

IMPLEMENTING EDUCATIVE MENTORING: BUILDING TEACHER CANDIDATE
FORMATIVE ASSESSMENT PRACTICES

by

Shae A. Miga

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Dissertation Committee:

Dr. Kimberly Evert, Chair

Dr. John Lando Carter

Dr. Angela G. Hooser

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ABSTRACT

This study explored how educative mentoring supports teacher candidates in developing formative assessment practices and how mentor teachers come to understand and enact educative mentoring during a teacher residency semester. Using a descriptive embedded single-case study design, the research examined the experiences of teacher candidates and mentors at Cheery Cove Elementary. Findings revealed that teacher candidates demonstrated growth in their understanding of formative assessment, shifting from viewing it as a tool for planning and evaluation to recognizing it as an ongoing, responsive process that supports real-time instructional decisions and student learning. Teacher candidates also transitioned from teacher-centered to student-centered approaches to formative assessments. Key factors that contributed to this development included observations, direct conversations with mentors, reflection, and learning through practice and challenges. Simultaneously, mentor teachers, through participation in structured study group meetings and collaborating with teacher candidates, deepened their understanding of educative mentoring. They adopted more mentee-focused practices centered on collaborative dialogue and targeted support for formative assessment. This study highlights educative mentoring as a reciprocal and co-constructed process that fosters professional growth for both mentors and mentees. Implications suggest that intentional, school-based mentoring programs can effectively enhance teacher candidates' assessment literacy and transform traditional mentoring practices into developmentally rich experiences.

Keywords: educative mentoring, formative assessment, teacher residency, teacher candidate development, mentor teachers, study group, work group, professional development

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LIST OF TERMS/ABBREVIATIONS

Andragogy- the art and science of helping adults learn (Knowles, 1980)

Assessment literacy- “consists of an individual's understanding of the fundamental assessment concepts and procedures deemed likely to influence educational decisions” (Popham, 2018, p.2; 2020, p. vii).

Checks for understanding- activities designed to be a part of the “rhythm” of the lesson as a way to elicit evidence and monitor student understanding and learning (Heritage, 2022).

Educative mentoring- co-learning while creating growth-producing experiences for a novice teacher (Stanulis et al., 2019) and employs the cognitive apprenticeship through specific mentoring activities to make the unseen seen with the mentor being a co-thinker (Feiman-Nemser, 2001b; Stanulis et al., 2019).

Educative Mentor Study Group- context driven professional development focused on concrete practices that include mentor’s talking about and enacting co-planning, observing and debriefing, and analyzing student work (Gardiner, 2016b; Stanulis et al., 2019).

Effective professional development- “structured professional learning that results in changes in teacher practices and improvements in student learning outcomes” (Darling-Hammond et al., 2017, p. 5).

Feedback- information provided to a learner to reduce the gap between current performance and a desired goal (Sadler, 1989).

Formative assessment- “formal and informal processes teacher and students use to gather evidence for the purpose of informing next steps in learning” (Chappuis, 2015, p. 3).

Formative assessment in the moment of teaching- formative assessments that occur within the lesson for real-time learning regulation (Black & Wiliam, 2009); short cycle formative assessment; immediate, in-the-moment checks; embedded formative assessment

Mentoring- guiding, teaching, influencing and supporting another teacher where there is shared power and autonomy within a partner relationship (Ellis et al., 2021).

Novice teacher- a teacher who is in the early stages of their career, includes teacher candidacy and the first three years of teaching.

Professional development- “those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might in turn, improve the learning of students” (Guskey, 2000, p.16).

Professional learning- “the product of both externally-provided and job-embedded activities that increase teachers’ knowledge and change their instructional practice in ways that support student learning” (Wei et al., 2009, p. 1).

Teacher candidate- novice teacher who is in the process of completing their initial teacher preparation program but have not yet assumed a full-time teaching role.

Teacher residency- the culmination of the teacher preparation experience and the opportunity to demonstrate the knowledge and skills learned in prerequisite classwork and when capstone assessments of content knowledge, pedagogical skills and dispositions occur.

CHAPTER I: INTRODUCTION

Overview

The rise of public policy emphasizing the evaluation of teachers and schools using student summative assessment results has been an avenue in trying to increase teacher effectiveness for student learning. However, focusing primarily on summative assessments has shown limited success in improving day-to-day teaching practice (Wiliam, 2018). Schools have tried many different ways to increase student learning, student achievement, and student assessment results to make schools an effective engine for society and have realized the problems we face today cannot be solved with the processes of the past (Wagner, 2008, 2012). Students at the center of learning and teachers using student thinking are both found in the moment of instruction with the evidence established through formative assessment (Athanases & Achinstein, 2003).

Novice teachers quickly encounter the demands of the diverse students they serve and must meet the students' varied needs. They also feel the weight of job demands from performance expectations, rigorous content standards, governmental policies, position accountability, and the profession's evaluation system. These pressures can overwhelm a novice teacher and support is needed to navigate the nuances of effective teaching to meet the diverse needs of their students and of the profession itself. To do this, novice teachers need support in learning the complex work of teaching (Feiman-Nemser, 2001b, 2010; Grossman et al., 2009).

