

**THE INTERVIEW: ASCERTAINING TEACHERS' ABILITY TO FOSTER STUDENT
METACOGNITION**

by

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Teacher responsiveness is the direct, daily feedback occurring between the teacher and student during the learning process that can impact student learning, partially via their metacognition. Interview tools that intentionally assess teacher candidates' ability to foster student's metacognitive growth through verbal feedback do not exist. To that end, a review of existing research literature identifies types of feedback characteristics and factors of feedback connected to teacher responsiveness to student metacognition, school district interview practices and tools for interviewing teachers, and strengths and limitations of the present study. Using an action research approach, questions embedded into existing interview tools and demonstration lessons with students were analyzed and evaluated against a feedback criteria list created through examination of the research literature connected to metacognition, instruction, and feedback. Identification of the interview tools that are most informative about teacher candidates' level of ability to be responsive to students' metacognitive needs include questions specific to metacognition and a demonstration lesson with students. Major findings include a list of feedback characteristics which support metacognitive growth, the effective use of interview questions specific to the understanding of metacognition in combination with a 30-minute

demonstration lesson presented to students and a comparison of candidate responses against the feedback characteristics list.

Keywords: teacher feedback, metacognition, interview tools

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1.0 STATEMENT OF THE PROBLEM OF PRACTICE

The ability of a teacher to skillfully respond to student feedback in the academic classroom setting can determine the extent to which a student learns (Konold, Miller & Konold, 2004; Connor, Piasta, Fishman, Glasney, Schatschneider, Crowe, Underwood, & Morrison, 2009). Students' ability to engage in metacognition teaches them to self-monitor their learning, how to ask questions of their thinking while in the process of learning and applying information, and what strategies to apply to assist them through their thought processes (Butler & Winne, 1995; Lajoie, 2008). Metacognition is important because research has linked it to academic and social-emotional outcomes (Allen & Hancock, 2008; Chapman & Tunmer, 2003).

In order to assess and scaffold students' abilities to reflect and to think about their thinking, teachers themselves must be knowledgeable about metacognition and how to provide metacognitive feedback to students (Wilson and Bai, 2010). A study by Soodla, Jogi & Kikas (2017) found that a teacher's strength of metacognitive knowledge connecting to reading comprehension correlated with a higher average of student metacognitive knowledge, which in turn impacted the student's knowledge and application of reading comprehension strategies. Additionally, a teacher must understand factors that impact a teacher's depth of responsiveness to students when giving metacognitive feedback. Therefore, it is important to understand characteristics of verbal feedback and factors impacting feedback that most impact students' metacognitive growth.

Each student possesses unique characteristics and learning profiles, and the task of an exemplary teacher involves analyzing, identifying, and providing metacognitive feedback to students to foster academic and social-emotional growth. School districts expect continuous student academic growth in learning and the state of Pennsylvania assesses this growth through the Pennsylvania Value Added Assessment System, or PVAAS, using a value-added growth formula based on the state achievement assessment. According to the state's formula, district growth scores of -1 and higher indicate that students in the assessed grade levels demonstrated one year of academic growth. For the 2015-2016 school year, out of 633 school districts, 35% of students in ELA and 39% of students in Math in grades 4-8 did not demonstrate the expected growth. Hiring teachers with stronger metacognitive feedback skills may improve students' metacognitive skills, and thus their academic and social-emotional growth. It is then beneficial to evaluate school district interview processes to determine how school districts assess a teacher's understanding of metacognition and their ability to foster student's metacognition through verbal feedback.

1.1 CONNECTION THROUGH PERSONAL EXPERIENCE

As a school principal conducting classroom walkthroughs and observations and participating in interviewing teachers for teaching positions, I have observed the impact that quality and specificity of teacher feedback within instruction has on students' metacognitive growth. In the school I lead, all teachers have access to the same curriculum and resources and the same amount of instructional time. When the school staff is not fully successful in implementation of instruction or interventions based on student growth outcomes, each teacher

problem solves in order to adjust the course of action for each student in need. A first solution may be to adjust the course of cognitive instruction or adjust an intervention. The most skilled teachers, however, work to understand the core of the students' needs, how the students learn best, and how to move the students toward calibration and self-regulation of their learning. On first observation of a lesson, this work by the teacher may not be readily apparent.

I may observe a teacher's lesson and have the perception that he or she generally teaches well but find that particular lesson less effective than other observed lessons. However, through analysis of the actual components of the instructional lesson, I may find my initial perception to be inaccurate. For example, I transcribe teacher and students' verbal interactions during classroom observations. On one occasion I entered a classroom and the classroom management, facilitation of the curriculum through defined lessons, student and teacher enthusiasm for learning, and an inviting classroom environment were all in place. While analyzing the transcription, I noticed positive elements of instruction, though the gestalt of the lesson did not strike me as particularly good. This was due to the distraction of the teachers' poor affect during the lesson. Upon reflection and analysis of the lesson, quality components of the teacher's ability to foster metacognitive growth in her students emerged. Example components included questions which required students to explain their thinking, thinking strategies modeled aloud, and delayed feedback. Students engaged in discussion throughout the lesson to allow for thinking deeply on their rationale for approaches to learning and solutions to problems. The students then demonstrated the budding ability to self-monitor and self-regulate while working independently on assigned work. Had I relied on my perception alone and not utilized a form of analysis to capture components of effective teaching practices through the teacher's verbal feedback, I may have inaccurately perceived the teacher as limited in her ability to foster student

growth. The same rationale can be applied to the interview setting. As it is more effective to recommend teachers for hire who engage in effective feedback with students than to recommend those who cannot or do not and thus need extensive training, focused intention on seeking out this skill in teacher candidates has the potential to quickly narrow the pool of skilled candidates. Those who are conducting interviews for teaching positions may overlook teachers with a strong metacognitive skillset if there is no targeted focus or criteria by which to assess a teacher's understanding of metacognition and application of metacognitive feedback to students. The question then exists as to what specific characteristics of feedback and factors impacting feedback specifically target metacognitive growth in students.

1.2 AREA OF FOCUS

Teachers provide feedback during instruction and thus have the ability to affect students' metacognition. Feedback can help students to acquire new knowledge and support students' engagement with the information in multiple ways. One particularly common and effective way is through verbal dialogue, which is an exchange or series of exchanges between the teacher and student. Though this exchange the teacher either provides information or solicits information. It is rare that interview committees have sufficient information to determine whether a teacher candidate has strong verbal feedback skills. Studies of teachers' verbal feedback and factors impacting feedback that develop student metacognition offer support for the basis for determining ways that interview tools might capture these feedback features. The interview tools can equip school districts to (1) assess teacher candidates' ability to develop students' metacognition, and (2) employ teachers who demonstrate the skill set to act responsively in

fostering growth of students' metacognitive skills. Therefore, I am interested in researching a few issues. First, the types and factors of feedback that support metacognition, and second, the interview tools that are most informative about teacher candidates' level of ability to be responsiveness to students' metacognitive needs. In order to have an understanding of what factors of teacher feedback and interview tools most inform an interviewer about a candidate's ability to develop students' metacognition, feedback must be defined and types of feedback explored.

2.0 REVIEW OF SUPPORTING SCHOLARSHIP AND PROFESSIONAL KNOWLEDGE

A review of research on teacher feedback is required to determine which feedback types and factors of feedback develop students' metacognitive growth and what interview tools best reveal a candidate's ability to foster this growth in students. First, information is offered that defines and describes types of feedback, highlighting areas of need. Factors of feedback that impact metacognitive growth are then identified, which include the teacher-student relationship, interactive dialogue, and scaffolding. Next is a review of the literature on district interview processes and tools and highlights interview tools that can best inform an interview panel about a teacher's ability to develop metacognitive growth in students through verbal feedback. Interview tools considered include written and verbal questions, role-playing, and demonstration lessons with students. Limitations of the study and implications for future study conclude the review.

2.1 FEEDBACK

Existing research literature has only recently begun to examine how verbal feedback between the teacher and students, both primary and secondary aged students, affects students' metacognitive growth. Feedback is only effective if student learning improves (Black & William, 1998). While cognition involves learning knowledge and gaining understanding of

concepts and skills, metacognition is thinking about one's thought processes behind cognitive learning. Metacognition, as defined by psychologist John Flavell (1971), requires reflection by the student to understand how to think about their thought processes and strategies connected to learning (as cited in Lajoie, 2008). To impact student's metacognitive growth, a teacher must provide quality metacognitive focused feedback directed at deepening the students' capacity for in-depth and self-regulated learning.

Researchers vary in the definition and labeling of verbal feedback that enables the student to grow in cognitive, metacognitive, or processing skills (Van den Bergh, Ros, & Beijaard, 2013). In the late 1960's, Benjamin Bloom began to examine how instruction was connected to each specific learner rather than a one size fits all approach. Bloom used the term feedback to describe how the effective use of one-on-one interaction between a teacher and student enables the teacher to correctly analyze student answers and provide corrective guidance to the student (William, 2011). Two studies support this view by defining feedback as communication by the teacher to students to impact students' subsequent learning actions (Mohd, Noor, Aman, Mustaffa, & Seong, 2010; Konold, et al., 2004). The information communicated revolves around the connection between the students' demonstrated progress and the learning objective (Van den Bergh, Ros, & Beijaard, 2014). These limiting views of feedback imply feedback as a form of teacher control and knowledge acquisition rather than a purposeful interaction between the teacher and the student that engages the student as an active participant in the dialogue and transfers ownership of the learning. In order for the students to internalize learning, the teacher must engage in dialogue with the student to determine how to assist the student in the development of his or her self-regulated processing. Therefore, the feedback must include

interplays of communication between the teacher and student rather than feedback from a teacher to a student.

Other researchers also describe feedback as a form of communication, but they extend the meaning to include an exchange of information between the teacher and student (Koole & Elbers, 2014; Ruiz-Primo, 2011). This latter description of feedback most closely aligns with the idea of feedback as an active process built from the interaction between the teacher and student. In the classroom, teachers engage in verbal feedback during active learning through the practice of formative assessment. This targeted interaction engages the student in constructing conceptual meaning and understanding of and about their learning.

First described in 1967 as formative evaluation connected to education programs, Scriven outlined the purpose of formative evaluation as identifying areas in which to improve, as opposed to summative evaluation, which was a determination of quality or not (Scriven, as cited in Popham, 2013). The numerous, self-defining descriptive feedback types found in several studies vary in focus but are essentially all instances of formative assessment. However, they vary in the extensiveness of active learning by the student based on the teacher's response and the instructional intention of the teacher when providing the feedback. Examples of cognitive and processing types of teacher feedback during student learning include cognitive feedback, facilitative feedback, formative feedback, task-level feedback, and evaluative, corrective, and descriptive feedback (Butler & Winne, 1995; Van den Berg et al., 2013; Shute, 2008). For example, a teacher may describe the aspects of a task the student answered or demonstrated correctly or guide the student toward the correct answer or approach (Shute, 2008). One study found that only a limited number of teachers utilized facilitative feedback and connected their feedback to a learning target, while two other studies found that (1) teachers had difficulty

determining why students made errors in their work, (2) feedback given by teachers to their students did not foster active learning, and (3) what they said to the students was not improving student learning (Schneider & Gowan, 2013; Van den Bergh et al., 2013; Brookhart, 2008). The feedback did not engage the students in the learning process nor did the feedback result in successful student acquisition and application of new learning. Other researchers found that evaluative feedback exceeded use of all other types of measured feedback, implying the need for feedback that increased student participation in the feedback process (Mohd et al., 2010).

To focus on metacognitive growth of students, both the teacher and the student participate in the feedback process, with focused intention by the teacher to increase the student's ability to think about their thinking. This type of feedback goes by several names, including meta-cognitive feedback, interactive feedback, instructional dialogues, assessment conversations, conversational analysis, self-regulated feedback, and process feedback (Koole & Elbers, 2014; Richard & Lockhart, 1996 as cited by Mohd et al., 2010; Ruiz-Primo, 2011; Koole et al., 2014; Hattie & Timperley, 2007; Van den Bergh et al., 2014). A teacher who provides this type of feedback may engage in conversation with a student to understand the student's thinking. Then, they provide guidance connected to the thought process or strategy the student used to think about the question or task (Ruiz-Primo, 2011).

2.2 FACTORS THAT MAY LIMIT FEEDBACK EFFECTIVENESS

In order to be able to provide feedback that fosters this metacognitive growth, teachers themselves must engage in metacognition. They first need to understand how they themselves think in the learning process. This coupled with knowledge and understanding of other various

thought processes, such as perspective-taking and empathy, enables teachers to identify how to support individual students. However, a recent study on self-regulated learning found that teachers lacked understanding of metacognition and how to teach thinking skills (Dignath-van Ewijk, Dickhauser & Buttner, 2013). Subsequently, a study found that teachers did not adequately grasp how their students were thinking in order to deepen their understanding of the content through their verbal feedback to the student (Haug & Odegaard, 2015).

