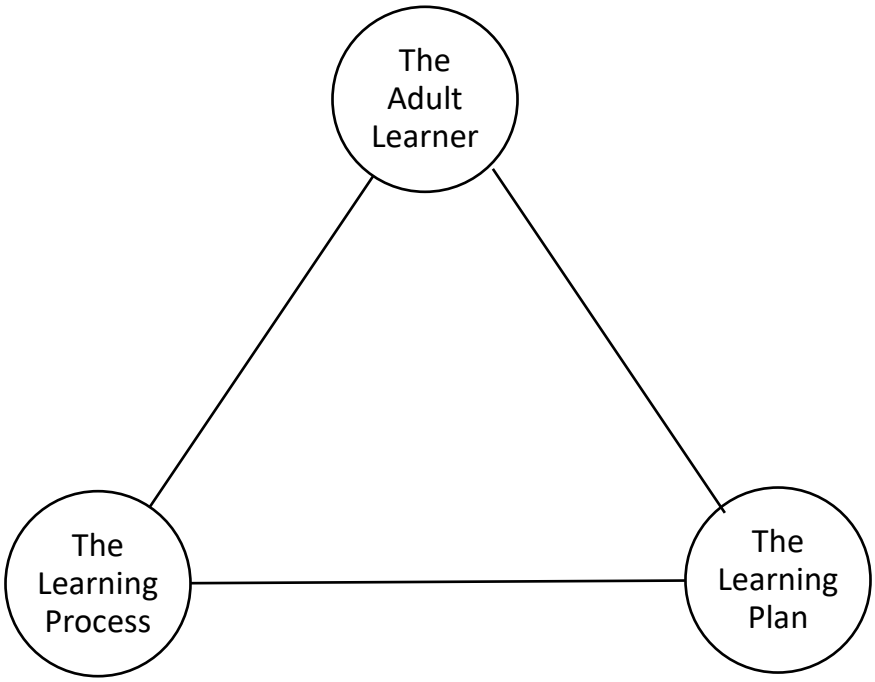


Figure 1

Model of Adult Education for Training, Instruction, and Learning

Note. This figure demonstrates the adult education process for in training, instruction, and learning as described by Cyril O. Houle and discussed by Malcom Knowles. (M. Knowles, 1990; Merriam & Brockett, 1997).

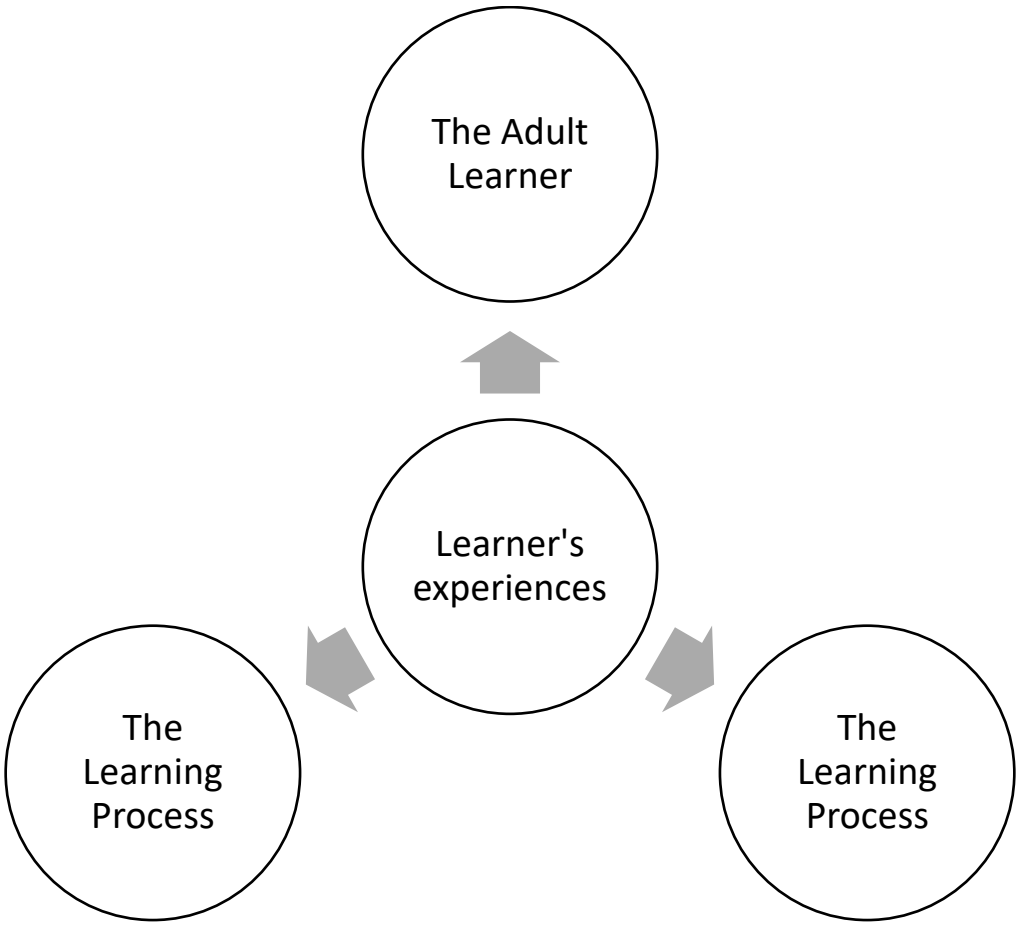


Figure 2

Model of Transformative Theory

Note. This figure demonstrates Jack Mezirow's transformative theory for adult education which builds upon the previous model to take the individual's learning experiences into consideration for their growth and development (Mezirow, 1997).