To meet the wide range of students' academic needs, teachers need assessment literacy practices that have proven to be effective (Black & Wiliam, 1998, 2004; Stiggins, 1999).

“Assessment literacy consists of an individual's understanding of the fundamental assessment concepts and procedures deemed likely to influence educational decisions” (Popham, 2018, p.2; 2020, p. vii). Novice teachers need to build their assessment literacy practices (Center for the Study of Teaching and Policy, 2001; Popham, 2011, 2020; United States National Commission on Excellence in Education [NCEE], 1983; U.S. Department of Education, 2002; U.S. Government, 2015; Weisberg et al., 2009) since they have been found lacking in assessment knowledge and skills (Bennett, 2011; DeLuca & Klinger, 2010). Providing support for novice teachers to learn the complex work of teaching, especially assessment literacy practices, novice teachers can receive what they need through effective professional development.

Teacher residency, commonly known as student teaching, is conceived as one of the most influential experiences for teacher candidates (Clarke et al., 2014). The mentoring that teacher candidates experience during residency is a form of effective professional development (Ellis et al., 2021; Spooner-Lane, 2017). This learning is contingent on the mentor teacher creating and offering opportunities which are constructed for the teacher candidate (Grossman, 2010). Mentors can provide intentional learning opportunities for their teacher candidates during teacher residency by employing educative mentoring practices, with a special emphasis on formative assessment techniques (Chappuis, 2015; Mertler, 2004). Educative mentoring is co-learning while creating growth-producing experiences for a novice teacher (Stanulis et al., 2019) and employs the cognitive apprenticeship through specific mentoring activities to make the unseen seen with the mentor being a co-thinker (Feiman-Nemser, 2001b; Stanulis et al., 2019).

Mentor teachers engaging in educative mentoring practices with their teacher candidates can support teacher candidates in learning the complex work of teaching and building assessment literacy practices to meet the wide range of students' academic needs.

Context

Cheery Cove Elementary openly welcomes college and university students into our school. The vast majority of these students are in some form of program in education, though a few are from other studies programs. Each year, roughly 7% (four teachers) Cheery Cove Elementary teachers accept a teacher resident assignment and host a teacher resident in their final semester of college. Even though this is a common occurrence and even encouraged, many teachers have little to no guidance to know how to effectively mentor, reflecting the larger profession as a whole that has little to no guidance to do so (Clarke et al., 2014). These teachers are left to navigate mentoring based on their own experiences, their own beliefs and to seek out training on their own.

Formative assessment practices are an area of focus for teachers at Cheery Cove Elementary. Cheery Cove Elementary has had six professional development meetings within the previous five years involving formative assessment practices and using data as a way to increase student learning. The school has an established system of weekly PLC meetings for data and team planning for student learning. The emphasis has been on formative assessment as end of lesson units for making instructional decisions. A PLC professional development mini-meeting revolved around a specific assessment literacy practice of reading data in different ways and for different purposes to better understand how to address student learning needs. Even in this

limited scope of the use of assessment literacy practices, specifically formative assessment practices, Cheery Cove Elementary has attributes of effective teaching practices.

Statement of the Problem and Purpose of Study

The problem is that novice teachers require effective professional development in assessment literacy practices to excel in their complex work of teaching and for assuring student learning. One way to address this is through preservice training with teacher candidates. Mentoring is a proven effective professional development for novice teachers and teacher candidates. Their mentors, who are highly regarded and highly relied upon to support these teachers to build these practices, have little support to know how to be effective in their mentoring role.

The purpose of this study was to understand how educative mentoring supports teacher candidate's assessment literacy practices and how their mentors enacting educative mentoring practices understand their roles.

Significance of Study

Black and Wiliam (1998, 2004) have said formative assessment is an advantageous practice for increasing learning and achievement. Wiliam (2018) further emphasized that improving teaching through formative assessment is one of the most effective ways to raise student achievement. In addition, teachers need living examples of formative assessment practices in action (Black & Wiliam, 1998, 2004). Furthermore, Stiggins (1999) said classroom assessments dictate the quality of instruction in that classroom. Mertler and Campbell (2005) found many teachers do not feel prepared for assessing the performance of students even though it is one of the most essential responsibilities of a classroom teacher. In addition, research points

out teachers, especially teacher candidates, are lacking in assessment knowledge and skills (Bennett, 2011; DeLuca & Klinger, 2010) and teacher candidates need to have an abundant amount of training in assessment literacy (Popham, 2011). Findings from this study have important implications for understanding how teacher candidates and novice teachers can build their assessment practices. This study demonstrated that educative mentoring built teacher candidates' knowledge in using assessments to inform their practice.