Lack of teacher content knowledge is a plausible reason for limited improvement in student learning based on the teachers' feedback (Haug & Odegaard, 2015). However, the literature indicates that both content and metacognitive knowledge of the teacher are necessary to foster student growth (Engel, 2013; Bathgate, Sims-Knight, & Schunn, 2011). Not only must teachers be able to connect feedback to learning targets, they must be skilled in analyzing student thinking that may be different from their own, and then respond to the students in a targeted manner to engage students in metacognitive learning. Each of these skills requires teacher competency before in-depth growth of the subsequent skill for the student can occur. Additionally, for teacher responses to be effective in supporting growth in student's metacognition, not only must the teacher be knowledgeable, the teacher must understand common misconceptions that students may have and understand the value behind the practice of meaningful feedback that impacts metacognition (Shute, 2008; Dignath-van Ewijk & Werf, 2012).

In a study conducted on the effects of a professional development program designed to increase teachers' ability to provide feedback through formative assessment specific to metacognition and to social learning, participants varied greatly in their use of focused feedback types which include task, process, self-regulation, and self-level, and they provided more

directive feedback to students (Van den Bergh et al., 2014; Hattie & Timperley, 2007). Self-level feedback refers to feedback that is personal to the student and not related to the task, such as a compliment on effort. Over the duration of the study, participants came to understand importance of providing metacognitive feedback and demonstrated short-term improvement in providing that feedback to students but did not sustain practice when reassessed after seven months. Therein lies a challenge of teacher responsiveness through the teacher-student interaction, which is the fact that interactive feedback is a human dynamic between two individuals who each have a set of values, beliefs, and priorities that guide their thoughts and actions. This study supports the implication that for teachers to consistently provide metacognitive feedback or change their current form of delivery of feedback to students, they must have an understanding of metacognition and how to provide sustainable practice in daily instruction in order to foster metacognitive growth in their students.

2.3 FEEDBACK FEATURES

Three factors of feedback enable teachers to capitalize on teacher-interaction to understand students' needs and promote metacognitive growth. These factors include the teacher-student relationship, interactive dialogue, and scaffolding. The overarching theme behind these factors is the ability of the teacher to analyze student thinking by knowing and engaging the student in the thought process.

2.3.1 Teacher-student relationship

The literature suggests the importance of understanding the learning profile and emotional needs of the students in order to most effectively respond to and promote student learning. Learning profile refers to how each individual learns best. The ability of a teacher to understand their students' learning profiles and engage in meaningful talk with the student affects student learning (Haug & Odegaard, 2015; Jurik, Groschner, & Seidel, 2014). Because specific feedback requires a learned set of techniques that a teacher utilizes to target the metacognitive needs of the student, the responsiveness by a teacher to a student must be directly connected to the specific academic need of the student in that moment in order to move the student forward in the learning process. One study suggests the importance of understanding how students' "gender, prior knowledge, and motivational characteristics" impacts the type of feedback most appropriate for the students, whether it is based on content or specificity, which can increase the pace at which the student learns (Narciss, Sosnovsky, Schnaubert, Andres, Eichelmann, Gogvadze, & Melis, 2014, p. 56). In order for a teacher to be able to respond to a student with detail, he or she must be able to identify not only the academic learning needs of the student, but the emotional barriers that may be hindering the learning process. The teacher must be adept at understanding how students perceive the feedback they receive from the teacher in relationship to their thinking about themselves and that which motivates them. This information assists the teacher to understand how students' self-reflection relates to the students' ability to apply metacognition (Eva, Armson, Holmboe, Lockyer, Loney, Mann, & Sargeant, 2010).

Therefore, the teacher must understand students' thought processes and recognize that they may be different from his or her own process of thinking. A responsive teacher builds relationships with students in order to gain insight on their thought processes and in turn, their

learning needs. These findings suggest that teacher responsiveness based on the identification of and response to internal learning perceptions and barriers of students may be an important feedback characteristic to gauge of a teacher candidate within an interview. While difficult to assess any depth of understanding by the teacher of student needs in a demonstration lesson because the candidates do not know the students, the understanding of the importance of this skillset can be questioned of candidates during the interview. Also, the interviewers can take note of ways in which the candidate attempted to begin that relationship building process in order to motivate and build rapport with the students in a short span of time. Interactive dialogue provides the avenue through which the teacher can engage and make a determination on the students' thought process.

2.3.2 Interactive dialogue

Interactive dialogue involves intentional interactive exchanges through the course of a lesson between the teacher and student that is targeted to improve the ability of the student to think and make meaningful connections to and within the content. Exchanges intended to foster metacognitive growth should provide insight into how the student is thinking (Thurlings, Vermeulen, Bastiaens, & Stijnen, 2013). Teacher responsiveness to student feedback requires the teacher to engage a student in meaningful and targeted dialogue and action connected to a learning purpose that directly impacts student thinking. Most recently, a study sought to identify the active components during interactive dialogue. Through the course of an exchange there are four actions, including recognition of the student, listening to the student's response, responding to the student, and then providing any additional support to assist the student in moving forward (Van Kruiningen, 2013, p. 116). The key action within the interaction is the teacher's level of

ability to effectively engage in the third phase of the turn-taking within the interactive dialogue to develop students' metacognitive capacity. And, to not only develop their capacity, but to move the student closer to self-regulated learning. Two examples include asking students "how" questions, such as explaining how they determined their answer, or how they concluded what they need to correct, and utilizing a planned sequence of instructional feedback and support to target metacognition (Bathgate et al., 2012; Dignath-van Ewijk et al., 2013). High levels of teacher responsiveness gleaned from dialoguing with students lays the foundation for providing the appropriate scaffolding of metacognitive learning.

2.3.3 Scaffolding

Another facet of feedback, the term scaffolding originated with Vygotsky and refers to layered support intended to enable a student to grasp the intended concept or process. Some researchers view scaffolding as supporting the student's efforts to complete an assignment or activity (Pol, Volman, & Beishuizen, 2010). This view of scaffolding as connected only to supporting completion of a task is limited. Teacher responsiveness encompasses the ability of a teacher to scaffold conceptual understandings for students through teacher-student interaction in order to increase students' metacognitive growth. In support of this statement, a study on self-regulated learning defined scaffolding as students' monitoring of themselves and applying received feedback to alter their future actions when thinking through tasks, problems, or processes (Butler & Winne, 1995). This internal monitoring can be supported not only through completion of a task but also through teacher-student interaction, supporting transfer of learning ownership to the student. In order for this goal to be realized, the teacher has to take the time to understand the student and to engage in dialogue with the student to determine their current level

of thought process (Pol et al., 2010). Cognitive feedback and delayed feedback proved effective due to specificity of the feedback the teacher gave based on the student's response and the time the student was given to process the information received by the teacher (Butler & Winne, 1995). However, cognitive feedback connects to achievement while delayed feedback puts more of the ownership of learning on the student by providing wait time between bouts of feedback. The purposeful delay provided time for the student to engage in reflection about how they were learning and working through their work. Through the use of delayed feedback, students demonstrated greater gains in a shorter period of time. Teachers who are responsive and skilled in using scaffolding in their feedback to develop metacognitive growth understand the appropriate timing and frequency with which to use various types of feedback. The responsiveness is critical, as it moves the thought process and understanding of the learner in a particular direction and can either speed up or slow down the pace of learning by the learner. Additionally, specific verbal feedback used with the intention of strengthening students' metacognition through layered support can teach the student how to self-monitor and recognize how to calibrate their learning, which is how they apply thinking strategies when monitoring their thought processes and work (Butler & Winne, 1995).

2.4 DISTRICT INTERVIEW FORMATS AND TOOLS

Although it is clear from the literature that verbal feedback specific to fostering student metacognition is an important part of teaching, it is not as clear if this is a teacher skill that can be gleaned when school districts interview teacher candidates. Key connections exist between building relationships, engaging in interactive dialogue, and scaffolding that support

metacognitive development. The three feedback characteristics all require targeted teacher-student interaction, an exchange of information that is utilized by the teacher to support student thinking about how they learn, and flexibility in the type of support provided by the teacher to the student. There is lack of research on how or if school districts and principals require teacher candidates to discuss these critical attributes of verbal, metacognitive feedback.

There are no existing interview tools to intentionally assess teacher candidates' ability to foster students' metacognitive growth. In fact, few interview tools provide candidates an opportunity to speak about or demonstrate quality feedback characteristics. Nor do the tools require a candidate to provide specific examples from experience working with children that demonstrates their depth of responsiveness. Additionally, the tools do not assess teacher's ability to respond to student questions and answers about thinking to foster metacognitive growth. Recommending teachers for employment is a primary responsibility of a school administrator. Thus, inquiry into teacher responsiveness to students' metacognitive growth through feedback may be worthwhile to include in an interview as an indicator of how likely candidates support the metacognitive growth of the students they may teach. According to Engel (2013), purposeful and intentional recommendation of the best candidates available lies with school district principals and those conducting the interview. In most school districts in Pennsylvania, the recommendation for hire lies with the superintendent. A critical task of a superintendent then is recommending teacher candidates to the school board, candidates who possess metacognitive knowledge and skills and the ability to foster the same within the students they teach.

Since hiring teachers is an important process that impacts the quality of education children receive, assessing critical attributes of teacher feedback that most affect student growth

can benefit the interview process. Limited information exists on the particular attributes of teaching that school districts value. Much of the limited research literature on hiring practices and formats, as well as qualities principals look for when hiring, only include overarching teacher qualities. Most school districts rely on the experience of the administrators conducting the interviews to determine the quality of candidates (Kesten, Lang, Ralph, & Smith, 1998). This approach can limit the process, as it assumes that those within leadership positions are experts on instruction. Most district processes focus on determining candidates' level of ability related to general teacher characteristics like building relationships, classroom management, teaching experience, appearance, content knowledge, and what they can contribute to the school outside of the classroom (Engel, 2013). The results of a recent study indicated that four teacher characteristics valued by principals included caring about the students they teach, knowledgeable in content, demonstrating classroom management skills, and offering skills to support the school outside of the classroom (Engel, 2013). The study noted that while principals stated that content knowledge was important, they did not discuss it in detail or assess teacher levels of ability in this area. Only one of the 31 principals interviewed in the study described qualities of teaching skills in depth. Of note, only one of the 15 listed teacher characteristics in the study's principal survey involved instructional skills, listed as the instructional ability of the teacher to impact student achievement. This was based on the assumption that the candidate had the skill set as a recipient of the appropriate degrees and teacher certification (Engel, 2013). This reasoning can be dangerous, as a review of four teacher assessments indicated that only two of the four assessments, the PRAXIS III Teacher Performance Assessment and the National Board for Professional Teaching Standards mention feedback and/or a teacher's ability to develop students' cognitive capacities. Of the four assessments, which include the Teacher Perceiver Instrument,

STAR Teacher Interview, PRAXIS III Teacher Performance Assessment and the National Board for Professional Teaching Standards, only the Teacher Perceiver Instrument and the STAR Teacher Interview are designed for use during the interview process (Ryan & Alcock, 2002). One researcher suggests that districts may be falling short of screening teacher candidates' demonstration of skills that impact student learning and implies that because principals do not appear to value these qualities, they are limited in their own ability to identify quality characteristics of these components (Engel, 2013). While this is one researcher's generalization based on the findings of the conducted study, it points to the importance of not relying on the assumption that teaching credentials are an indication of effective teaching skills. Therefore, there is a need for providing interview formats in a way that allow teacher candidates to demonstrate competency in fostering students' metacognitive learning, alongside other instructional skills. Three interview formats seem to have the potential to capture feedback characteristics that assess the ability level of teacher to impact metacognition, which include the use of written and verbal questions, role-playing, and demonstration lessons with students, or video-taped instructional analysis of a previously taught lesson.

To provide background for the rationale behind these three selected interview tools, a group of researchers studied the hiring process and sought to determine what constituted effective teaching behaviors, focusing closer on instructional actions by the teacher more so than previous studies (Schumacker, Grigsy, & Vesny, 2015). Key highlights of the interview protocol used in the study focused on questioning and self-rating of teachers on classroom management, organizing and implementing instruction, and monitoring progress. Of the 56 questions, no questions targeted specific forms of feedback between the teacher and student. Three questions targeted differentiation, progress monitoring of students, and how feedback is given to students

connected to homework. An average teacher could interpret these questions to mean planning of tasks, assignments or materials, scores on assessments, or attributes of work within a rubric, without ever considering the powerful effect, purpose, and role of effective verbal feedback. The critical missing piece is the demonstration of the specific teacher-student interactions necessary for students' learning that impacts their metacognitive growth. The three interview formats all have the capacity to capture one or more of the key factors of feedback identified, including the teacher-student relationship, interactive dialogue, and scaffolding.