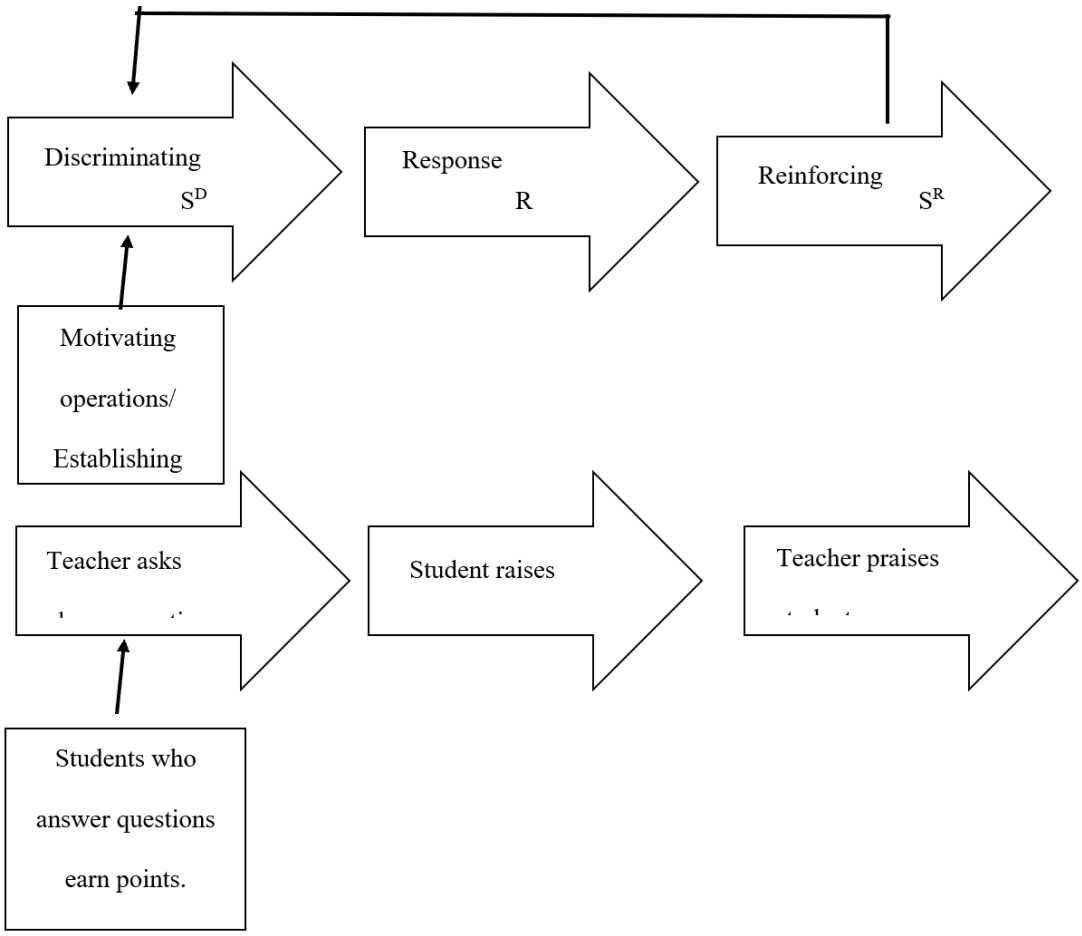


Figure 3

Model of Skinner's Operation Conditioning

Note. This figure demonstrates the process of operant conditioning and the way motivating operations can play a role in influencing behavior (Cooper et al., 2020; Michael, 1988, 1993; Skinner, 1953).

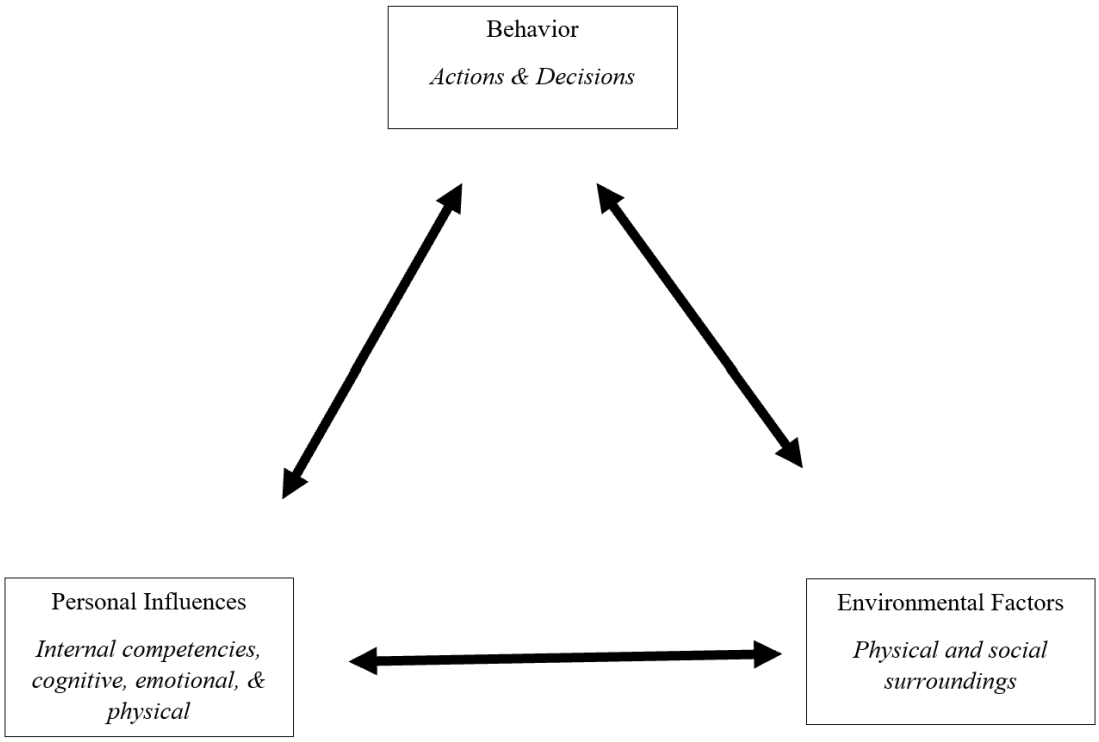


Figure 4

Model of Bandura's Social Cognitive Theory Reciprocal Determinism

Note. This figure demonstrates the reciprocal relationship between personal influences, environmental factors, and behavior and it's influence on one's behavior and learning (Bandura, 1977, 1986).

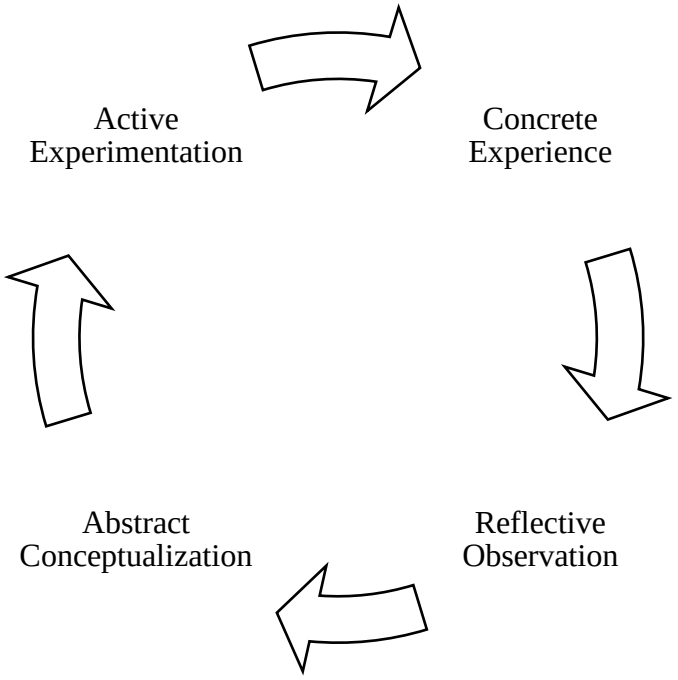


Figure 5

Model of Kolb's Experiential Learning Cycle

Note. This figure displays the four steps in the experiential learning cycle. Concrete experiences provide learners with an experience that they themselves engage in. Reflective observation provides the learning with an opportunity reflect on their experience. Abstract conceptualization is where learners think about the experience, reach conclusions, and learn from the experience. Active experimentation is where learners try what they have learned, applies the model, and practices the skill in a new experience (Kolb, 1984; Kolb et al., 2014).