Teachers can be supported in understanding and using formative assessment in lesson planning and reflection (Mills & Harrison, 2020). In order to implement formative assessment practices, teachers need to engage in training and learning (Bennett, 2011; DeLuca & Klinger, 2010; Popham, 2011). A proven process of professional development to build teacher capacity for school reform is through the mentoring of novice teachers (Athanasos & Achinstein, 2003; Feiman-Nemser et al., 2014; Hope et al., 2022; Orland-Barak & Wang, 2021; Stanulis & Brondyk, 2013; Wexler, 2020a). Findings from this study have important implications for principals in their approach to supporting growth in novice teachers, as well as seasoned teachers.

Mentoring has been found to benefit mentees and mentors through both receiving professional development (Hope et al., 2022; Hudson, 2013). Not only did mentees gain professional development, but the mentors benefited from stronger pedagogical knowledge, communication skills and developed leadership skills (Hope et al., 2022; Hudson, 2013). Another benefit of quality mentoring is increased organizational commitment of novice teachers (Hong & Matsko, 2019) as well as renewed commitment of mentors (Feiman-Nemser et al.,

2014; Hope et al., 2022). Findings from this study in how mentors understood educative mentoring practices increased their mentoring skills and created stronger collaboration practices.

It is a misconception that a good teacher makes a good mentor (Stanulis & Brondyk, 2013). Because mentoring is a complex practice, much like teaching, mentoring must be learned (Schwille, 2008; Stanulis et al., 2019). Mentors learn within the context of the work (Langdon & Ward, 2015) and context matters for mentoring (Ambrosetti & Dekkers, 2010). Stanulis et al. (2019) found in a qualitative study of mentors that mentors benefit from professional development focused on concrete practices that include mentor's talking about and enacting co-planning, observing and debriefing, and analyzing student work (Gardiner, 2016b). Findings further supported the use of educative mentor study groups based on the experiences of the mentors engaged in educative mentoring practices.

Educative mentoring supports teacher candidates' learning because it is co-learning while creating growth-producing experiences for a teacher candidate (Stanulis et al., 2019) and employs the cognitive apprenticeship through specific mentoring activities to make the unseen seen with the mentor being a co-thinker (Feiman-Nemser, 2001b; Stanulis et al., 2019). Additionally, mentor teachers are a model for learning from practice and provide the teacher candidate opportunities to experiment in practice (Wexler, 2020a). Teacher programs are educative especially when they employ systematic reflection on student learning with opportunities to retry and to improve (Darling-Hammond, 2006). Mentors were also found to be successful with supporting teacher candidates in shifting their teaching practice when the mentor had a targeted practice, they sought support to become an effective mentor and met the mentee where they were but kept the goal in mind (Schwille, 2008; Stanulis et al., 2014). Findings from

this study show a way to use educative mentoring in teacher preparation programs for teacher candidate's theory and practice development.

This study adds to the body of literature because it sought to understand how educative mentoring can support teacher candidates' formative assessment practices and how their mentors enacting educative mentoring practices understand their roles over time.

Research Questions

This embedded single-case study research was to understand how educative mentoring can support teacher candidates' assessment literacy practices and how their mentors enacting educative mentoring practices understand their roles over time at Cheery Cove Elementary. Educative mentoring is co-learning while creating growth-producing experiences for a novice teacher (Stanulis et al., 2019) and employs the cognitive apprenticeship through specific mentoring activities to make the unseen seen with the mentor being a co-thinker (Feiman-Nemser, 2001b; Stanulis et al., 2019). With this purpose in mind, my research questions were:

1. How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester?
2. How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester?

Summary

An increased demand for school and teacher accountability for student learning comes a high demand for strong teaching practices and effective professional development. Educative mentoring of novice teachers in their teacher residency of their final semester of college around

formative assessment practices in the moment of the lesson will better prepare them to effectively teach for student learning. Mentor teachers experiencing educative mentoring practices with the novice teacher opens possibilities of reciprocal learning. This inquiry sought to understand how teacher candidates build their assessment literacy practices and how mentors understand educative mentoring with their teacher candidates over time during their teacher residency semester. Through an Educative Mentoring Study Group, interviews, observations, and engaging in educative mentoring, the research looked at how educative mentoring supported teacher candidates in building assessment literacy practices and how mentors understood their roles when enacting educative mentoring. The investigation was guided by constructivist theory of learning, the theory of educative mentoring and the theory and framework of formative assessment. The results provide school leaders and mentor teachers' insight into how educative mentoring can support teacher candidates' formative assessment practices and how their mentors enacting educative mentoring practices understand their roles.

The following chapter includes a review of the literature related to assessment literacy, formative assessment, professional development, and educative mentoring. Chapter 3 focuses on the methodology of the study. Chapter 4 reports the results of the study. The final chapter, Chapter 5, hosts a discussion of the study and recommendations for future study.