2.4.1 Written and verbal questioning

Minimal progress has been made on a large scale in teacher hiring practices to select teachers based on the use of interview tools that can provide confirmation of what candidates say, through concrete evidence, as well as confirm principals' perceptions of the candidate. In a study by Kersten (2008) that sought to understand the look-for qualities and the process principals use to select teachers, the panel utilized the traditional question and answer style of interviewing. Among the group of Illinois principals, they limited incorporation of open-ended written questions, teacher demonstration, and skill-based tools. The skill-based tools if utilized were *Ventures for Excellence* or *Gallup Teacher Perceiver*. Some principals used them in pre-screening; others used them in the interview. The tools designed for pre-screening consisted of multiple-choice questions while the interview tool required answers to open-ended questions. A proposed use of written and verbal questioning involves designing the questions with purposeful intention to target how the candidates themselves think as well as how they provide metacognitive feedback to students. An example question may include providing candidates with a student sample to critique and asking them to (1) share their thought process aloud, (2)

describe an example dialogue with the student to demonstrate understanding of the student's thought process, and (3) describe the scaffolding used to assist the student's metacognition of the task. While there is the possibility of the candidates writing and saying what they think the interview panel wants to hear, it still requires the candidate to describe their metacognition skills and how they would actually build the teacher-student relationship to understand the student's thought process and transfer ownership of learning to the student. A written open-ended question or survey can require the candidates to identify and discuss their beliefs and values connected to feedback. This information can indicate the motivation of teacher candidates to utilize feedback that supports metacognitive development in students. Answering written and verbal questions, infused with role-playing, has the potential to immediately indicate whether or not the candidate can transfer from theory to action.

2.4.2 Role-playing

Carefully designed scenarios for role-playing have the potential to showcase teacher candidates' ability to provide feedback focused on improving metacognition. Prior to engaging in role-play, an opportunity is provided for the candidate to preview the hypothetical student's learning profile. The candidates' responses and interaction during the role-play or analysis of information highlights their strengths, or weaknesses, in interactive dialogue and analysis. Because of the spontaneous nature of the interview format, the candidates may naturally reveal their actual level of expertise through their answers through two ways. First, they demonstrate their own metacognition by having to think about how they would respond in order to demonstrate what they would say to a student or recommend as an action plan. Second, they must share what they would say to a student or recommend as an action plan, which provides the

interview panel the opportunity to assess the type of feedback they would actually use. Role-playing can be performed through written analysis of student profile data, observation of a demonstration lesson with pre-determined questions embedded into the lesson by student participants, or through one to one scenario interaction between the candidate and the interview panel.

Minimal research literature exists on using role-play within an interview. One study in the field of behavior health utilized role-playing during the interview process. The researchers found that role-playing can bring out candidates' personality, thought processes, emotions, and form (Oh & Solomon, 2014). One form in particular is the ability of the candidate to build and sustain a relationship with the hypothetical student. When placed in new situations, most people revert to using the skills in which they are comfortable. It is sensible to provide more than one role-play scenario, should candidates become anxious and respond in an abnormal way. Despite the possibility of anxiety or a feeling of lack of authenticity in the process, role-playing highlights the teacher candidates' knowledge and ability to spontaneously demonstrate qualities of interactive dialogue and scaffolding of learning. Another limitation to role-playing includes the lack of time for the candidate to initiate and build rapport with the students.

2.4.3 Demonstration lesson

The critical piece of a demonstration lesson in order to make it effective to assess teacher candidates' ability to foster students' metacognitive growth in a structured academic setting is to provide a setting in which actual students are taught. Also, there must be set criteria of metacognitive feedback attributes to look for within the demonstration. For example, what questions do the candidates ask of the students to challenge how students think and to make

connections between disciplines? Through use of a self-designed assessment model and the *Classroom Assessment Scoring System-Secondary* as a tool to measure effective teaching techniques, a group of researchers measured the effectiveness of teacher interactions in the three domains of emotional support, classroom organization, and instructional support (Allen, Gregory, Mikami, Jun, Hamre, & Pianta, 2013). As one form of measure with the domain of instructional support, they included quality feedback to the extent that it reflected the teacher's ability to provide feedback that provided both a challenge and an increase in depth of understanding. The contingent feedback discussed involved asking questions and process-based feedback but did not address the quality of verbal feedback between the teacher and students. In contrast, another study more closely examined the feedback characteristic of teacher-student interaction in early childhood classrooms, using the term "mental state talk", which studies emotion, cognition, desire, and perception terms used by teachers with students within the classroom (King & Paro, 2015). The study confirmed the positive impact of targeted verbal interactions of teachers with students and suggests that additional study of mental talk can further the discussion of the impact of verbal feedback through the interactive process and the teacher qualities associated with the skill. Because the *CLASS* is an assessment system designed to measure teaching qualities through observation, the quality feedback component of the *CLASS* is a possible assessment measure that could be used within an interview through analysis of a submitted lesson video or the teaching demonstration that involved actual students. This particular standardized assessment tool lacks measures of metacognitive-feedback, which prevented any correlation findings connected to use of metacognition terms among the teacher-student interactions and student outcomes. With purposeful design and set of criteria specific to metacognitive feedback, the demonstration lesson as an interview tool provides the opportunity

for teachers to demonstrate all three of the highlighted factors of feedback that promote metacognitive growth. Some districts that do include teaching demonstrations have the teacher candidate conducting the demonstration only to the adults in the room. By using students, the interviewers will have the opportunity to observe the teacher interact, engage with, and respond to the students. When the demonstration lesson is used in combination with question-answer formats, the tools may provide a rich combination of information to assess teacher candidates' ability to foster student metacognition.

2.5 LIMITATIONS

In order for teachers to be responsive in providing the most effective and timely feedback to students for maximum learning and growth, they must have in-depth knowledge in subject area content and instructional strategies that specifically target students' learning needs. Therefore, prior in-depth learning must take place to strengthen knowledge in metacognition, so that teachers can assess and respond to student thinking. Only then can the teacher engage in learning the "how to" of feedback to target learning connected to metacognition. Several limitations exist that can impact understanding of the problem.

First, there is no one interview tool that alone captures the teacher-student relationship component. Both questioning and role-playing tools do not provide an opportunity for the candidate to begin the process of building a relationship with a student. While the teacher candidate interacts with students in the demonstration lesson, the time is limited and does not allow for natural inquiry into in-depth understanding of the students' learning profiles and thought processes. One way to account for this limitation is to provide the teacher candidate

with general student attributes as part of the demonstration lesson information given to the teacher prior to the interview.

Second, the varied approaches to the hiring process utilized by school districts studied within the literature require time and effort to change. Third, current interview tools and commercially available assessments are severely limited in their capacity to capture authentic skills connected to metacognition and that account for differences in schools, teachers, cultures, and students. Additionally, current interview formats do not include measures to delineate between teacher candidates who could talk well about teacher feedback with demonstration, and those who may speak well but do not perform to the same level.

Finally, cost and time are also factors as to why these varied interview tools are not used by districts in the hiring process (Young & Delli, 2002; Mason & Schroeder, 2010). The more involved the interview process, the more costly and time consuming the process becomes. Therefore, principals studied tended to rely more on initial perceptions of a candidate. Two studies concluded that interview tools do affect teacher selection, yet most often the process continues to remain perception based and subjective (Bolton, 1969; Young & Delli, 2002).

2.6 IMPLICATIONS

Despite the above limitations, focused study on how school districts can assess teacher candidates' ability to impact student metacognition during an interview is worthy of study. First, the proposed tools provide an opportunity to capture the nature of the candidates' level of expertise in metacognition and how they interact with students to determine the students' needs. Second, through use of designed tools, the study provides an opportunity to capture specific

feedback skills of highly responsive teachers, by those who can speak to and demonstrate the “how” of feedback that directly influences students’ metacognitive growth. As evidenced through the existing literature, the competencies teachers need to provide quality feedback continue to become clearer. In addition, information from the resulting study can determine which of the three proposed interview tools or combination of tools can best capture an authentic assessment of teacher candidates’ ability to impact the metacognitive growth of their students. Fourth, the information from the use of the tools can guide professional development planning in feedback for hired candidates. Finally, educational leaders, such as school boards and superintendents, can address policies that pertain to the structure of the interview process within the school district they serve.

2.7 CONCLUSION

The ability of a teacher to target feedback to students is a critical component of teaching and learning. Research has identified that in-depth content and metacognition knowledge is a requirement of teachers to have before they can truly engage in providing meaningful feedback to students. Identifying the feedback characteristics of highly responsive teachers that most impact student growth can impact the structure of interview practices of school districts through the use of instructionally focused interview formats connected to feedback and student growth. The newly acquired knowledge from the study has the potential to positively impact both teachers and student growth through access to quality interview tools that assess teacher candidates’ depth of metacognitive expertise. This valuable information can prove useful for consideration for all school districts seeking to hire the most effective teachers.

2.8 STATEMENT OF THE QUESTIONS

Based on the information gleaned from a review of the literature on teacher feedback connected to metacognition and teacher interview tools in the interview process, the following questions are proposed to serve as a guide for the investigation with the Demonstration of Scholarly Practice project:

1. How many factors of feedback can be identified in the literature that may indicate a teacher candidate's ability to foster students' metacognitive growth in a structured academic setting?
2. What interview tools or combination of tools provides the most information about a teacher candidates' ability to communicate or demonstrate understanding of metacognition?
3. How do the candidates' written and verbal responses relate to their use of metacognitive feedback to the children?

3.0 APPLIED INQUIRY PLAN

3.1 PROBLEM AREA

The ability of a teacher to skillfully respond to student feedback in the academic classroom setting can determine the extent to which a student learns (Konold, Miller & Konold, 2004; Connor, Piasta, Fishman, Glasney, Schatschneider, Crowe, Underwood, & Morrison, 2009). Teacher responsiveness is the direct, daily feedback occurring between the teacher and student during the learning process that can impact student learning, particularly in terms of metacognition. Teachers who guide students to be self-regulated learners through their feedback can enable the students to grow at a faster pace (Narciss, Sosovsky, Schnaubert, Andres, Eichelmann, Gogvadze, & Melis, 2014). Key connections exist between building relationships, engaging in interactive dialogue, and scaffolding that support metacognitive development. It is then beneficial to evaluate school district interview tools to determine how school districts assess teachers' ability to foster metacognition through feedback in order to select highly responsive candidates for teaching positions.

There are no existing interview tools to intentionally assess teacher candidates' ability to foster students' metacognitive growth through feedback. Few interview tools provide candidates an opportunity to speak about or demonstrate quality feedback characteristics. Nor do the tools require a candidate to provide specific examples from experience working with children that

demonstrates their depth of responsiveness. Much of the limited research literature on hiring practices and formats, as well as qualities principals look for when hiring, only include overarching teacher qualities like building relationships, classroom management, teaching experience, appearance, content knowledge, and what they can contribute to the school outside of the classroom (Engel, 2013). Minimal progress has been made on a large scale in teacher hiring practices that include interview tools that can provide confirmation of what candidates say, through concrete evidence, as well as confirm principals' perceptions of the candidate. In a study by Kersten (2008) that sought to understand the look-for qualities and the process principals use to select outstanding teachers, the panel utilized the traditional question and answer style of interviewing. The current district interview tools and commercially available assessments are severely limited in their capacity to capture authentic skills connected to metacognition and that account for differences in schools, teachers, cultures, and students. Cost and time are also factors as to why varied interview tools are not used by districts in the hiring process (Young & Delli, 2002; Mason & Schroeder, 2010). Effective teaching impacts student growth, and targeted responsiveness to a student by a teacher to develop student metacognition leads to students' ability to self-regulate their learning. If teacher responsiveness can greatly impact student growth, school administrators have a responsibility to assess this quality during the interview process through the use of targeted interview tools.

3.2 INQUIRY SETTING

The state of Pennsylvania provides complete autonomy to school districts to determine their interview process. The state only sets the regulations for hiring of teachers through Chapter

49 for teacher credentials and background clearances. Title 22 sets school board requirements for setting expectations for district control of the hiring practices. In the school board policy of the public school district which participated in this study, *Recruitment and Hiring-Professional Vacancies*, the policy designates the superintendent or designee to determine the process for the interview and the tools utilized. District-selected staff at the time of the district policy writing design the administrative regulations for the hiring of teachers. Experienced educational leaders understand that highly qualified does not necessarily equate highly effective. Thus, as the policy is reviewed, refined, and revised over time, expectations and outcomes have changed. When there are ambiguous guidelines by the state from which to begin in order to allow for some local control in decision-making, the interpretation, implementation, and outcomes are likely to be varied across districts (Russell & Bray, 2013).