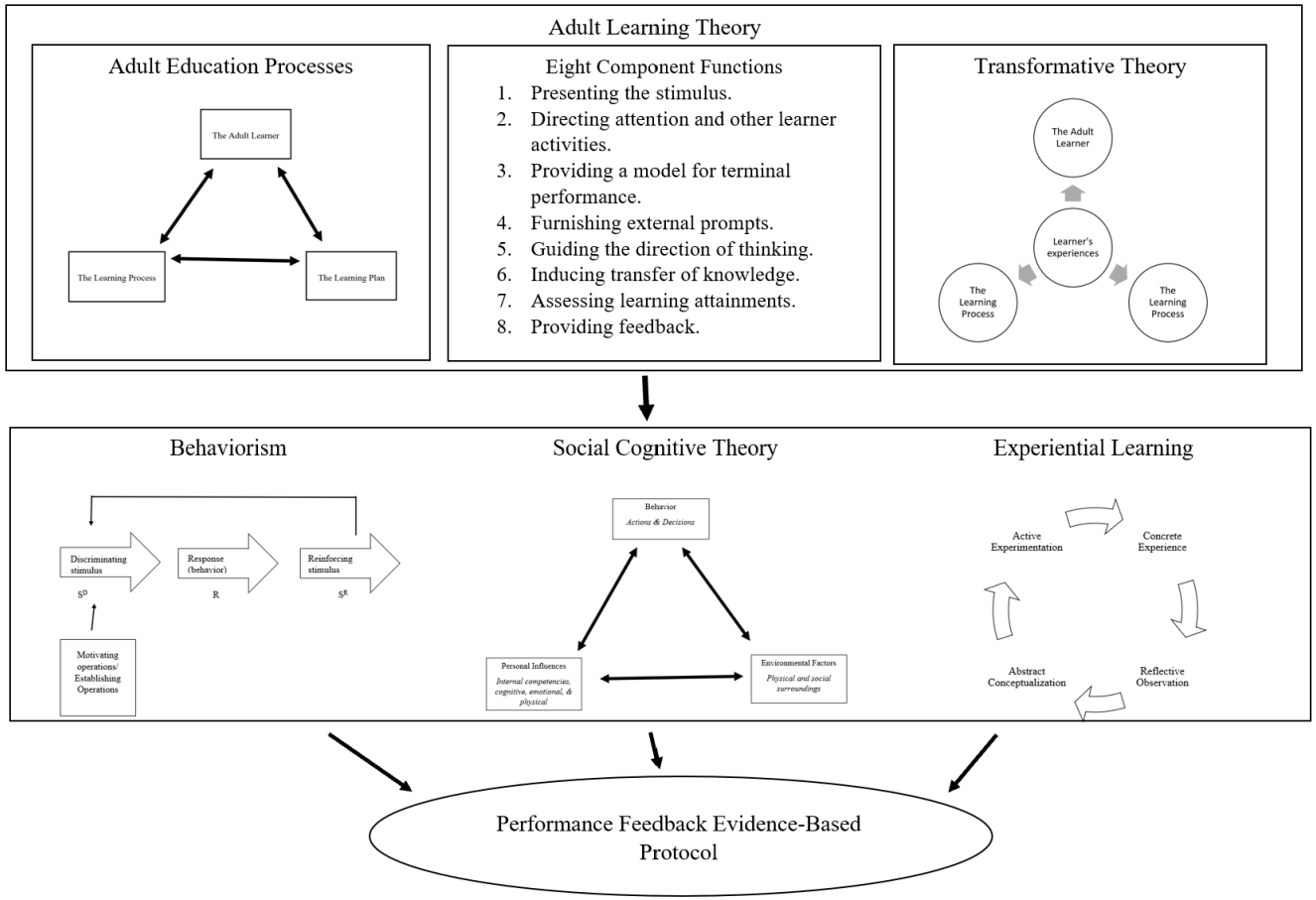


Figure 6

Theoretical Framework Support for Performance Feedback for Adult Learners

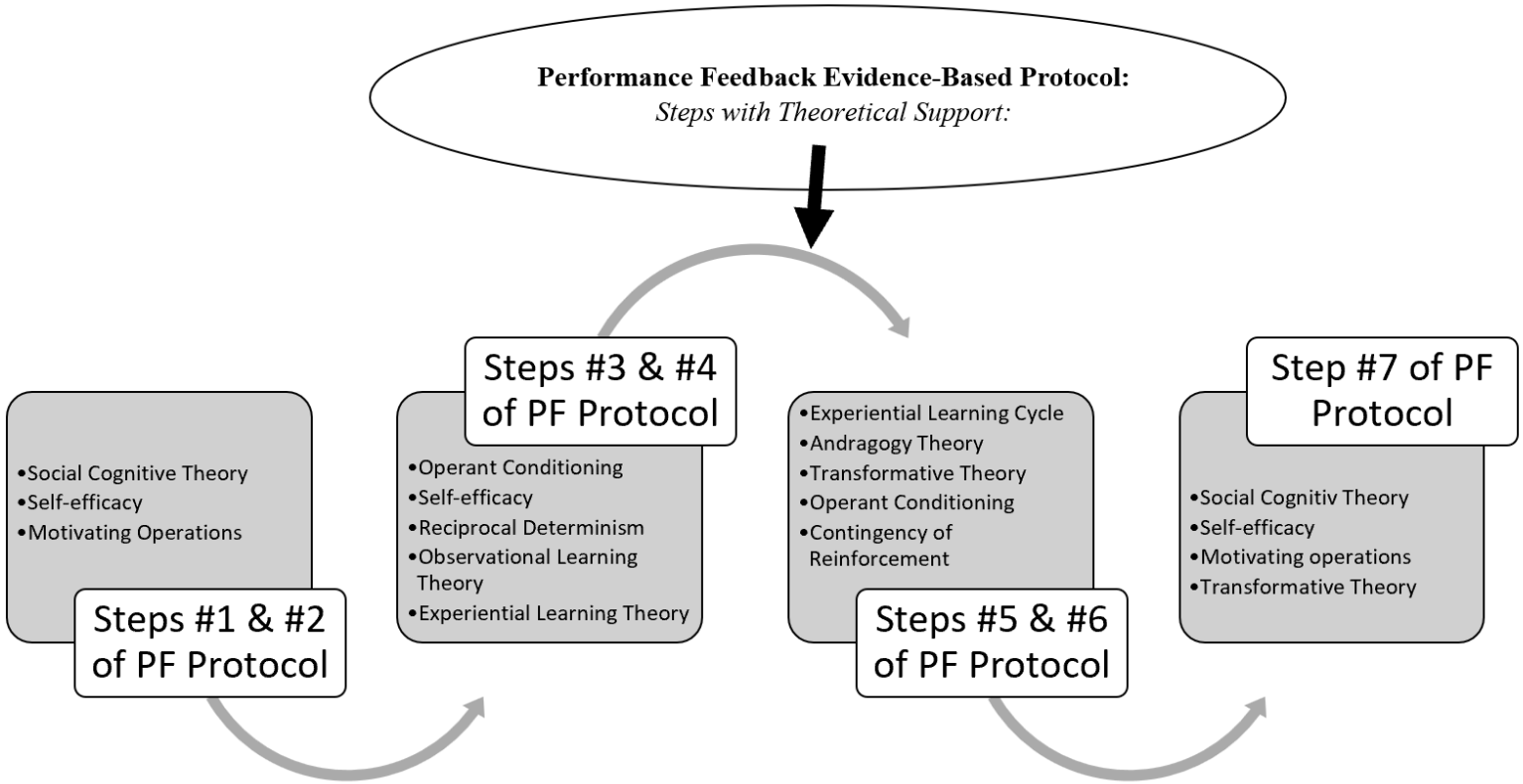


Figure 6 (continued).

Please provide your contact information below. All participants information and survey responses will remain confidential. A portion of participants may be contacted in the future to complete a follow-up survey to help us assess the reliability of this survey. This information will allow us to contact you in the future for this follow-up survey.

First and Last Name

Educator Preparation Program (Please provide the full name of the College, University, or Institution where completing educator licensure requirements)

E-mail Address

Phone Number

How would you characterize your school for your primary student teaching, internship, or other school-based experience placement?

- ○ Urban
- ○ Suburban
- ○ Rural
- ○ Other. Please specify:

Which of the following grades were you observed by a faculty member or teacher preparation program supervisor. Check all that apply.

- [ ] PreK
- [ ] K
- [ ] 1st
- [ ] 2nd
- [ ] 3rd
- [ ] 4th
- [ ] 5th
- [ ] 6th
- [ ] 7th
- [ ] 8th
- [ ] 9th
- [ ] 10th
- [ ] 11th
- [ ] 12th

Which of the following best describes your school?

- ○ Regular Public School
- ○ Alternative School
- ○ Career and Technical School or Magnet School
- ○ Other Please specify:

How would you best describe yourself?

- ○ Female
- ○ Male
- ○ Non-Binary
- ○ Transgender Female
- ○ Transgender Male
- ○ Self-describe (fill in the blank)

  _____
- ○ Prefer not to answer

Are you of Hispanic, Latino or Spanish origin?

- ○ Yes
- ○ No
- ○ Other

  _____
- ○ Prefer not to answer

How would you best describe yourself?

- ○ American Indian or Alaska Native
- ○ Asian
- ○ Black or African American
- ○ Native Hawaiian or Other Pacific Islander
- ○ White
- ○ Other Race (Please specify)

- ○ Prefer not to answer

Select all your teacher licensure programs.

- [ ] Agriculture (6-12)
- [ ] American Sign Language (ASL) (Prek-12)
- [ ] Ark (K-12)
- [ ] Deaf and Hard of Hearing (Prek-12)