CHAPTER II: REVIEW OF LITERATURE

Responding to Weisberg et al.'s (2009) *The Widget Effect: Our national failure to acknowledge and act on differences in teacher effectiveness*, there has been an increase in public policy (Center for the Study of Teaching and Policy, 2001). The rise of public policy emphasizing the evaluation of teachers and schools using student summative assessment results has been accompanied by a sharp increase in the prevalence of schools trying to address these demands. However, relying solely on summative assessments to evaluate teacher effectiveness has not meaningfully improved classroom practice (William, 2018). Schools have tried many ways to increase student learning, student achievement, and student assessment results to make school an effective engine for society and have realized the problems we face today cannot be solved with the processes of the past (Wagner, 2008, 2012). The diversity students bring and the complex skills of deep understanding along with thinking skills students need to acquire grounding for further education and work in the 21st century require a shift in teaching (Athanases & Achinstein, 2003; Grossman & McDonald, 2008; Grossman et al., 2009). Wagner (2012) called for the development of 21st-century skills for students to be innovators and contributors to the social and economic edge of the United States. His seven survival skills include the metacognition needed for effective oral and written communication, critical thinking and problem solving, and initiative. These have gained momentum in reforming schools and shifting teaching practices, specifically in student-centered learning (Athanases & Achinstein, 2003; Athanases et al., 2008; Stanulis et al., 2014; Stoetzel & Taylor-Marshall, 2022) and in using student thinking (Cash et al., 2022; Grossman et al., 2009; Norman & Feiman-Nemser,

2005; Wexler, 2020c). Student-centered learning and using student thinking are both found in the moment of instruction with the evidence established through formative assessment practices (Athanases & Achinstein, 2003), which are shown to significantly improve student engagement and learning outcomes when embedded in instructional practice (Wiliam, 2018). Student-centered learning refers to addressing “the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students and groups of students” (The Glossary of Education Reform, 2014). Using student thinking is the process of eliciting student thinking (what students are doing and saying that provides clues into their thinking), making sense of their thinking, and using that information to move the student’s thinking forward (Sherin & Lynn, 2019).

Historically, the heart of school reform to make these shifts in teaching and education is building teacher capacity (Stoll et al., 2006). Through educational research, a process that has been proven to work in increasing teacher capacity for school reform is through mentoring of novice teachers (Athanases & Achinstein, 2003; Feiman-Nemser et al., 2014; Hope et al., 2022; Orland-Barak & Wang, 2021; Stanulis & Brondyk, 2013; Wexler, 2020a).

Additionally, educational reform plus legislative work have pushed for summative assessments to tell the quality of the teacher and the efficacy of the school; it stands to reason that developing assessment literacy in teachers is vital (Center for the Study of Teaching and Policy, 2001; Popham, 2020; NCEE, 1983; U.S. Department of Education, 2002; U.S. Government, 2015; Weisberg et al., 2009). Popham (2020) defined assessment literacy as consisting “of an individual’s understanding of the fundamental assessment concepts and procedures deemed likely to influence educational decisions” (p. vii). Popham (2011) emphasized the need for teacher candidates to have an ample amount of training in assessment

literacy. Popham (2018) also stated that teachers are more likely to improve student learning when they are assessment literate. Similarly, Stiggins (1999) said classroom assessments dictate the quality of instruction in that classroom. Assessment literacy encompasses three major methods of assessment, diagnostic assessment, summative assessment and formative assessment. Diagnostic assessments evaluate students' strengths, weaknesses, knowledge and skills before their instruction. Summative assessments are “assessments that provide evidence of student achievement for the purpose of making a judgment about student competence or program effectiveness” (Chappuis, 2015, p. 4). Formative assessments are “formal and informal processes teacher and students use to gather evidence for the purpose of informing next steps in learning” (Chappuis, 2015, p. 3). Black and Wiliam (1998, 2004) have specifically suggested formative assessment is an advantageous practice for increasing learning and achievement and teachers need living examples of formative assessment practices in action. Furthermore, Wiliam (2017) stated, “the shorter the assessment-interpretation-action cycle becomes, the greater the impact on student achievement” (Wiliam, 2016). Mertler (2004) found in his research that practical experience is important for using data. The practical experience of teacher candidates with mentor teachers around data use in planning instruction is worthy to study.

This paper examined the research in mentoring teacher candidates, with effective professional development, around formative assessment techniques that elicit evidence of student learning in the moment of teaching for making instructional decisions.

Assessment Literacy

Assessment has become a partner with teaching and has become synonymous with test and measurement. Popham (2018) stated that teachers are more likely to improve student learning when they are assessment literate. Popham (2018, 2020) also stated “assessment literacy consists of an individual's understanding of the fundamental assessment concepts and procedures deemed likely to influence educational decisions” (p.2; p. vii). According to Popham (2020), “educational assessment is a formal attempt to determine students’ status with respect to educational variables of interest” (p. 12). Furthermore, Popham (2020) said assessment “is a broad and relatively nonrestrictive label for the kinds of testing and measuring teachers must do” (p.13).

Assessments have grown in importance after educational leaders at all levels implemented test-based accountability policies in reaction to the report “A Nation at Risk” (NCEE, 1983). The increased focus on school effectiveness, as guided by student assessments and measures, with the No Child Left Behind Act (NCLB) in 2001 and 2015 Every Student Succeeds Act (ESSA) shows a continuing need for greater student achievement (Popham, 2020; U.S. Department of Education, 2002; U.S. Government, 2015).