The school district is located in a suburban area northeast of Pittsburgh, Pennsylvania, serving approximately four thousand students. The district is host to one high school, one middle school, and four elementary schools. Three of the elementary buildings serve approximately three hundred and fifty students, and one building serves seven hundred students. When hiring teachers, a four-step hiring process includes qualification screening, preliminary interview, site interview, and superintendent interview, per district administrative regulations. The elementary team works collaboratively through the interview process with candidates.

Recent informal interview responses by selected administrators and parents conducted by the researcher of this study indicate weaknesses in the current interview tools. One, there lacks consistency in criteria used to screen candidate resumes and in the follow-up tools used to calculate candidate rankings during screening interviews. Second, relevance between the types of questions asked connected to specific positions and tools used to target specific skill qualities

is missing, and third, there is no opportunity to spontaneously interact with a candidate due to the district practice of asking all candidates the same questions. Specific to point two from above, subject specific teachers are asked the same questions as general positions, and so lack of content knowledge in a candidate's expected area of expertise could be overlooked by interviewers not well-versed in the particular subject area in question. Also, the questions asked are general in nature and do not target specific skillsets required of certain teaching positions or teaching qualities valued in the school district. The hiring process in the district itself has not changed in at least fifteen years, but the content or structure within the tools has slightly changed.

3.3 STAKEHOLDERS

The stakeholders involved in interviewing teacher candidates include district office administrators, building principals, teachers, parents, and teacher candidates. Indirect stakeholders include university teacher preparation professors and student teacher mentors. Should the individual who is responsible for facilitating the hiring process change, the hiring process or tools might also change. For example, in the past two years, the screening questions and parts of the lesson demonstration have changed due to the personnel assigned to carry out the hiring process. Parents serve on building hiring teams for two years, so there is limited consistency in the parents who serve in the hiring process. Interview practices by the district are influenced by administrators' professional values connected to instruction and past experience, district administrative regulations, teacher and parent perspectives, the level of training of the interview panel in interviewing candidates, and teacher candidates' responses.

3.4 PROBLEM OF PRACTICE

Four interview tools are utilized during the interview process in the district, including screening questions, two series of interview questions, a written reflection, and a demonstration lesson. Administrators and parents in the district, per recent interviews and surveys conducted with participating personnel, rated teacher responsiveness as a critical teacher quality, yet held the opinion that the current interview tools do not specifically target this quality. Key indicators included generalized and similar processes between the initial screening interview and the site interview questions, a lack of students in the second interview demonstration lesson, and a generalized written reflection required of the candidate. The quality of selection of teachers is determinant on the interview screening processes within the district's administrative regulations on interviewing teachers. With the continued use of the existing interview tools as currently designed, the possibility exists of teachers being hired who may not have the capacity to deeply connect with and respond to students in a way that develops both cognition and metacognition. A quality interview process requires clear vision of the goals and expected outcomes, with the use of target specific interview tools that include checks and balances in order to avoid hiring based on the interview panel's perceptions and self-knowledge. In a school district that values differentiated instruction, the interview tools must reflect this value when screening and interviewing candidates in order to select candidates who can highly impact the growth of students' metacognition through responsive feedback.

3.5 INQUIRY QUESTIONS

1. How many factors of feedback can be identified in the literature that may indicate a teacher candidate's ability to foster students' metacognitive growth in a structured academic setting?

Three elements of feedback impact teachers' ability to capitalize on teacher-student interaction to understand students' needs and promote metacognitive growth. These elements include the teacher-student relationship, interactive dialogue, and scaffolding. The overarching theme behind these characteristics is the ability of the teacher to analyze student thinking by knowing and engaging the student in the thought process. Key connections exist between building relationships, engaging in interactive dialogue, and scaffolding that support metacognitive development. The three feedback characteristics all require targeted teacher-student interaction, an exchange of information that is utilized by the teacher to support student thinking about how they learn, and flexibility in the type of support provided by the teacher to the student.

2. What interview tool or combination of tools provides the most information about a teacher candidates' ability to demonstrate or communicate understanding of metacognition?

There are no existing interview tools found in the research literature that intentionally assess teacher candidates' understanding of metacognition. Nor do any interview tools exist that assess teachers' ability to respond to student questions and answers that foster metacognitive growth. Limited research exists on how or if school districts and principals require teacher candidates to discuss critical features of quality feedback, cognitive or metacognitive. Few interview tools provide candidates an opportunity to speak about or demonstrate quality feedback

characteristics or require a candidate to provide specific examples from experience working with children that demonstrates their depth of responsiveness. Purposeful and intentional selection of the best candidate is the task of interviewers (Engel, 2013). There is a need for interview tools that enable interviewers to observe teacher candidates to demonstrate an understanding of and competency in fostering students' metacognitive learning. Based on an initial review of the literature, three interview formats have the potential to capture information about a teacher candidate's ability to communicate or demonstrate understanding of metacognition, and will be examined further. These include written and verbal questions, role-playing, and demonstration lessons with students. How do the candidates' written and verbal responses relate to their use of metacognitive feedback to the children?

3. How do the candidates' written and verbal responses relate to their use of metacognitive feedback to the children?

Written and verbal responses of the candidates provide the opportunity to 1) compare the candidates' answers from the written assessment, the comprehensive interview questions, and the demonstration lesson follow-up questions to the verbal feedback that was provided to students during the demonstration lesson, 2) analyze the candidates' responses relative to the criteria from question one, to identify specific examples of metacognitive feedback used, 3) identify feedback examples distinguishing participants with more uses of metacognitive feedback from participants with fewer uses of metacognitive feedback, and 4) identify similarities and differences between the two comparison groups: teacher candidates and teachers. The short duration of the demonstration lesson impacts the information that can be gleaned about the teacher-student relationship. Though the teacher candidate interacts with students in the demonstration lesson, the time is limited and does not allow for natural inquiry into in-depth understanding of the

students' learning profiles and thought processes. The lesson is one snapshot of the teacher's instruction. One way to account for this limitation is to provide the teacher candidate with general student attributes as part of the demonstration lesson information given to the teacher prior to the interview, if possible. Even if it is not possible to have such information prior to the lesson, the interviewers can observe how a teacher candidate plans for differentiation and then adjusts during the presented lesson. The researcher asserts that observing and listening to teacher candidates in action provides a level of authenticity and reliability of information to interviewers more than other forms of information, such as speaking to the teacher candidates' references.

3.6 INQUIRY APPROACH

The purpose of the inquiry is to explore change through action research, following the Susman & Evered (1978) action research model (Jarvinen, 2005). The ability of a teacher to target feedback to students is a critical component of teaching and learning. Research has identified that in-depth content and metacognition knowledge is a requirement of teachers to have before they can truly engage in providing meaningful feedback to students. Identifying the feedback characteristics of highly responsive teachers that most impact student growth can impact the structure of interview practices of school districts through the use of interview tools that target teacher responsiveness to students' metacognitive growth. The newly acquired knowledge from the study has the potential to positively impact school districts and, ultimately, student growth, through access to quality interview questions and approaches which assess teacher candidates' depth of instructional metacognitive expertise. This valuable information

can prove useful for consideration for all school districts seeking to hire the most effective teachers.

3.7 DESIGN AND EVIDENCE

The inquiry will be conducted through the method of evaluation of a new process by collecting data from originally designed written and verbal questions embedded into the district's existing interview tools, and from a demonstration lesson with students in the Summer of 2016 for all elementary teacher position interviews within the Fox Chapel Area School District. The same process will be used for a comparison set of data collected from participating teachers who have one to five years teaching experience in the district. Data from two questions in the comprehensive interview, all of the demonstration lesson or teacher lessons, two follow-up questions to the demonstration lesson or teacher lesson, and two questions from the written assessment will be collected from all persons who agree to participate in the study. An originally designed list of teacher responsiveness feedback criteria specific to metacognition based on the review of existing literature will be created for use in the analysis of the collected data.

Evidence will be collected through the creation of a list of responsiveness feedback characteristics, questions embedded into the district's existing interview tools, which consisted of two questions in the comprehensive interview, four demonstration lesson follow-up questions, two written assessment questions, and a demonstration lesson or teacher lesson. For more authentic collection of feedback data, the district permitted a change in procedure for the demonstration lesson to include children as the audience rather than the adults conducting the interview. Three questions will be provided to participating students to aid in asking questions

of the teacher during the lesson but will not be required of the students to be asked. The evidence aligns with the inquiry questions as indicated in Table 1 (see Appendix A).

3.8 ANALYSIS AND INTERPRETATION

All of the evidence gathered will be examined through comparison to the Responsiveness to Metacognition Criteria, devised from the research literature on factors of teacher feedback most connected to students' metacognitive growth. Because the field of literature on teacher feedback directly linked to metacognitive growth is limited, some of the responsiveness characteristics on the list are contextual in nature, such as the components within the teacher-student relationship. The evidence gathered includes teacher candidate and teacher verbal and written responses, a transcription of a demonstration lesson or teacher lesson, and follow-up demonstration lesson or teacher lesson questions. Interpretation based on data analysis will indicate which interview tool or combination of tools most inform about a teacher candidate's ability to demonstrate or communicate understanding of metacognition and how the candidates' written and verbal response relate to their use of metacognitive feedback to the children.

3.9 PROPOSED DELIVERABLE PRODUCT

The planned product for the Demonstration of Scholarly Practice is an article submitted to an educational practitioner journal. The article proposes to inform educators on verbal feedback elements found to be effective in targeting the growth of student metacognition by a

teacher, provide specific examples of teacher statements that can foster this growth, and suggest how school districts or other educational organizations can use this information when interviewing candidates for teaching positions. Assessing teacher responsiveness through verbal and written demonstration of depth of instructional metacognitive expertise during an interview provides a snapshot of the candidate's ability to provide student specific feedback that impacts metacognitive growth. If certain interview tools used are found to be beneficial in hiring highly responsive teachers, it is anticipated that school district administrators and educational leaders may apply the information in their own planning for teacher interviews.

The product of the research inquiry will be a list of feedback criteria that support students' metacognitive growth and then used as a protocol in the analysis of two sets of interview data. The analysis of data will seek to determine whether or not an individual tool or a set of interview tools assesses teacher responsiveness expertise specific to student metacognition. The study has the potential to inform and change the practice of hiring teachers as well as for current educators. As the state provides for local control in determining the process and tools used to interview teacher candidates, districts select how they interview candidates. District policies specific to district hiring practices have the potential to change, as directed by the superintendent, to include questions which most inform an interview panel about a teacher candidate's ability to communicate and demonstrate understanding of metacognition and how their written and verbal responses relate to their use of metacognitive feedback to students before he or she is hired. Long-term benefits of the study, if a favorable outcome, include the positive impact on how educational leaders structure the teacher interview process, the interview tools and criteria used to identify highly responsive teachers specific to metacognition. If such targeted tools are used, there may be less need for professional development in this area without

a steep learning curve for a newly hired teacher and, ultimately, higher levels of students' academic achievement and growth.

3.10 TIMELINE

June 2016

- Create Responsiveness to Metacognition Criteria
- Create questions specific to the study to embed into the district interview tools consisting of verbal and written questions, a demonstration lesson with embedded role-play, and four lesson follow-up questions
- Obtain Institute Review Board (IRB) approval for study

June - August 2016

- Instruct interview panel on the use of the new tools - how to assess teacher responsiveness during an interview
- Utilize the interview tools during elementary professional teacher candidate site interviews

November 2016

- Present study overview and receive feedback from doctoral committee

August- December 2016

- Enact study:
 - Interview teacher candidates
 - Transcribe teacher candidate interview responses

- Code, compare, analyze, and interpret teacher candidates' responses from the interview tools to the Responsiveness to Metacognition Criteria

January - April 2017

- Interview teachers
- Transcribe teacher interview responses
- Code, compare, analyze, and interpret teacher responses from the interview tools
- Continue to refine literature review with any new literature findings
- Write findings and conclusion of the study
- Present Dissertation in Practice to the doctoral committee

May - June 2017

- Write and submit an article to an educational practitioner journal
- Prepare Dissertation in Practice in Electronic and Thesis Dissertation (ETD) format

4.0 DATA, ANALYSIS, AND FINDINGS

4.1 RESEARCH QUESTION 1

Research question one asked how many feedback characteristics can be identified in the literature that may indicate a teacher candidate's ability to foster students' metacognitive growth in a structured academic setting. Findings of this question formed the essential foundation for answering research questions two and three. Much is known and has been researched about teacher strategies in the area of academic achievement and cognitive growth. Based on the limited information in existing research literature and the researcher's professional work as a principal, teacher responsiveness to metacognitive growth through feedback necessitates attention. The literature review for this study required thorough examination of all relevant research articles in an attempt to capture very specific teacher feedback qualities which have been found to target metacognition. Peer-reviewed articles spanning the last ten years guided the majority of the study, found through the use of specific key words and phrases. Examples of such key words and phrases included metacognition, feedback, feedback characteristics, and responsiveness. With narrowed attention to verbal feedback, four themes and corresponding components emerged from the review of the literature as factors of feedback which foster metacognitive growth, as outlined in Table 2 (see Appendix B). The list became the protocol by

which all study participant interviews were transcribed and then statements coded against each theme's components for frequency of occurrence within each interview tool.