- [ ] Early Childhood Education (Prek-3)
- [ ] Early Development and Language (Prek-K)
- [ ] Elementary (K-5)
- [ ] English as a Second Language (ESL) (Prek-12)
- [ ] Middle Grades: Mathematics (6-8)
- [ ] Middle Grades: Science (6-8)
- [ ] Music: Instrument (K-12)
- [ ] Music: Vocal (K-12)
- [ ] School Librarian, Library Information Specialist (Prek-12)
- [ ] Secondary English (6-12)/English as a Second Language (Prek-12)
- [ ] Secondary Mathematics (6-12)
- [ ] Secondary Science (6-12)
- [ ] Secondary Social Science (6-12)

- [ ] Secondary Social Science (6-12)
- [ ] Special Education: Interventionist (K-8 & 6-12)/Comprehensive (K-12)
- [ ] World Language: French (Prek-12)
- [ ] World Langauge: German (Prek-12)
- [ ] World Language: Latin (Prek-12)
- [ ] World Language: Spanish (Prek-12)
- [ ] Other: Please Specify

Which school-based experience program are you currently enrolled in?

- ○ Student Teaching
- ○ Professional Internship
- ○ Job-Embedded Practitioner (JEP) Program
- ○ Practicum Placement
- ○ Other: Please Specify (i.e. Grow Your Own Program)

What setting did the **majority** of your school-based experience program take place?

- ☐ In-person Instruction
- ☐ Virtual Instruction
- ☐ Hybrid Instruction
- ☐ Other: Please specify

Remote video observation is where a teacher or teacher candidate will record themselves teaching a lesson in their classroom and then share that video with a supervisor. These observations can be either synchronous (where the supervisor views your instruction on the video in real-time via a web cam and video conference software such as Zoom, Microsoft Teams) or asynchronous (where the teacher records the video and shares the video with the supervisor and the supervisor reviews the video).

During the current school year, did you participate in any remote video observations (as described above) with a university supervisor from your educator preparation program during one or more of your school-based experiences?

- ○ Yes
- ○ No

How difficult were each of the following aspects of the remote video observation process?