Despite legislative action, maintaining ongoing student achievement continues to be a problem for underperforming schools. Considering the assessments given to students, the majority of them are summative (Dufour et al., 2008). However, Guskey (2003) stressed classroom assessments can give meaningful feedback to teachers about the effectiveness of their teaching practices. McCrann (2018) furthered the importance of assessment by underscoring that the assessments created by teachers are authoritative enough to create deeper learning and create

a change in instruction. Young and Kim (2010) found teachers' assessment practices, pedagogical views, and the accessibility of assessment data are linked to effective instructional practice in the classroom. Yet, Mertler and Campbell (2005) found many teachers do not feel prepared for assessing the performance of students even though it is one of the most essential responsibilities of a classroom teacher. Many novice teachers do plan for assessing for learning at a much lower level than of their knowing and understanding the variety of methods available (Siegel & Wissehr, 2011). In addition, research points out teachers, especially teacher candidates, are lacking in assessment knowledge and skills (Bennett, 2011; DeLuca & Klinger, 2010). Popham (2011) further emphasized the need for teacher candidates to have an ample amount of training in assessment literacy. These facts give rise to the notion and need for teachers' assessment literacy.

In light of Popham's (2018, 2020) general description of assessment, clarity comes from the specificity of kinds of assessments. Classroom assessments are teacher given or student driven, formative or summative, all utilized for feedback, decision-making, goal setting and planning (Popham, 2009). To differentiate these types of assessments, they are further defined. Summative assessments are "assessments that provide evidence of student achievement for the purpose of making a judgment about student competence or program effectiveness" (Chappuis, 2015, p. 4). Formative assessments are "formal and informal processes teacher and students use to gather evidence for the purpose of informing next steps in learning" (Chappuis, 2015, p. 3). According to Hattie (2012), feedback is a form of assessment and can be used in self-assessment, whether formative or summative. Brookhart (1999) supported that assessments do increase students' levels of achievement and can also raise their motivation to learn (Chappuis, 2015;

Heritage, 2022). To further discuss the formative processes of assessment, a clearer definition is utilized for process enactment.

Formative Assessment

Formative assessment has become a buzzword to describe so many things in education; it is almost losing its impact and significance due to overuse. Formative assessment has been used to name a single assessment, to label strategies for instruction, and even as a theoretical framework (Black & Wiliam, 1998, 2004, 2009). It stands to reason it has several different definitions. In 2018, a task force created by the Council of Chief State School Officers was formed to have consensus on defining formative assessment. The 2018 definition refined the 2006 definition and is as follows:

Formative assessment is a planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of intended disciplinary learning outcomes and support students to become self-directed learners (CCSSO, 2018).

This definition emphasizes that formative assessment must be integrated into the instructional process, not treated as an add-on which is a view echoed by Wiliam (2018), who argues that the greatest learning gains occur when assessment is embedded in responsive teaching.

A way to view the inclusivity in formative assessment is to look at the formative assessment theory framework in Figure 1 (Wiliam & Thompson, 2007; Thompson & Wiliam, 2008; Black & Wiliam, 2009, 2018). The five strategies are integrated within the three statements and correspond with the teacher, peers, and the learner. The framework provides a way to see formative assessment in the moment of teaching.

Figure 1

Aspects of Formative Assessment (Wiliam & Thompson, 2007; Thompson & Wiliam, 2008; Black & Wiliam, 2009, 2018)

The “big idea” is that evidence about student learning is used to adjust instruction to better meet student needs—in other words that teaching is adaptive to the student’s learning needs.			
	Where the learner is going	Where the learner is right now	How to get there
Teacher	1. Clarifying learning intentions and criteria for success	2. Engineering effective classroom discussions and other learning tasks that elicit evidence of student understanding	3. Providing feedback that moves learners forward
Peer	Understanding and sharing learning intentions and criteria for success	4. Activating students as instructional resources for one another	
Learner	Understanding learning intentions and criteria for success	5. Activating students as the owners of their own learning	

In the Moment of Teaching, Checks for Understanding: An Integral Part of Formative Assessment

Checks for understanding are activities designed to be a part of the “rhythm” of the lesson as a way to elicit evidence and monitor student understanding and learning (Heritage, 2022). The purpose is to gather data from these checks to strengthen your ability to adjust and differentiate within your lesson to move your students to the learning intentions (Fisher & Frey, 2014; Heritage, 2022). Checks for understanding are low stakes, not for grades, and are an

efficient way for seeing the learners' ways of thinking, gaining their ideas, and helping the teacher have evidence of learning (Chappuis, 2015; Heritage, 2022; Leenknecht et al., 2021).

Looking back at Figure 1, the checks for understanding techniques are nestled within each of the five strategies and are intentionally selected for the teacher's purpose and for the content being delivered. Checks for understanding are many and vary widely. Wiliam (2018) emphasizes that such strategies, when used intentionally and responsively, are among the most powerful levers for improving student outcomes. Black and Wiliam (1998, 2004) suggest formative assessment is an advantageous practice for increasing learning and achievement and teachers need living examples of formative assessment practices in action.