4.2 RESEARCH QUESTION 2

In research question two, the goal was to determine what interview tool or combination of tools provide the most information about a teacher candidate's ability to communicate or demonstrate understanding of metacognition. During the coding process, similar wording in statements connected to a particular code were coded one time. For example, "how" questions of similar wording were coded one time under Interactive Dialogue, IIA, for a participant, even though within that code the participant may have utilized the questions multiple times throughout the lesson. Cross-over exists in the coding for statements if applicable. The researcher acknowledges the existence of subjectivity in the interpretation of the verbal and written statements in the interviews. In cases where the researcher questioned a selected code, the researcher compared the example against the code of the Co-Investigator. In addition, the researcher observed, marked, and analyzed statements which were close to a code but not clear, as well as those which did not fit a code but merited consideration and reflection. The coding for all theme components and subsequent analysis provided the basis for answering research questions two and three. Figures 1 - 4 (see Appendix C) visualize the frequency to which candidates either communicated verbally or demonstrated in writing each of the theme components through each interview tool. As noted in the figures, certain theme components surfaced more frequently than others. Table 3 (see Appendix D) identifies specific examples found in the interviews representative of the range of the strongest codes.

The majority of participants stated positive feedback as a feedback characteristic that fosters metacognitive growth. Positive feedback can impact how students perceive feedback and may soften or increase any emotional barriers. However, positive feedback shared by participants received the code of Teacher-Student Relationship component IC-Emotional Barriers only if there was specificity in the answer directly tied to metacognition. Specifically, how praise impacts emotional barriers to learning, how the positive feedback motivates students, or how the students think about themselves. The researcher applied the same narrow coding approach to general statements made on constructive feedback, questioning, one-to-one conferences, conversations, rubrics, goal setting, and thinking skills. The rationale behind this reasoning stems from the crossover application these general characteristics have with cognitive functioning. Some participants' responses clearly identified such examples.

For a comparison set of interviews with hired teachers, the Principal Investigator conducted a second set of interviews with five teachers in the participating district who were hired within the last five years. The teachers answered the same questions as the teacher candidates, and the Principal Investigator observed a thirty-minute classroom lesson for each teacher. The results of the transcribed and coded interviews as outlined in Figures 5 - 8 (see Appendix E) provided insight to the problem of practice. Similar to Table 3, Table 4 (see Appendix F) outlines strengths in components found across the teacher set of data. Of particular note is that with the exception of ID-Varied Thought Processes, both sets of participants in the study shared the same strengths in themes, and the interview tool varied only slightly between the two groups.

Figure 9 (see Appendix G) compares similarities and differences between the two sets of data. Compared to the teacher candidate set of coding, the data suggests that teacher candidates

demonstrated more mention or application of metacognitive feedback characteristics overall than the teachers currently teaching in the district in the areas of Teacher-Student Relationship, Interactive Dialogue, and Scaffolding. Teachers had more coding than teacher candidates in the written assessment, in understanding the term metacognition, and across all components in the Professional theme. Though Figure 9 indicates a higher number of metacognitive feedback responses for teacher candidates in IIA-Questions Requiring Explanation, the teacher group used “how” questions more frequently than the teacher candidates that require students to explain their thinking to specifically target student metacognition. Also, in general, a few participants in each study group amassed the most codes across the four interview tools within each theme. Per the analysis, the comprehensive interview and lesson provide the most information on a teacher candidate’s ability to communicate or demonstrate understanding of metacognition across the four themes.

4.3 RESEARCH QUESTION 3

Research question three asks how the candidates’ written and verbal responses relate to their use of metacognitive feedback to the children. Table 5 (see Appendix H) outlines examples found in the data that distinguished participants with more instances of metacognitive verbal feedback versus participants with few coding.

Feedback characteristics that emerged in study participants’ responses with fewer metacognitive feedback codes marked included general praise, simple acknowledgement of a correct answer, demonstration of teacher knowledge rather than the students’, and feedback specific to cognition over metacognition. Candidates with fewer uses of Interactive Dialogue

tended to ask a “why” question connected to content, not metacognition, and then confirmed or extended to share their own knowledge. Candidates with more uses of metacognitive feedback would extend by asking the students how they came up with that, or how they knew, and asked those questions more often within the lesson. Those same candidates, more than other candidates, also used modeling for teaching how to think about thinking as well as for content. All candidates received the coding for subject content knowledge, as they demonstrated understanding of the content they were teaching to the students. However, not all participants were able to explicitly define metacognition which led to less informed answers to other relevant questions.

The written assessment and lesson follow-up questions provided the least information. Despite the fact that the writing assessment question specifically stated metacognitive growth and almost identical to one of the comprehensive interview questions, information in the written assessments proved to be general feedback characteristics. In several samples it either very clear or was difficult to ascertain whether or not the participant was writing with a focus on feedback connected to cognition or metacognition. For example, one participant wrote about using verbal, positive feedback about the task the students completed, not about the students’ thought process while working through the task. Another participant wrote that conferencing is used with students so that the teacher can hear how the students are thinking as they engage in their work. Other participants wrote that they use positive reinforcement, constructive feedback, and goal setting but did not identify how they use those types of feedback to support metacognition rather than cognition. Without providing specific examples, general answers could pertain to both cognition and metacognition.

A difference in teacher candidates and current teachers' coding, related to the comprehensive interview, emerged from the data. When there was opportunity in the lesson to connect what was said in the comprehensive interview and follow-up questions, all teacher candidates demonstrated as such. This observation shows that what the teacher candidates conveyed in their verbal answers transferred to the lesson and in self-reflection of the lesson. Adversely, some of the currently practicing teachers' lessons did not relate as much with their answers in the comprehensive interview. Two plausible reasons for this finding include program fidelity and inexperience. In four of the five lessons observed, the teachers were following specific instructional guided reading and/or phonics programs. The phonics program is scripted, but the guided reading allows for slightly more teacher discretion during instruction. In some school districts, district administrators require teachers to implement instructional programs with strict fidelity. In the present study, teachers were expected to follow the phonics program with fidelity, and the extent to which the guiding reading program is followed with fidelity varies from building to building. Requiring such may limit teachers' ability to foster students' metacognitive growth. In support of this possible explanation, Wilson & Bai (2010) found when exploring the extent of teachers' professional knowledge about metacognition that despite what teachers know to do they may not actually practice due to the constraints of mandated fidelity to specific programs. Experienced teachers, or less experienced teachers who have depth of knowledge in teaching metacognition, are more likely to be comfortable and skilled in incorporating the identified themes related to metacognitive growth within their lessons, regardless of the type of instructional program.

There was also an unexpected imbalance of the frequency of feedback between the two comparison groups in the teacher-relationship theme specific to metacognitive feedback. The

teacher candidates did not know the students they taught during the demonstration lesson, yet as a group, showed more use of feedback in each of teacher-student relationship components, than did the teacher group. The amount of feedback the teacher candidates gave was relatively balanced between the comprehensive interview, the demonstration lesson, and the demonstration lesson questions. The teacher group did not give any feedback in the teacher-relationship components through the demonstration lesson or the demonstration lesson questions. Possibilities for this finding may be 1) that the teacher candidate group is seeking to make the best impression of themselves and understanding of the need to quickly communicate and demonstrate the importance of building rapport with students and understanding their needs and thought processes, or 2) that the teachers in the teacher group already established this rapport and incorporated the learning profiles and needs of their students into the lesson, undetected through their statements by the researcher, 3) that the teachers focused more on cognitive feedback or general rapport through the teacher-student relationship, or 4) that the teacher candidate group communicated a more thorough understanding during their interview of the impact the teacher-student relationship had on fostering metacognition in students.

The responses given by participants in both groups after the lesson were often a review of the answers given in the comprehensive interview. For follow-up lesson questions one and two, which were specific to misconceptions and extension of learning, participants tended to answer in terms of content or cognitive skills. Reasons for this could be the design of the questions or how the participant perceived the question. Also important to note, due to the schedule of the interviews, some participants answered their comprehensive interview questions after the lesson rather than before the lesson, and four teacher candidates presented twenty-minute lessons. Despite the follow-up questions providing little to no new information in some samples and the

varied time and timing of questioning for some participants, an important observation to note when considering implications of including these type of questions in an interview, is that the teachers more often than not were able to accurately reflect on the components within their lesson and held true to their verbal demonstration of knowledge and skills. This supports the assertion stated earlier that depth of content knowledge and skills directly connects to a teacher's ability to foster student's metacognitive growth. It also suggests the researcher's assertion that a candidate's ability to demonstrate understanding of metacognition and ability to foster students' metacognitive growth are important skills to ascertain in an interview.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Metacognition requires more attention during the teacher interview process, yet there are few interview tools available to assist interview panels in gauging a teacher's understanding of metacognition and his or her application of metacognitive feedback in instruction to foster students' metacognitive growth. Based on the researcher's experience, lessons with direct instruction and general feedback can make a positive first impression on an interview panel. However, the study findings highlight the value of using criteria by which to orient interviewers specific to metacognition, asking interview questions that target metacognition, and incorporating a required demonstration lesson with students for authenticity of teacher responses. This helps the interviewers to limit recommendation decisions made based on interviewer perceptions. By using a set of criteria specific to teacher responsiveness to metacognitive growth in addition to other criteria when conducting interviews, interviewers may be better able to determine a candidate's capacity to foster students' growth as learners.

The five components of feedback that occurred most frequently across the two participant groups, including learning profile, thought process, questioning, time and frequency, and thinking skills supports the idea that metacognitive knowledge and application of metacognitive feedback to students can be ascertained during an interview. Additionally, identifying specific examples of teachers' responses that supported metacognitive feedback separated strong from weak candidates in this area. The review of recent literature suggested that teachers' own

knowledge of metacognition would strengthen students' metacognitive knowledge, and better equip the students toward calibration and self-regulation of their learning, leading to higher student achievement (Wilson & Bai, 2010). A future question worthy of study asks how the use of specific metacognitive feedback used by teachers in the classroom with students correlates to measurable student growth.

Recommendations for those in the position of interviewing teachers for teaching positions as a result of the findings are the use of a "look-for" list specific to metacognition, interview questions that specifically ask a candidate's understanding of metacognition and its application through verbal feedback to students, and inclusion of a thirty-minute demonstration lesson with students. Some school districts do not permit interviewers to ask candidates follow-up questions so that all candidates are asked the same questions. The opportunity for interviewers to ask candidates to speak with more detail and provide examples about the topic or question they are being asked allows for a more comprehensive assessment of the candidates' depth of understanding in the questioned topic. Should a district superintendent or other educational leader be interested in recommending a candidate for hire who may not score as high in the area of metacognition due to other strengths, the design of the induction program may include the provision to differentiate professional learning in this area for the new hire.

It is important to note that the coded feedback characteristics in the present study may not be all-inclusive, rather they were supported by research about fostering metacognitive growth. Future study in this area could possibly ascertain what other components may positively impact metacognitive growth. Additional studies of this type may benefit from using multiple coders in order to more thoroughly vet participant responses. Also, the interviews reflected one snapshot of each teacher's teaching, as is the nature of most interviews. A different day and a different

lesson may or may not have concluded different overall study findings. The findings presented here serve as a preliminary study to lay the foundation for future replication.

Three findings from the study prompt considerations for further study. First, the teacher candidate group gave more feedback overall in components found to assist in fostering metacognitive feedback. Because the participants in the teacher group were observed teaching lessons in which they were required to follow a scripted or guided program, inquiry around this finding could be to determine if teaching such programs or varied years of experience teaching is a factor impacting the ability of a teacher to balance incorporating metacognitive strategies within instruction against mandated or scripted programs void of metacognitive strategies. Second, because the study found that the teacher group had more use of feedback in the written assessment, understanding of the term metacognition, and in all of the professional theme's components. Another option for further study could be to survey teacher candidates and teachers of varied levels of teaching experience on how much of their knowledge on metacognition is a result of self-study, work experience, or professional development experiences. Third, the teacher groups' limited responses connected to the teacher-student relationship theme relative to the teacher candidate group, sparked the question as to why this may be the case. Exploration of these ideas could help educational leaders when making decisions about demonstration lesson requirements, teacher preparation coursework, instructional program decisions, and professional development pertaining to metacognition, since the pool of teacher candidates derive from newly graduated teachers, substitute teachers, or already employed teachers.

A future study may also be how praise can be utilized to foster metacognition due to its prevalence in teachers answers to the questions. All participants noted the importance of praise, but many connected praise to emotional, procedural, or content knowledge over its benefit to

bolster students' metacognition. A study in this area specific to its relationship in fostering metacognitive growth may highlight ways in which teachers can shape the praise they give to students and be able to speak to the value of this type of praise during an interview.