	Extremely easy	Moderately easy	Slightly easy	Neither easy nor difficult	Slightly difficult	Moderately difficult	Extremely difficult	Not Applicable
Setting up the camera equipment and software in your classroom	○	○	○	○	○	○	○	○
Recording video to capture your classroom activities (did the video capture all the parts of your instruction as you desired)	○	○	○	○	○	○	○	○
Recording audio to capture all your classroom activities (did the audio capture all parts of your instruction as you desired)	○	○	○	○	○	○	○	○
Saving the video recordings to your computer and/or cloud storage (i.e. Google Drive, One Drive, Canvas, etc)	○	○	○	○	○	○	○	○
Watching your video on your computer	○	○	○	○	○	○	○	○

Deciding which video that you recorded to submit to your educator preparation program supervisor(s) for your video observation	○	○	○	○	○	○	○	○
Uploading the video to the appropriate storage system (i.e., Google Drive, One Drive, Canvas, Microsoft Teams, etc) to be shared with your educator preparation program supervisor(s)	○	○	○	○	○	○	○	○

Accessing the feedback provided to you by the educator preparation program supervisor(s) (i.e. video conference, email, online discussion, video time-stamped feedback, etc)	○	○	○	○	○	○	○	○
Understanding the feedback provided to you by the educator preparation program supervisor(s) (did the feedback make sense, easy to understand, was it stated clearly and easy to follow)	○	○	○	○	○	○	○	○
Accessing help or support for conducting the remote observations (were your supervisor(s) able to help you if you were struggling with any part of the remote observation process)	○	○	○	○	○	○	○	○

Accessing help or support for technology-related issues (were technology supports available to you to help you if you were struggling with any part of the technology requirements for your remote video observations)	○	○	○	○	○	○	○	○

What are your primary concerns with sharing videos of your teaching practice with educator preparation program supervisor(s)? Select all that apply.

- ☐ Technological access to reliable video recording equipment
- ☐ Internet connection for uploading videos to be shared with educator preparation program supervisor(s)
- ☐ PreK-12th grade student privacy concerns
- ☐ Teacher candidate concerns with others viewing their videotaped lessons
- ☐ Teacher candidate self-consciousness with being videotaped
- ☐ Time needed to completing recording and upload videos
- ☐ Not Applicable

Approximately how much time did setting up your equipment and video recording your classroom add to an average day in which you videorecorded?

- ○ 0-10 minutes
- ○ 10-20 minutes
- ○ 20-30 minutes
- ○ 30-40 minutes
- ○ 40-50 minutes
- ○ 60-minutes
- ○ More than 60 minutes
- ○ Not Applicable

What type of remote video observations were conducted?

- ○ Only synchronous with observer (all remote video observations were conducted in real-time with the observer watching the video "live" as the lesson was occurring)
- ○ Only asynchronous with observer (all remote video observations were recorded videos that the observer watched at a time outside of the live observation)
- ○ Mixture of synchronous and asynchronous remote video observations
- ○ Not Applicable

Are there any other types of remote video observations you have conducted?

Which type of remote video observation do you prefer?

- ○ Only synchronous with observer (all remote video observations were conducted in real-time with the observer watching the video "live" as the lesson was occurring)
- ○ Only asynchronous with observer (all remote video observations were recorded videos that the observer watched at a time outside of the live observation)
- ○ Mixture of synchronous and asynchronous remote video observations
- ○ Not Applicable

When did you typically receive feedback following the observation from your educator preparation program supervisor(s)?

- ○ Same day as the observation (immediate feedback)
- ○ 1-2 days following observation
- ○ 3-4 days following observation
- ○ 5-7 following observation
- ○ More than 7 days following observation

How frequently did your educator preparation program supervisor(s) provide the following kinds of feedback?

	Never						Always
Conversation (verbal communication in either face-to-face or virtual meeting about the perceptions or feedback they wish to provide to the teacher)	○	○	○	○	○	○	○
Observation Notes (written notes from the observation such as a script, notes, comments, or questions about the perceptions or feedback they wish to provide to the teacher)	○	○	○	○	○	○	○
Teacher Evaluation Rubric (copy of a completed teacher evaluation rubric along with summary notes for feedback they wish to provide to the teacher)	○	○	○	○	○	○	○

Recorded voice or video feedback (the supervisor submits a recording of their perceptions or feedback they wish to provide to the teacher)	○	○	○	○	○	○	○
Time-stamped video commentary software options (i.e. Canvas Studio, VidHub, Swivl Platform) to add comments as time-stamps along the video recording timeline to provide commentary including perceptions, notes, comments, or questions about the observation for the teacher candidate to view while reviewing the recorded video capturing their lesson	○	○	○	○	○	○	○
Bug in the Ear (during synchronous remote observations the teacher wears a small earpiece and throughout the lesson the supervisor provides feedback to the teacher in real-time)	○	○	○	○	○	○	○

Other types of feedback (please specify kind of feedback)	○	○	○	○	○	○	○	

Indicate your level of agreement with each item in relation to feedback from your education preparation program supervisor(s) following remote observation.

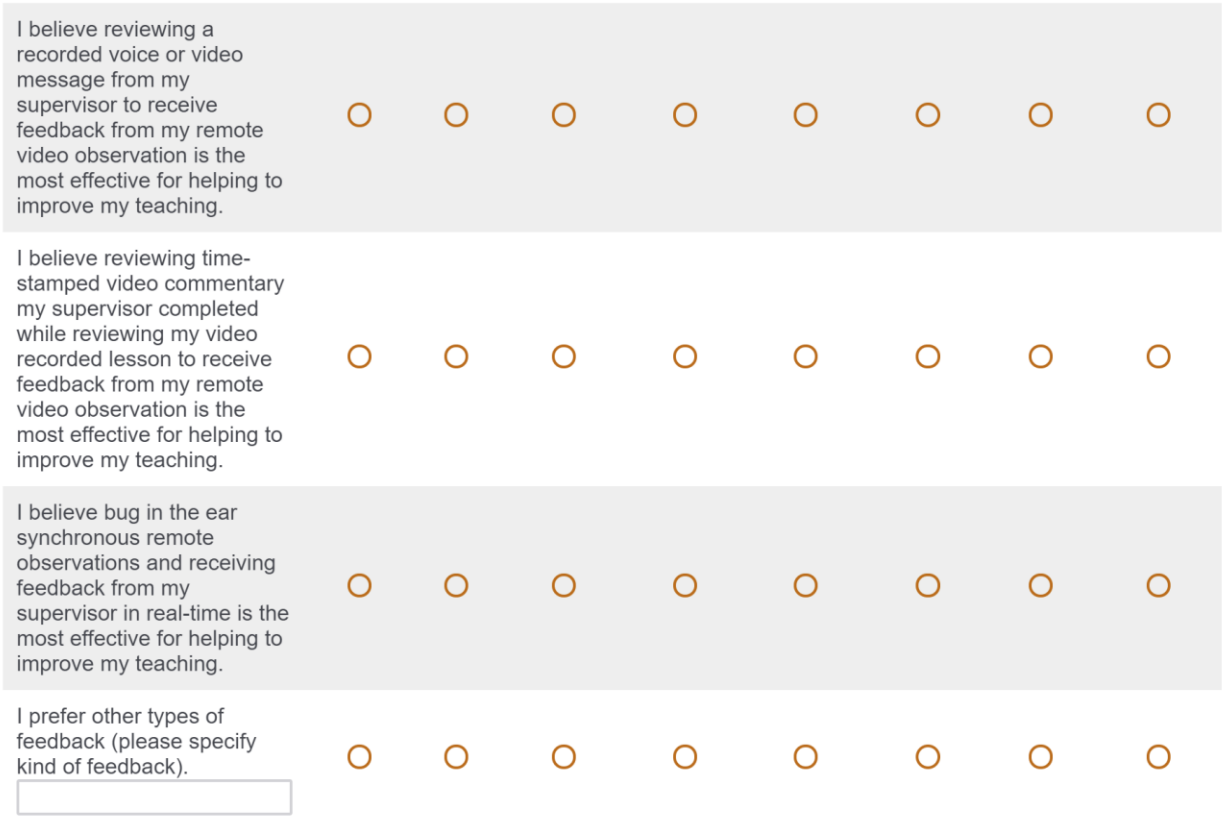
	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree	Not applicable
I prefer conversations with my supervisor to receive feedback from my remote video observation.	○	○	○	○	○	○	○	○
I prefer reviewing observation notes from my supervisor to receive feedback from my remote video observation.	○	○	○	○	○	○	○	○
I prefer reviewing teacher evaluation rubric scores from my supervisor to receive feedback from my remote video observation.	○	○	○	○	○	○	○	○
I prefer to review a recorded voice or video message from my supervisor to receive feedback from my remote video observation.	○	○	○	○	○	○	○	○