Checks for Understanding: True Leverage in Feedback

Feedback is information provided to a learner to reduce the gap between current performance and a desired goal (Sadler, 1989). Feedback can be from adults, peers, or self and are classified as internal or external feedback (Clark, 2012). Feedback can also be formative or summative; before, during, or after a lesson; and takes many forms as verbal, non-verbal, written, reports, grades, rubrics, reflection, and the like (Brown et al., 2016; Hattie, 2012; Sadler, 1989). Sadler (1989) emphasizes feedback as a key element in formative assessments. Keeping in mind feedback is an important feature of formative assessment, and there are four levels of feedback that move along a progression: task, process, self-regulation, and self (Hattie, 2012). Hattie (2012) explained task as focused on information, specific and is mostly about correct or incorrect. Feedback at the process level is focused on the processes used to create the product or complete the task. Self-regulation level feedback is focused on the students' monitoring of their own learning processes. The last level of feedback, self, is focused on the self and can be labeled

as praise; noting it is not to be mixed with the feedback prompt (Hattie, 2012). Feldman (2019) stated teachers must use strategies of feedback, and build a community of feedback within the classroom, to equip our students so they are prepared for lifelong learning. Teachers can be supported in understanding and using formative assessment in lesson planning and reflection (Mills & Harrison, 2020).

While checks for understanding elicit valuable data about student learning and the efficacy of teaching that help teachers adjust in the moment, they are not intended to be a ‘check’ and done. Checks for understanding become high leverage when they are used as a first step in giving feedback for student learning (Sadler, 1989; State Collaborative on Assessment and Student Standards, 2008; Hattie, 2012). When students are given feedback, their self-regulation in their own learning is activated (Frey et al., 2018). The student may be scaffolded in their understanding, may directly address their misconceptions, revise their work, use it to practice the lesson skill, or for correcting errors. And this process continues to cycle within the lesson and after the lesson to set new goals for learning.

Self-assessment Within the Context of Feedback

Fisher and Frey (2017) said the need for students to learn skills for self-direction; to gauge their progress so they can benefit from personalized learning. Frey et al. (2018) highlighted self-regulation is at the heart of managing one’s own learning and is leveraged through being an assessment-capable learner, which is utilizing feedback, goal setting, self-judgment, and motivation (Fisher & Frey, 2018). Ramdass and Zimmerman (2008) found students that assess what they know and what they do not know will become greater learners that are self-regulated. They also state self-assessment is a key self-regulatory process. Zimmerman

and Schunk (2011) stated learners engage in a self-oriented feedback loop (assessment) and use it to regulate their learning by setting personal goals. Students become their own source of feedback by identifying the gap between where they are currently in their learning and where they are going when they use self-assessment (Schimmer, 2016). Feldman (2019) advocated motivating students by supporting intrinsic motivation and not for a point system, and offered examples of feedback strategies that include self-evaluation, peer evaluation, and self-reflection. He suggested a student tracker for students to use in ongoing self-assessment. He stated student trackers help students build metacognitive thinking, self-regulation, soft skills along with supporting them for goal setting, adjusting their strategies, and reflecting on their progress.

Frey et al. (2018) explained Hattie's calculated effect size for one year of growth for students is .40. Frey et al. (2018) stated an effect size of motivation is .72, goal setting effect size is .56, self-regulation effect size is .64 and feedback effect size .75. Using these embedded in self-assessment couples its benefits on student learning and has an effect size of 1.44, meaning that it more than triples the speed of learning (Frey et al., 2018). Hattie (2012) was clear to express feedback should not be coupled with praise for feedback to be beneficial. Ruiz-Primo and Li (2013) shared many studies around the effect size of feedback, including self-assessment, had some varied results and noted it is the variation between studies and how feedback is defined.

As Wiliam (2018) asserts, formative assessment, when used well, represents one of the most impactful strategies available for improving both teaching effectiveness and student achievement. To implement these assessment practices effectively, teachers need to engage in

targeted training and ongoing professional learning (Bennett, 2011; DeLuca & Klinger, 2010; Popham, 2011).

Teacher Learning

Schools are under much pressure to change. School reform must consider teacher quality and building teacher capacity since standards-based reform and school restructuring fall short in meeting the needs of students (Chenoweth, 2021). Teacher quality can be addressed through learning (National Council for Accreditation of Teacher Education [NCATE], 2001; Polikoff, 2013). The art and science of helping adults learn is andragogy (Knowles, 1980). Adult learners bring significant lived experiences and varied backgrounds to their learning (Knowles, 1978; Egan et al., 2023). They also bring clear goals to their learning and have a need to view their time and academics as having immediate application (Jarvis, 2003). Adult learning processes focus on problem solving and self-directed inquiry/learning (Knowles, 1968, 1978, 1980; Drago-Severson, 2009a).