One final possibility for future inquiry is exploring the extent to which school boards, superintendents, and other educational leaders shape the process by which teachers interview for teaching positions, as the financial investment in teachers and overall development of human capital within organizations lie within their purview. These leaders are tasked with the great responsibility of overseeing the education of the children in the community they serve and have the capacity to shape the interview process and expectations for hiring teacher candidates who are most likely able to positively impact students' academic growth and performance.

6.0 DISSEMINATION PLAN

Using findings about which feedback characteristics connect to metacognitive growth, the study examined which interview tools provided the most information about a teacher candidate's ability to communicate or demonstrate understanding of metacognition. The school board is tasked with making the final determination on whether or not a candidate is worthy of substantial investment over the course of the teacher's career in the district. Incorporating focused questions about feedback specific to metacognition and seeking out feedback characteristics specific to metacognition in an authentic lesson with children during interviews can assist interview panels in narrowing the field of qualified candidates. District administrators can train interview panel members in specific elements to look for in candidate answers or in a demonstration lesson, or they can use a list of criteria as identified in this study to ascertain a candidate's potential to impact students' metacognitive growth. The superintendent is then able to confidently recommend a teacher candidate for hire who has demonstrated the skillset to guide the academic achievement and growth of the students he or she will teach. This research has the ability to impact how school districts determine policy connected to hiring, design interviews for teaching positions, plan induction programs, and plan professional development for teachers and principals connected to instruction and classroom observations.

In addition to benefiting school districts, the identified feedback characteristics of responsiveness connected to metacognitive growth may benefit any individual who teaches or

plans to teach, and those entities who prepare others to teach, hire others to teach, or provide professional learning opportunities for employees. Some examples of entities other than school districts include colleges, as part of their teacher preparation programs, and other organizations that provide training, internships or professional development connection to instructional practices.

With the potential for greater impact on a wide audience, the proposed plan for dissemination of the study findings is a blog post with supporting resources for the University of Pittsburgh SEED Lab, which is committed to conducting research on social-emotional learning of young learners. Additionally, an article will be submitted in September, 2017, to *Educational Leadership*, a practitioner magazine in the field of education. Targeting current educators and persons interested in education matters pertaining to preK-12 age students, the distribution is wide, including 160,000 educational leaders and institutions through the United States. Approximately 75% of the submitted articles, with an expected length of 1,500 - 2,500 words, are unsolicited by the magazine and revolve around instruction, curriculum, and supervision. The magazine's February 2018 "Measuring What Matters" theme provides an opportunity to highlight key findings of this study through a conversational style of writing, extending the range of the audience who may find the information useful in professional practice. Once published, the article could be used as part of a professional development session with elementary teachers in the school district. Subsequent alternatives in order are 1) an informational handout made available to school district superintendents in the Pittsburgh area, 2) a presentation to teachers in a teacher certification program at the University of Pittsburgh, or 3) a presentation to the Pittsburgh Association for the Education of Young Children. Any educator, educational leader, or education provider who is cognizant of the identified factors of feedback can incorporate the

applicable components into his or her professional role. Whatever the form or role, educators who demonstrate responsiveness to students' metacognitive growth through specific verbal feedback may be more likely to impact the extent to which students learn and develop self-regulation of learning.

APPENDIX A

INQUIRY QUESTIONS

Table 1. Inquiry Questions per the Literature Review

Questions	Evidence	Design/Method	Analysis and Interpretation
1. Responsiveness Feedback Characteristics	Responsiveness to Metacognition Criteria	Evaluation: Comparison Analysis	-Create protocol based on the research literature - Compare and code teacher interview responses to the list
2. Interview Tools to Assess Teacher Responsiveness	Written and Verbal Questioning, Demonstration Lesson/Teacher Lesson	Interview, Tool Use	- Analyze teacher candidate answers within each of the tools - Code statements against the RtoMC - Interpret which tools best assess teacher responsiveness based on candidate's answers
3. Tools that Best Predict	Interview Tools	Evaluation: Comparison Analysis	- Interpret which interview tools predict high levels of teacher responsiveness in instruction

APPENDIX B

RESPONSIVENESS TO METACOGNITION CRITERIA

Table 2. Teacher Responsiveness to Metacognition Criteria per the Literature Review

Themes	Key Components	Citations
Teacher-Student Relationship	<ul style="list-style-type: none"> a. Understanding and utilizing student learning profile b. Self-reflection: how students perceive feedback c. Understanding and response to emotional barriers: how it motivates students, how students think about themselves d. Recognition or and/or response to varied student thought processes 	<p>Haug & Odegaard, 2015; Jurik, et al., 2014. Eva, et al., 2010.</p> <p>Narciss, et al., 2014.</p> <p>Ruiz-Primo, 2011.</p>
Interactive Dialogue	<ul style="list-style-type: none"> a. Demonstrates or communicates the importance of asking “how” questions: explaining how students determined their answer, how a student or students concluded what they need to correct b. Demonstrates or communicates the importance of the utilization a planned sequence of instructional feedback and support to target metacognition c. Demonstrates or communicates the importance engaging in conversation about student thinking 	<p>Bathgate et al., 2012; Dignathvan Ewjik, et al., 2013.</p> <p>Bathgate et al., 2012; Dignathvan Ewjik, et al., 2013.</p> <p>Pol et al., 2010.</p>
Scaffolding	<ul style="list-style-type: none"> a. Demonstrates or communicates the importance of time and time and frequency: delayed feedback, pacing b. Calibration: how the student applies thinking strategies when monitoring their thought process and work 	<p>Butler & Winne, 1995.</p> <p>Butler & Winne, 1995.</p>

Table 2 continued

Professional	a.	Teacher engages in strengthening self-metacognition	Digmath-van Ewijk, et al., 2013.
	b.	Level of content knowledge	Engel, 2013; Bathgate, et al., 2011; Haug & Odegaard, 2015.
	c.	Understanding of how to teach thinking skills; ability to analyze student thinking skills that may be different from their own	Haug & Odegaard, 2015.
	d.	Understands common misconceptions	Shute, 2008; Dignath-van Ewijk & Werf, 2012.
	e.	Understands the value of fostering student metacognition	Shute, 2008; Dignath-van Ewijk & Werf, 2012.
	f.	Self-reflection on “thinking about thought processes and strategies connected to learning”	Flavell (1971), as cited in Lajoie, 2008.

APPENDIX C

TEACHER CANDIDATES' RESPONSES: TEACHER-STUDENT RELATIONSHIP, INTERACTIVE DIALOGUE, SCAFFOLDING, PROFESSIONAL

The four figures reflect the number of codes received by the teacher candidates in each component, grouped by theme.