I prefer to review a recorded voice or video message from my supervisor to receive feedback from my remote video observation.	○	○	○	○	○	○	○	○
I prefer to review time-stamped video commentary my supervisor completed while reviewing my video recorded lesson to receive feedback from my remote video observation.	○	○	○	○	○	○	○	○
I prefer bug in the ear synchronous remote observations and receiving feedback from my supervisor in real-time.	○	○	○	○	○	○	○	○
I prefer other types of feedback (please specify kind of feedback).	○	○	○	○	○	○	○	○

Indicate your level of agreement with each item in relation to feedback from your education preparation program supervisor(s) following remote observation.

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree	Not applicable
I believe conversations with my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	○	○	○	○	○	○	○	○
I believe reviewing observation notes from my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	○	○	○	○	○	○	○	○
I believe reviewing teacher evaluation rubric scores from my supervisor to receive feedback from my remote video observation is the most effective for helping to improve my teaching.	○	○	○	○	○	○	○	○

Figure 7 (continued).



Indicate your level of agreement with each item in relation to feedback from supervisors following remote observation.

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Feedback provided immediately (i.e. on the same day) following an observation is most effective for helping to improve my teaching.	○	○	○	○	○	○	○
Feedback provided 1-2 days following an observation is most effective for helping to improve my teaching.	○	○	○	○	○	○	○
Feedback provided 3-4 days following an observation is most effective for helping to improve my teaching.	○	○	○	○	○	○	○
Feedback provided 5-6 days following an observation is most effective for helping to improve my teaching.	○	○	○	○	○	○	○
Feedback provided 7 or more days following an observation is most effective for helping to improve my teaching.	○	○	○	○	○	○	○
Feedback provided only when it is necessary for me to make changes to my teaching is most effective for helping to improve my teaching.	○	○	○	○	○	○	○

The next set of items are used to evaluate the quality of feedback you receive from your educator preparation program supervisor(s). These next questions will help us get an idea of the quality of the feedback you received from your education preparation program supervisor(s).

Indicate your level of agreement with each item related to the feedback you received following remote video observations.

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
My supervisor(s) always briefly met with me prior to the observation(s).	○	○	○	○	○	○	○
My supervisor(s) always tried to ensure the feedback being provided was done privately with me.	○	○	○	○	○	○	○

My supervisor(s) always began their feedback with a positive or empathetic statement.	○	○	○	○	○	○	○
My supervisor(s) always specified what I did well in my observation.	○	○	○	○	○	○	○
My supervisor(s) always specified what I may of done incorrectly or needed to improve upon.	○	○	○	○	○	○	○
My supervisor(s) always specified what I needed to do to make improvements for areas I needed to improve upon or did incorrectly.	○	○	○	○	○	○	○

My supervisor(s) always solicited questions from me about the information being provided.	○	○	○	○	○	○	○
My supervisor(s) shared their data from the observation process and the outcomes of the observation in either verbal and/or written forms.	○	○	○	○	○	○	○
My supervisor(s) engaged in a problem-solving discussion with me about my observation.	○	○	○	○	○	○	○

My supervisor(s) discussed the impact of my observation and implementation of interventions or teaching strategies on student outcomes.	○	○	○	○	○	○	○
My supervisor(s) always informed me about the next action steps for areas to improve the targeted skills or behavior.	○	○	○	○	○	○	○
My supervisor(s) always ended the feedback with a positive or empathetic statement.	○	○	○	○	○	○	○

Indicate the level of importance as it relates to you with each item related to receiving feedback from your supervisor following remote video observations.

	Not at all important									Extremely important
My supervisor(s) briefly meeting with me prior to the observations.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) beginning their feedback with a positive or empathetic statement.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) specifying what I did well in my observation.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) specifying what I may of done incorrectly or needed to improve upon.	○	○	○	○	○	○	○	○	○	○

My supervisor(s) specifying what I need to do to make improvements for areas I needed to improve upon or did incorrectly.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) soliciting questions from me about the information being provided.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) sharing their data from the observation process and the outcomes of the observation in **verbal** forms.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) sharing their data from the observation process and the outcomes of the observation in **written** forms.	○	○	○	○	○	○	○	○	○	○

My supervisor(s) engaging in problem solving discussion with me to improve my teaching and student outcomes.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) discussing the impact of my observation and implementation of interventions or teaching strategies on student outcomes.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) informing me about the next action steps for areas to improve the targeted skill or behavior.	○	○	○	○	○	○	○	○	○	○
My supervisor(s) ending the feedback with a positive or empathetic statement.	○	○	○	○	○	○	○	○	○	○

The next set of items are used to evaluate the quality of training and coaching you received from your educator preparation program supervisor(s). These next questions will helps us get an idea of the types of training and coaching your educator preparation program supervisor(s) utilized and if you felt their training and coaching was beneficial to you as a teacher candidate.