Teacher learning within the adult learning process considers pre-service teachers, teacher candidates, novice teachers, and in-service teachers. Teaching is a complex process (Feiman-Nemser, 2001b, 2010; Grossman et al., 2009) and teacher competencies (knowledge, skills and attitudes) are dynamic (O'Flaherty & Beal, 2018). Teacher candidates and novice teachers have to build understanding in many facets of education from the structures of education to meeting individual student needs within the whole class of students (Aguilar, 2013). Teachers need and have multiple types of knowledge that work together to inform teaching (Schachter et al., 2016),

however, teacher professional development training often only target teachers' content knowledge (Cox et al., 2015).

Confounding the complexity of teaching that impacts professional development is that teachers are slow to change (Stanulis et al., 2019) and have embedded beliefs and values within their teaching (Allen et al., 2018; Kohen, 1990; Norman & Feiman-Nemser, 2005; Wang, 2010). Fabiano et al. (2018) found teachers made changes using a given strategy for behavioral management after a brief professional development coaching session, but in the same process for an instructional strategy, did not make observable instructional strategy changes. Kennedy (2006) established within teacher beliefs and values, above all other classroom demands, teachers based decisions first to avoid distractions and maintain lesson momentum. Given these factors, professional development needs review in light of school reform.

Professional development is “those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might in turn, improve the learning of students” (Guskey, 2000, p.16). Professional development has many forms and logic dictates all are not created equal: some are effective and some are ineffective. In addition, there are barriers to utilizing effective professional development.

Research states one barrier to effective professional development is cost (Darling-Hammond et al., 2017; Garet et al., 2001). Darling-Hammond et al. (2017) added barriers including lack of materials and lack of classroom management, as well. Another potential barrier is the unique needs for professional development found in schools with high poverty (Stosich, 2016). Lastly, a potential barrier is being able to evaluate professional development to ensure it is truly effective (Guskey, 2000).

Characteristics of Effective Professional Development

Effective professional development is defined as “structured professional learning that results in changes in teacher practices and improvements in student learning outcomes” (Darling-Hammond et al., 2017, p. 5). Being defined this way, effective professional development must consider the needs of an adult learner. Cohen’s (1990) essay highlighted the difficulty for teachers to learn a new practice of instruction. The teachers’ past, teaching and changing to new practices from building on past practices, institutional constraints, and the teachers’ judgements about what they have done and what they still may have to do are important features of what makes teacher learning difficult (Cohen, 1990). Cohen (1990) found what made teacher learning difficult was the complexity of new practices and putting them into practice along with a lack of support and guidance, especially using an old framework for professional development (Darling-Hammond et al., 2017).

As research has emerged over the years, so have other models of professional development. Reform professional development models that have shown to be effective include but are not limited to; professional learning communities (DuFour et al., 2016), mentoring and coaching (Aguilar, 2013; Izadinia, 2016), lesson study (Lewis et al., 2012), networks and work groups (Jacobs et al., 2007), and blended case study with modified lesson study design (Mills & Harrison, 2020).

Professional Development Through Networks and Work Groups

Networks and work groups are groups of educators collaborating together around a particular problem of practice or idea designed to improve their craft of teaching (Hung & Yeh, 2013; Jacobs et al., 2007). Networks and work groups have several characteristics of effective

professional development and are content focused, collaborative, include coaching and expert support, provide feedback and reflection, and may be of sustained duration (Darling-Hammond et al., 2017). Jacobs et al.'s (2007) quantitative study involving 89 teachers found that professional development in work groups has a positive effect on both teacher learning and student achievement. Childress (2014) shared her qualitative reflections and found teachers participating in job-embedded work groups who participated in observations with reflections that are connected to their state evaluation system are beneficial professional development. It stands to reason these are another viable option for schools to reform their practices of professional development.

Professional Development Through Mentoring and Coaching

The use of mentoring and coaching within education has gained much ground with its unique partnership capabilities. Mentoring is guiding, teaching, influencing and supporting another teacher where there is shared power and autonomy within a partner relationship (Ellis et al., 2021). Certo (2005) signified the importance of mentoring as a two-way dialogic relationship in which the mentor and mentee both espoused self-development as reflective practitioners in collaborative work (Ellis et al., 2021). This reciprocal relationship is future focused and grounded in growing in the profession (Thomas et al., 2015). Further, mentoring is a process that has been defined as working with teacher candidates, and even in novice teachers' first year to their first three years (Ellis et al., 2021; Spooner-Lane, 2017). Mentoring includes coaching (Thomas et al., 2015). Coaching is school-based professional development guided by the goal of meeting the schools' specific instructional learning needs (Neufeld & Roper, 2003). Coaching can address whole-school organizational improvement or can address improving teachers'

instructional strategies in specific content areas through change (Desimone & Pak, 2017; Neufeld & Roper, 2003). This supportive relationship is present focused, as well as, how to improve for the future (Thomas et al., 2015).