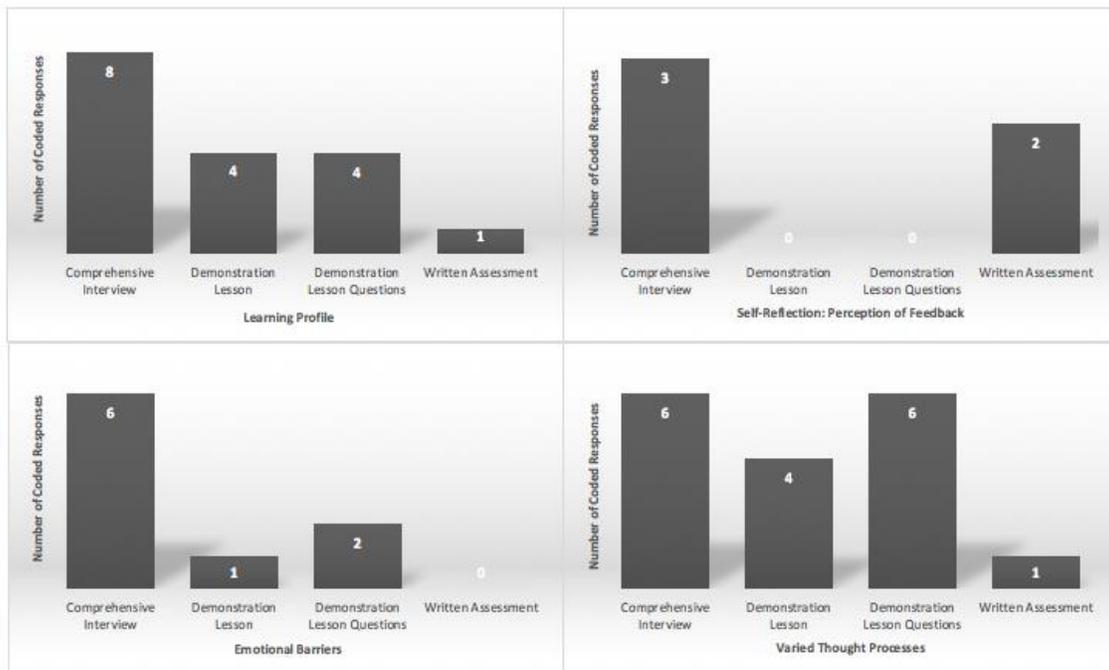


Figure 1. Teacher Candidates' Teacher-Student Relationship Responses

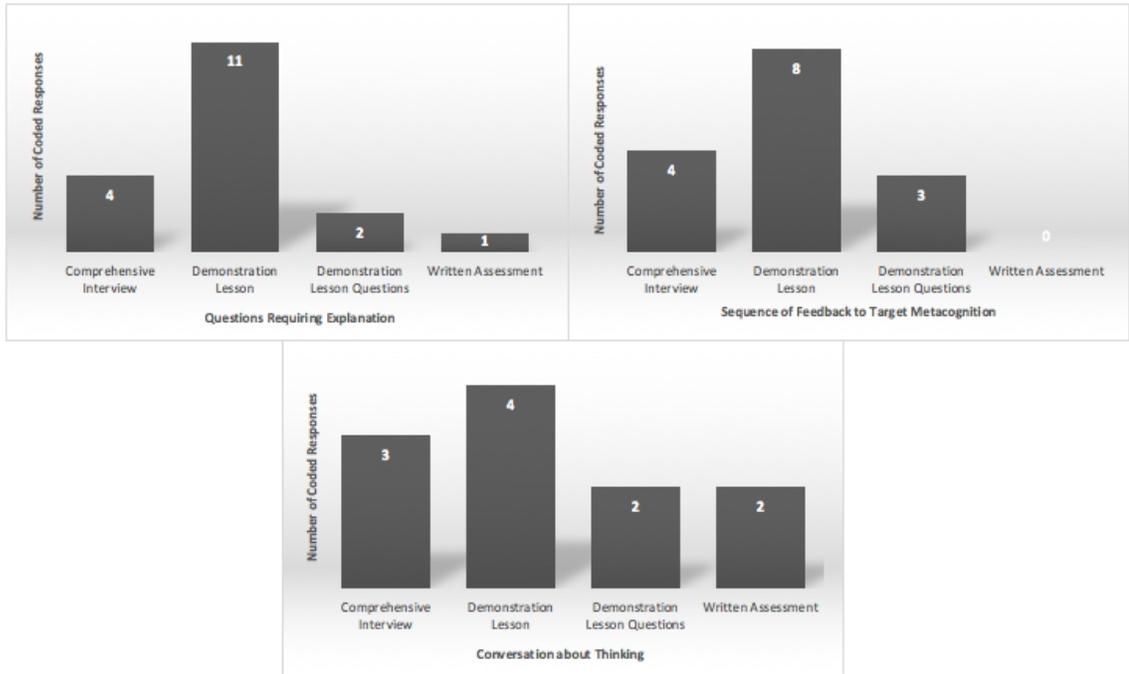


Figure 2. Teacher Candidates' Interactive Dialogue Responses

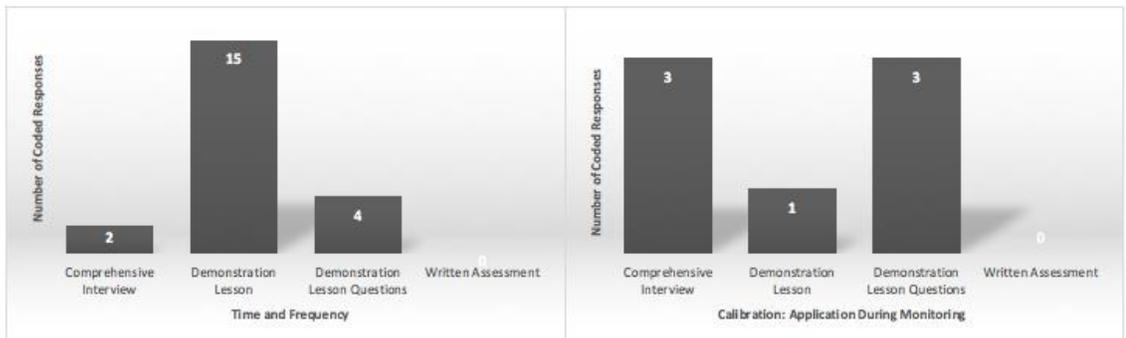


Figure 3. Teacher Candidates' Scaffolding Responses

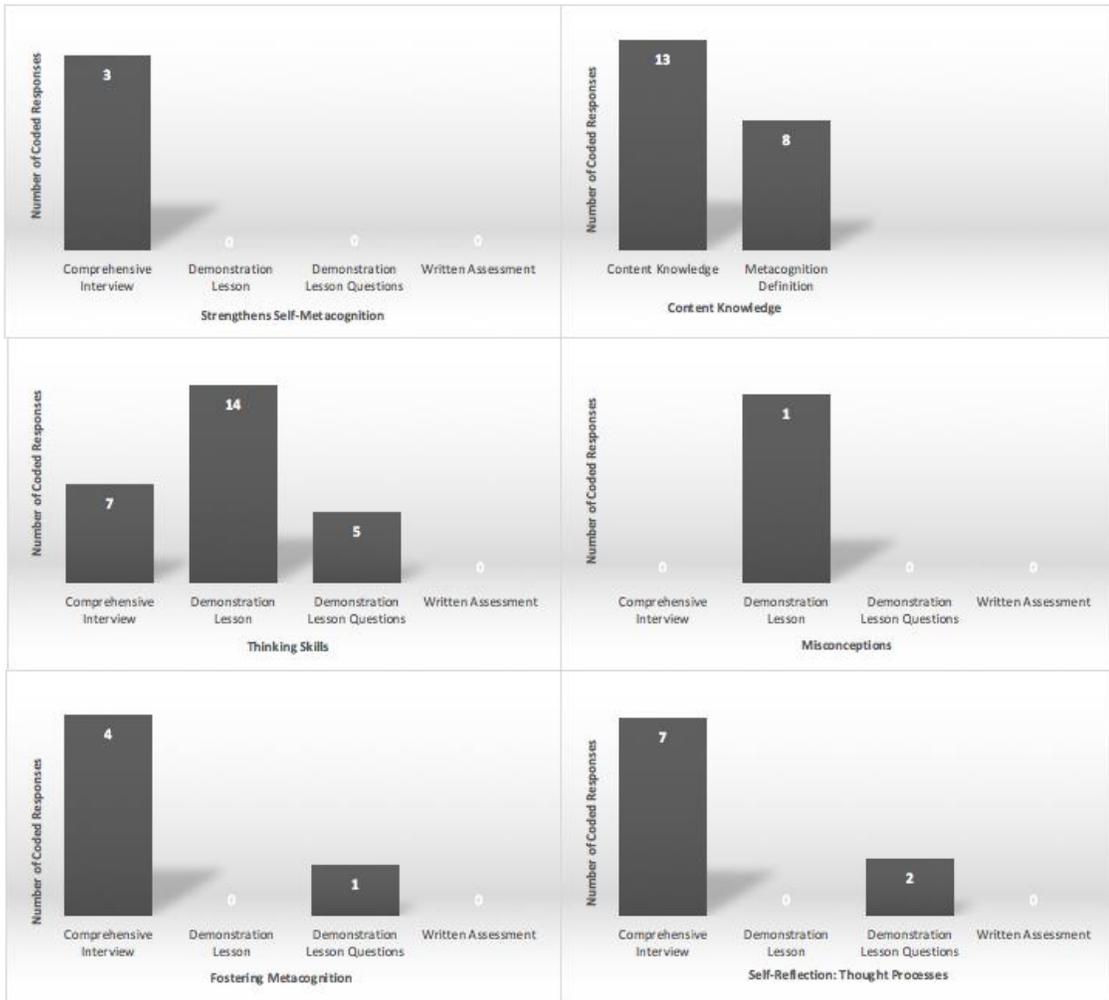


Figure 4. Teacher Candidates' Professional Responses

APPENDIX D

TEACHER CANDIDATE THEMES OF HIGH FREQUENCY

Table 3. Teacher Candidate Themes of High Frequency with Examples

Themes/Components	Teacher Candidate	Examples
Teacher-Student Relationship Learning Profile	Demonstration Lesson	“...utilizing different learning styles”, “prior knowledge of reading levels”, “multiple experience and modes of thinking”, “interest”
Varied Thought Processes	Demonstration Lesson Questions/Comprehensive Interview	“asking a child to expand on their line of thinking”, “think about how they are perceiving things”, “something you’re adding from your own personal understanding”
Interactive Dialogue Questions Requiring Explanation	Demonstration Lesson	“How do you know it’s...”, “What made you think that?”, “Can you explain that to me...”, “I know...because...”
Scaffolding Time and Frequency	Demonstration Lesson	Wait time, “What else...what else?”, “Maybe...”, “Anyone have any other ideas?”, “Not leading too much”
Professional Thinking skills	Demonstration Lesson	“Would ask them about why and how they think that way”, “Sentence starters”, “inferencing skills”, “modeling thinking out loud”, rereading for a deeper message and asking questions as students read

APPENDIX E

TEACHERS' RESPONSES: TEACHER-STUDENT RELATIONSHIP, INTERACTIVE DIALOGUE, SCAFFOLDING, PROFESSIONAL

The four figures reflect the number of codes received by the teachers in each component, grouped by theme.