What mode did your supervisor(s) utilize when providing you extra training or support in areas that need improvement?

- [ ] The supervisor(s) providing in-person training opportunities (including modeling of strategies, observation, and feedback)
- [ ] The supervisor(s) providing written summary of areas you needed extra training or support with
- [ ] The supervisor(s) sharing online training content (i.e. modules, webinars, etc)
- [ ] The supervisor(s) having a conversation (face-to-face or virtual) with you related to the areas you needed extra training or support with
- [ ] The supervisor(s) utilizing bug in the ear technology (during synchronous remote video observations the teacher wears a small earpiece and throughout the lesson the supervisor(s) provides feedback to the teacher in real-time)
- [ ] None of the above
- [ ] Other please specify

What methods did you prefer your supervisor(s) utilize when providing you extra training or support in areas that need improvement?

- [ ] The supervisor(s) provided in-person training opportunities (including modeling of strategies, observation, and feedback)
- [ ] The supervisor(s) provided written summary of areas you needed extra training or support with
- [ ] The supervisor(s) shared online training content (i.e. modules, webinars, etc)
- [ ] The supervisor(s) had a conversation (face-to-face or virtual) with you related to the areas you needed extra training or support with
- [ ] The supervisor(s) utilized bug in the ear technology (during synchronous remote video observations the teacher wears a small earpiece and throughout the lesson, the supervisor(s) provides feedback to the teacher in real-time)
- [ ] None of the above
- [ ] Other Please specify

Indicate your level of agreement with each item regarding your supervisor(s) training you in specific teaching strategy.

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
The supervisor(s) always described the skills, intervention or teaching strategy they want me, the teacher, to implement.	○	○	○	○	○	○	○
The supervisor(s) always provided me with the written summary of the teaching strategy they want me, the teacher, to implement.	○	○	○	○	○	○	○

The supervisor(s) always modeled or demonstrated the target teaching strategy for me to view.	○	○	○	○	○	○	○
The supervisor(s) always had me practice performing the teaching strategy and provided feedback to me.	○	○	○	○	○	○	○
The supervisor(s) would repeat these steps of explaining, modeling, and practicing the teaching strategy until I demonstrated competence in performing the target skills.	○	○	○	○	○	○	○

Indicate the level of importance as it relates to your supervisor(s) training you in specific teaching strategy.

	Not at all important									Extremely important
The supervisor(s) describing the skills, intervention or teaching strategy they want me, the teacher, to implement.	○	○	○	○	○	○	○	○	○	○
The supervisor(s) providing me with the written summary of the teaching strategy they want me, the teacher, to implement.	○	○	○	○	○	○	○	○	○	○
The supervisor(s) modeling or demonstrating the target teaching strategy for me to view.	○	○	○	○	○	○	○	○	○	○

The supervisor(s) having me practice performing the teaching strategy and provided feedback to me.	○	○	○	○	○	○	○	○	○	○
The supervisor(s) repeating these steps of explaining, modeling, and practicing the teaching strategy until I demonstrated competence in performing the target skills.	○	○	○	○	○	○	○	○	○	○

Thank you for completing this survey. We appreciate you taking the time to share about your experiences related to remote video observations and the feedback you have received from your college-based supervisors.

Please re-enter your email address to ensure we have an accurate way to contact you. We may be reaching out to ask participants to complete a shorter follow-up survey to assess the reliability of this survey.

Thank you for completing this survey. We appreciate you taking the time to share your responses. If you would like to be entered in a drawing for a gift card, please provide your contact information by clicking here.

If you have questions at any time about the study or the procedures, (or your experience adverse effects as a result of participating in this study), you may contact, Ashlee Smethers, Doctoral Student in Theory and Practice in Teacher Education Department at UTK, (785) 212-0136, or ashlee.smethers@utk.edu or Dr. Tara Moore, Associate Professor in Theory and Practice in Teacher Education Department at UTK, tara.moore@utk.edu. If you have questions about your rights as a participant, contact the IRB Administrator in the Office of Research at (865) 974-3466 or blawson@utk.edu.

Warmly,

Ashlee Smethers
Doctoral Student
TPTE, CEHHS
ashlee.smethers@utk.edu

Appendix C: Recruitment materials

Letter to EPPs

Dear Tennessee Education Preparation Program Provider,

My name is Ashlee Cornett Smethers. I am a doctoral student at the University of Tennessee, Knoxville. I am interested in understanding the perceptions of teacher candidates regarding their experiences with remote video observations and the quality of the performance feedback they were receiving on their observations. The purpose of this study is to survey teacher candidates to better understand their perceptions about remote video observations and the quality of the feedback they received from their college-based supervisors.

The use of remote video observation has grown significantly since the COVID-19 pandemic. Research has been conducted on the use of this technology on the quality of observations of teachers and teacher candidates. However, little research about the perceptions of the teacher candidates of remote video observations.

Performance feedback to teacher candidates is critical to any educator preparation program (EPP). The critical components of performance feedback and its role to improve teacher outcomes have been heavily studied. However, the perceptions of the teacher candidate for what components of performance feedback they believe they received and which ones were most important or valuable to them has little research at the time of this study.

The survey hopes to address these gaps in the research by looking at the perceptions of remote video observations and the quality of the performance feedback they have received with these observations. We would love to invite teacher candidates in your program to have the option to participate in this study. We are asking that you please forward the e-mail below which

includes a description of the study and link to the survey the teacher candidates will be asked to complete to all teacher candidates in your program.

If you have any questions regarding this study please feel to contact, Ashlee Smethers, Doctoral Student in Theory and Practice in Teacher Education Department at UTK, (785) 212-0136, or ashlee.smethers@utk.edu or Dr. Tara Moore, Associate Professor in Theory and Practice in Teacher Education Department at UTK, tara.moore@utk.edu. If you have questions about the rights of the participants, contact the IRB Administrator in the Office of Research at (865) 974-7697 or utkirb@utk.edu. Thank you for your consideration!

Warmly,

Ashlee Smethers

Doctoral Student

Theory & Practice in Teacher Education

University of Tennessee, Knoxville

Tara Moore, PhD, BCBA-D

Associate Professor

Theory & Practice in Teacher Education

University of Tennessee, Knoxville



RESEARCH STUDY TO UNDERSTAND PERCEPTIONS OF REMOTE VIDEO OBSERVATION FOR:

TEACHER CANDIDATES

Did you have remote video observations while completing your teaching licensure program?

We want to hear about your experience.

SCAN ME

TEACHER CANDIDATES HAVE THE OPPORTUNITY TO:

- Complete 15-20 minute survey
- Enter drawing for your choice of gift card
- Share about your remote video observation experience

This study has IRB approval from University of Tennessee, Knoxville
For more information please contact:
Ashlee Smethers, University of Tennessee, Knoxville, ashlee.smetheres@utk.edu
Dr. Tara Moore, University of Tennessee, Knoxville, tara.moore@utk.edu
Univeristy of Tennessee, Knoxville IRB: utkirb@utk.edu

Letter to Teacher Candidates

Dear Teacher Candidate,

`You are invited to participate in this survey study to help education preparation programs better understand the perceptions of teacher candidates when it comes to remote video observation and the feedback received from their education preparation program supervisor(s). Education preparation program supervisors from your program or university working with you to provide observation and feedback to your teaching experience (i.e. student teaching, interning teacher, or practicum experiences).

Participants' Involvement in the Study

In the survey, you will be asked questions about your experience with remote observations and the kind of feedback you have received from your educator preparation program supervisor(s).

By clicking on the link and responding to items in the online survey you are consenting to participate in the study. All participants are asked to complete the enclosed survey in the provided link. This survey is expected to take approximately 15-20 minutes to complete. There are little to no foreseeable risks or discomforts anticipated for participants.

Benefits

The results of this study will better help educator preparation programs develop, evaluate, and implement effective practices for supporting their teacher candidates with the use of remote video observation technology. This could allow supervisors to increase their support for teacher candidates, reduce travel time and associated costs, and support teacher candidates located in

different geographic locations more readily.

Compensation

Participants will have the opportunity to enter a drawing for a $10 gift card. Those who wish to enter the drawing, they will be asked to provide their name and e-mail address. Participation in this survey is completely voluntary. Participant's entry into the drawing is completely voluntary and not tied to their completion of the survey.

Participation in this study does not impact your ability to receive course credit or have an impact on your final grade in any coursework. Participation in this survey is completely voluntary.

Survey Link

Click here to take this survey!

Contact Information

If you have questions at any time about the study or the procedures, (or your experience adverse effects as a result of participating in this study), you may contact, Ashlee Smethers, Doctoral Student in Theory and Practice in Teacher Education Department at UTK, (785) 212-0136, or ashlee.smethers@utk.edu or Dr. Tara Moore, Associate Professor in Theory and Practice in Teacher Education Department at UTK, tara.moore@utk.edu. If you have questions about your rights as a participant, contact the IRB Administrator in the Office of Research at (865) 974-7697 or utkirb@utk.edu.

Thank you for your consideration!

Warmly,

Ashlee Cornett Smethers

Doctoral Student

Theory & Practice in Teacher Education

University of Tennessee, Knoxville

Tara Moore, PhD, BCBA-D

Associate Professor

Theory & Practice in Teacher Education

University of Tennessee, Knoxville

Script for Researcher to Read to Teacher Candidate

Hello! My name is Ashlee Smethers. I am a doctoral student in special education in the Theory and Practice in Teacher Education Department at the University of Tennessee, Knoxville. I am currently doing a survey study intended to help educator preparation programs better understand the perceptions of teacher candidates when it comes to remote video observation and the feedback received from their educator preparation program supervisor or supervisors. Educator preparation program supervisors include the supervisors from your program or university working with you to provide observation and feedback to your teaching experience (i.e. student teaching, professional internship, or practicum experiences).

The results of this study will better help educator preparation programs develop, evaluate, and implement effective practices for supporting their teacher candidates with the use of remote video observation technology. This could allow supervisors to increase their support for teacher candidates, reduce travel time and associated costs, and support teacher candidates located in different geographic locations more readily.

All participants are asked to complete the survey in the provided link. This survey is expected to take approximately 15-20 minutes to complete. There are little to no foreseeable risks or discomforts anticipated for participants.

Participants will have the opportunity to enter a drawing for a $10 gift card. Those who wish to enter the drawing, they will be asked to provide their name and e-mail address. Participation in this survey is completely voluntary. Participant's entry into the drawing is completely voluntary and not tied to their completion of the survey.

Participation in this study does not impact your ability to receive course credit or have an impact on your final grade in any coursework. Participation in this survey is completely voluntary.

If you have questions at any time about the study or the procedures, (or your experience adverse effects as a result of participating in this study), you may contact, Ashlee Smethers, Doctoral Student in Theory and Practice in Teacher Education Department at UTK, (785) 212-0136, or ashlee.smethers@utk.edu or Dr. Tara Moore, Associate Professor in Theory and Practice in Teacher Education Department at UTK, tara.moore@utk.edu. If you have questions about your rights as a participant, contact the IRB Administrator in the Office of Research at (865) 974-7697 or utkirb@utk.edu.

Thank you for your consideration!

VITA

Ashlee Elaine Cornett Smethers is originally from Lindsborg, Kansas, where she graduated from Smoky Valley High School in 2005. She earned her Bachelor of Science in Psychology with a minor in Exceptional Learners from Baker University in Baldwin City, KS in 2009. Upon graduation, Ashlee moved to Knoxville, Tennessee, to complete her Master of Science in Teacher Education with a concentration in Special Education. Ashlee completed her Master of Science and all required teacher licensure requirements in 2011. Ashlee was a special education teacher for students with low and high incidence disabilities, including students with significant communication and behavioral needs in inclusive and special education classroom settings. While a special education teacher, Ashlee was a mentor teacher and model of demonstration classroom to new teachers. She also served as a mentor for teacher candidates from various local educator preparation programs. Ashlee also provided colleagues with professional development and coaching on evidence-based practices to improve student outcomes.

Ashlee is an education consultant for the Tennessee Tiered Supports Center, previously known as the Tennessee Behavior Supports Project. The Tennessee Tiered Supports Center is a grant-funded project within the Tennessee Technical Assistance Network within the Tennessee Department of Education. In this current role, Ashlee provides training, coaching, and technical assistance to local school district administrators, building level administrators, and educators on implementing multi-tiered systems of support framework to better align their response to intervention and positive behavior interventions and supports. Ashlee also serves as an adjunct lecturer at the University of Tennessee, Knoxville, frequently teaching teacher candidates

various courses. As part of her PhD program, Ashlee has completed approved coursework and is currently fulfilling supervised fieldwork for Board Certified Behavior Analyst certification. She has also earned a minor in Statistics. Ashlee's research interests include teacher education, performance feedback, behavior skills training, high leverage practices, behavioral interventions, and implementation science. Ashlee is also interested in utilizing different methodologies for evaluating and improving outcomes for teachers, teacher candidates, and students, including single-case research design, quasi-experimental design, and advanced statistical modeling. Ashlee completed her PhD in August 2024.