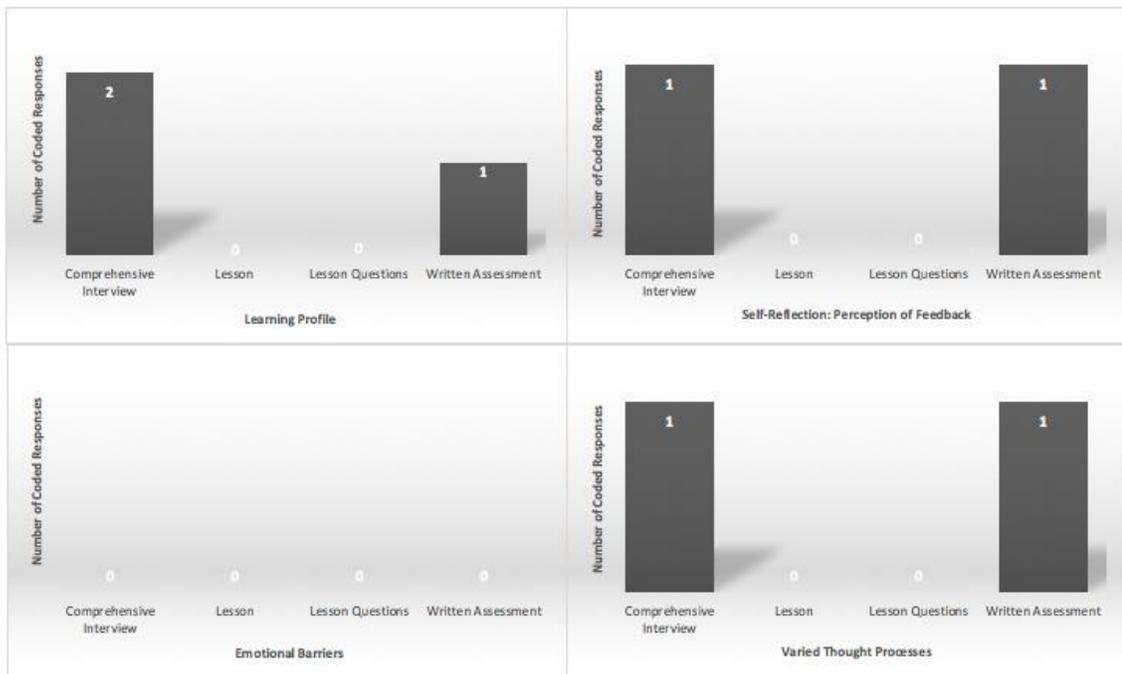


Figure 5. Teachers' Teacher-Student Relationship Responses

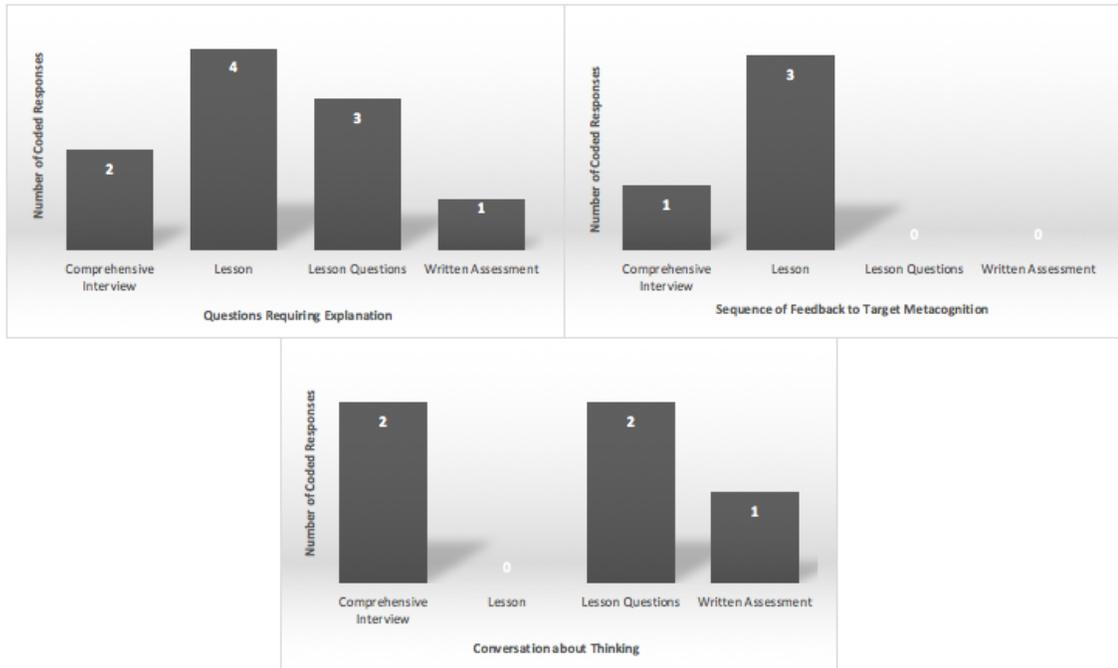


Figure 6. Teachers' Interactive Dialogue Responses

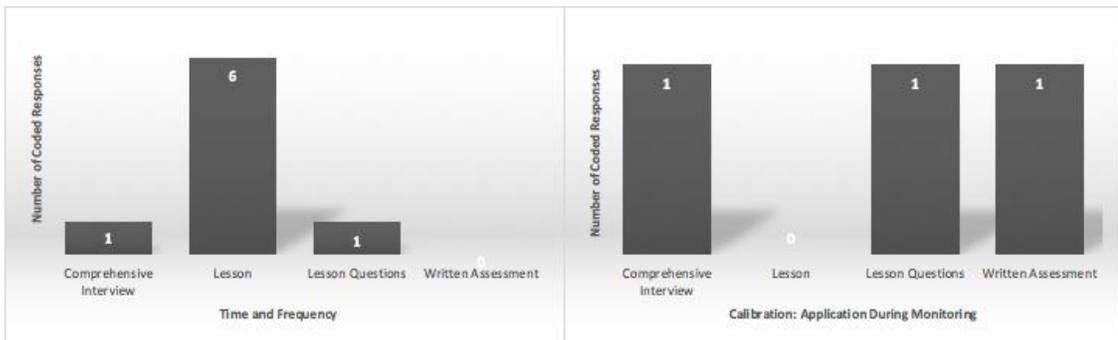


Figure 7. Teachers' Scaffolding Responses

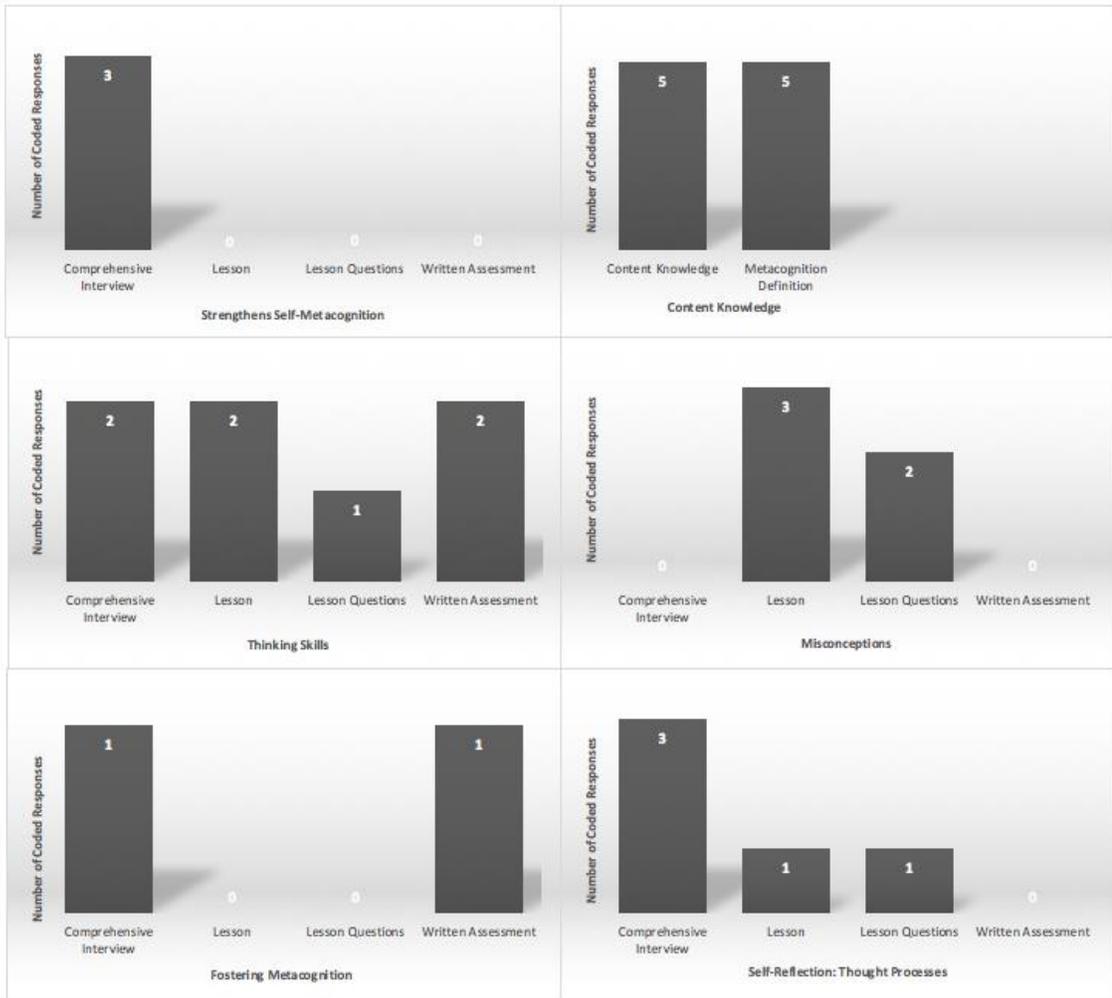


Figure 8. Teachers' Professional Responses

APPENDIX F

TEACHER THEMES OF HIGH FREQUENCY

Table 4. Teacher Themes of High Frequency with Examples

Themes/Components	Teacher	Examples
<u>Teacher-Student Relationship</u> Learning Profile	Comprehensive Interview	“...when you and the student realize how they best learn it will positively affect them”, “taking notice of how the students succeed in specific activities: pencil/paper, manipulatives”
<u>Interactive Dialogue</u> Questions Requiring Explanation	Lesson	“What made you think that inference?”, “How did you know?”, “Let’s really talk about it”, “How did you reach that answer?”, “Tell us what you did. How did you know?”
<u>Scaffolding</u> Time and Frequency	Lesson	Wait time, “I don’t (want to) tell them what’s happening before they show me how they’re thinking”, “What else do you notice?”, “You’re on the right track...”
<u>Professional</u> Thinking skills	Lesson/Written Assessment/ Comprehensive Interview	“modeling...show them that, then they’re going to want to mirror that”, concept of inferencing, “so do you...see how I’m asking you questions?”, “using words in context to figure out other words”

APPENDIX G

TEACHER CANDIDATES AND TEACHERS COMPARISON BY THEME AND TOOL

The four figures reflect the comparison of metacognitive feedback responsiveness theme and interview tools between teacher candidates and teachers by number of responses. Due to different number of participants in each group, the x axis equalizes the ratio between the two groups. The number above each bar represents the actual number of coded responses.

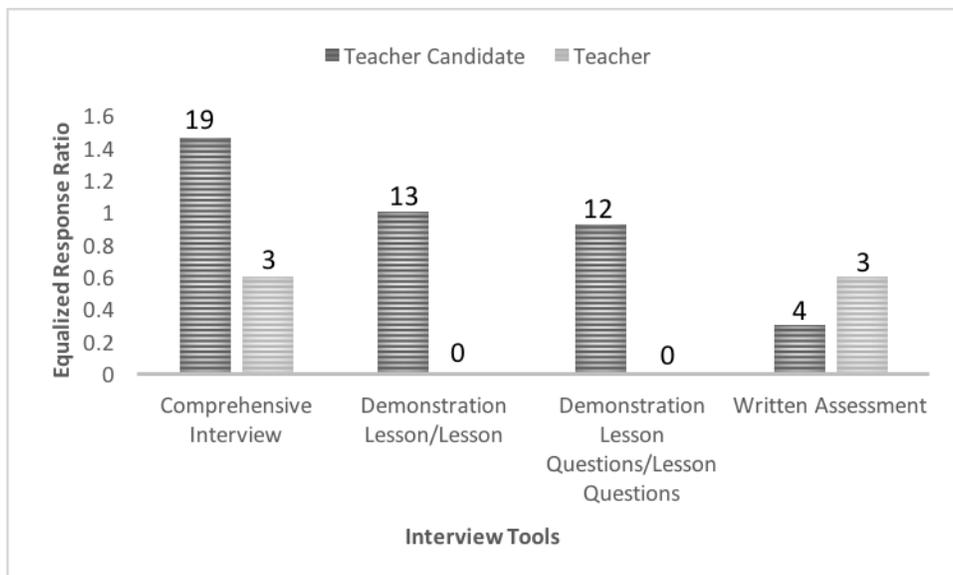


Figure 9. Teacher Candidates and Teachers Teacher-Student Relationship Theme Comparison by Interview Tool

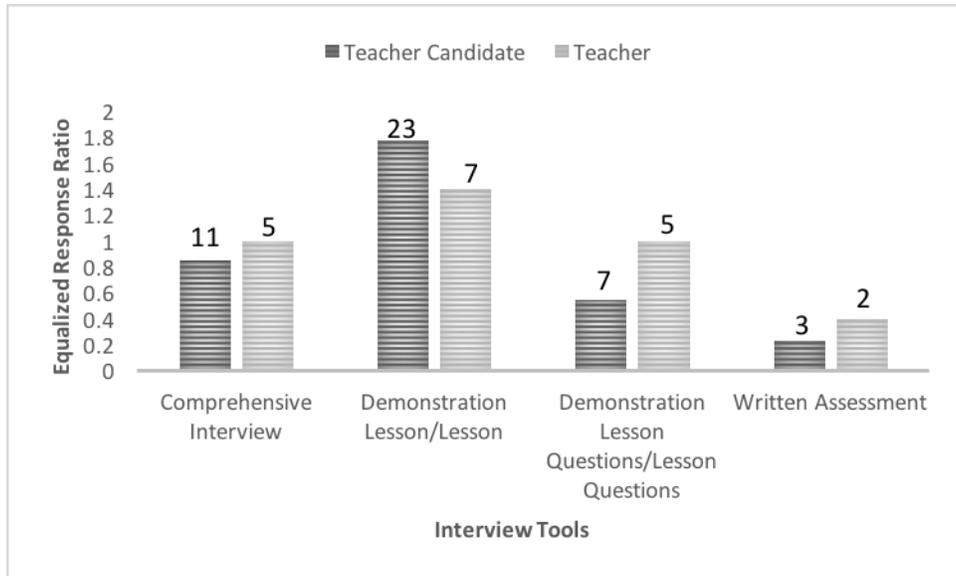


Figure 10. Teacher Candidates and Teachers Interactive Dialogue Theme Comparison by Interview Tool

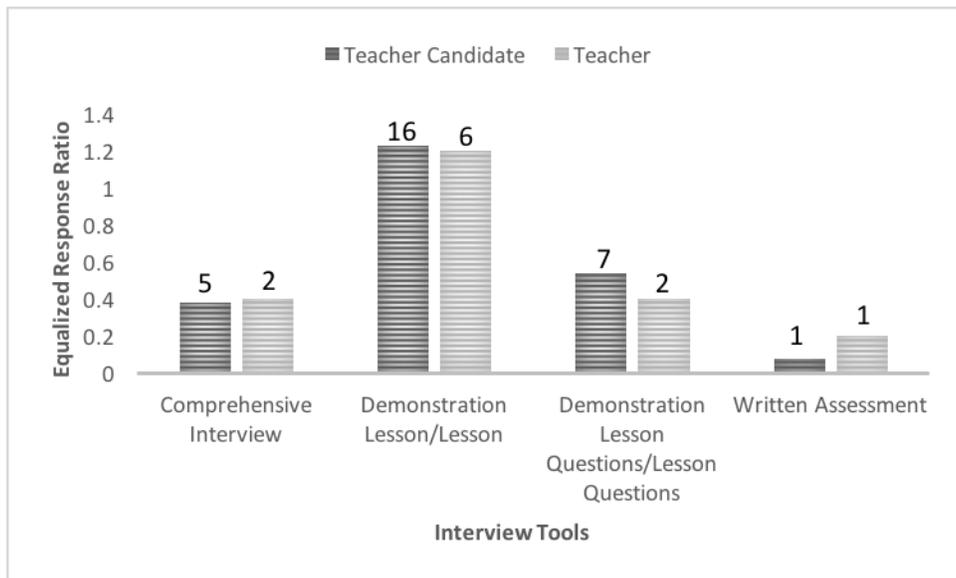


Figure 11. Teacher Candidates and Teachers Interactive Dialogue Theme Comparison by Interview Tool

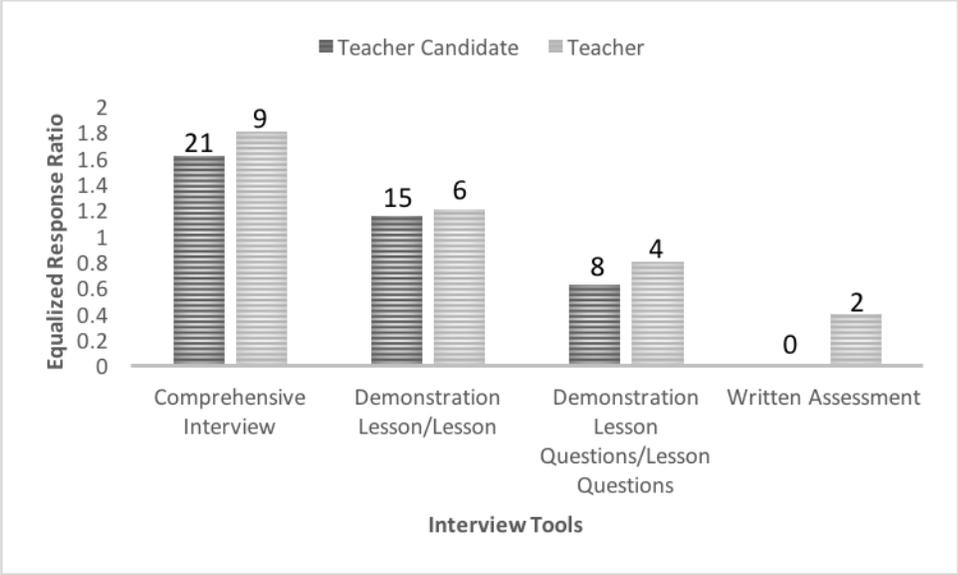


Figure 12. Teacher Candidates and Teachers Interactive Dialogue Theme Comparison by Interview Tool

APPENDIX H

PARTICIPANTS' METACOGNITIVE FEEDBACK RESPONSES

Table 5. Participants' Metacognitive Feedback Responses Examples

Participants with More Codings	Participants with Fewer Codings
<ul style="list-style-type: none"> • Asked more “how” or “why” questions that required the student to explain their thinking • Gave specific praise • Extended understanding of content or metacognition by asking the student to explain their thinking, to extend on their answer, or to think of additional ideas. • Provided more opportunities for delayed feedback through wait time or probing questions before sharing an answer • Scaffolded information, skill, or task from the bottom up; student centered. • Gave answers in the comprehensive interview more specific to metacognition than not. • The lessons did not line up as much with their Comprehensive Interview answers specific to metacognition. • Statements made about content and examples given were more specific and more often than not given a clear code. 	<ul style="list-style-type: none"> • Asked how questions that were procedural in nature • Asked how or why questions about content, not thinking • Asked “what do you think?” and “why do you think?”- connected to content, not thinking about their thinking • Gave general praise • Extended by sharing their own knowledge. Ex. So we know that... • Provided less wait time or little to no probing for more thought or expressing of thoughts by the student before providing an answer • Scaffolded information, skill or task from the top down; teacher led. • Gave answer in the Comprehensive Interview and Follow-up lesson more specific to cognition. • The lessons more often than not matched the statements made in their Comprehensive Interview. • Statements made about content and examples given were stated with less detail or vague.

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