Mentoring and coaching combines many elements of effective professional development and are content focused, active learning, collaboration, models of effective practice, coaching and expert support, feedback and reflection, and is of sustained duration (Desimone & Pak, 2017; Hudson, 2013). Mentors' values and behaviors have a governing influence in the partnership and in the novice teachers' experience (Rozelle & Wilson, 2012). Hudson's (2013) mixed methods study found not only benefits for the mentee but also the mentors. The qualitative data found mentors themselves had professional development in the process of mentoring others. The mentors found stronger pedagogical knowledge, communication skills and developed leadership skills (Hope et al., 2022; Hudson, 2013). Another benefit is increased organizational commitment of novice teachers with quality mentoring (Hong & Matsko, 2019) as well as renewed commitment of mentors (Feiman-Nemser et al., 2014; Hope et al., 2022). Aguilar (2013) established coaching benefited mentees by encouraging collaborative, reflective practices; learning more deeply, frequently, and consistently; improving their capacity to reflect and apply their learning to their work with students and also with peers; increasing their use of data to inform practice; and significantly improving new teachers' measures of teacher practices and student outcomes. With these benefits, the cost effectiveness for mentoring and coaching can be fairly high when compared to the cost of traditional professional development (Aguilar, 2013).

Izadinia (2016) studied the components of a good mentoring relationship. Izadinia (2016) found the components are encouragement and support; open communication based on trust and

respect; feedback that was constructive and honest; and factors such as availability, teacher knowledge and experience, and inspiring role models. This study also revealed mentors were significant in building novice teacher identity and close emotional connection between the mentor and mentee means greater outcomes (Izadinia, 2016).

Given what components make a good mentoring relationship, it also brings discussion for what constitutes a good mentor. Much like teaching, mentoring must be learned and is a complex practice (Schwille, 2008; Stanulis et al., 2019) and mentors form a professional and mentor identity (Andreason et al., 2019). This pushes back on the misconception that a good teacher makes a good mentor (Stanulis & Brondyk, 2013). Mentors learn within the context of the work (Langdon & Ward, 2015) and context matters for mentoring (Ambrosetti & Dekkers, 2010). However, Salas et al. (2018) has identified transportable teamwork characteristics (coordination, communication, and adaptability) that agreed with Izadinia's (2016) study. There is no formal curriculum for mentors, however, there has been work for formal education for mentors, even for teacher educators at the higher education level (Ping et al., 2018). In a cross-case analyses, Athanases et al. (2008) outlined three elements of an effective mentor curriculum and mentor development: the need to adapt generic mentoring scaffolds to local contexts; the merits of grounding mentor curriculum in student learning; and the values of equipping mentors with inquiry skills to study ways to adapt mentor curriculum as needed.

Another concern with professional development involving coaches and mentors revolves around what to focus on when coaching and mentoring (Athanases et al., 2008). Research has been done to support this need and to bring clarity to the practices within the school reform. Grossman et al. (2009) proposed to organize teacher education around a core set of practices to

support teacher educators in the complexity of teaching, as well as supporting key components of teaching. The core set of practices Grossman et al. (2009) presented were creating a productive classroom environment; learning about student understanding, which included eliciting student thinking and anticipating student responses; and orchestrating classroom discussions. These core practices would develop knowledge, skill and professional identity within the process of learning to teach, that in its principles, are accessible for novice teachers to begin to master with support (Grossman et al., 2009). They went on to suggest that novice teacher support come from integrated field experiences, coaching, and coordinated efforts with cooperating teachers (Grossman et al., 2009). These core practices have been defined, refined, and used in multiple contexts for research. Targeted feedback is a strategy used by mentors. Research has shown targeted feedback on a specific core practice increased a novice teacher's use of the core practice (Cash et al., 2022; Wexler, 2020b). These are the cornerstones of practice-based theory to bridge the gap of theory and practice (Darling-Hammond, 2006; Grossman et al., 2009; Jensen et al., 2018; Orland-Barak & Wang, 2021; Stanulis & Brondyk, 2013). As the core practices have been refined, a list of these 19 practices are called high leverage practices (TeachingWorks, 2023).

Lastly, research has done some work in answering what tools are needed in the mentoring process. Tools, scripts, and routines support the work for developing mentors (Athanasios et al., 2008). Mentors can use tools to help focus mentees' attention on student learning (Helgevold et al., 2015) and can prove to improve coach's instructional practices contribute to beliefs of improved practice (Hope et al., 2022). Adapting and adopting scripts within the mentor curriculum and scaffolds prove beneficial (Athanasios et al., 2008). Using tools, scripts, and routines blend into educative mentoring as professional development.

Professional Development Through Specific Mentoring: Educative Mentoring

Langdon and Ward (2015) defined types of acquiring knowledge. The three types of acquiring knowledge are knowledge-for-practice, knowledge-in-practice, and knowledge-of-practice. Knowledge-for-practice is formal knowledge and theory that teachers are taught, and knowledge is simply passed on to others. Knowledge-in-practice is the practical knowledge teachers gain through experience. Knowledge-of-practice is the analysis of both theoretical and practical knowledge (Cochran-Smith & Lytle, 1999; Langdon & Ward, 2015). Traditional mentoring has been a system of the handing down of knowledge to the mentee (Dennen & Burner, 2008). It assumes passing on the knowledge-for-practice is what is needed to learn (Langdon & Ward, 2015). Teacher mentoring is past the “sink or swim” approach to teaching which relies on knowledge-in-practice (Norman & Feiman-Nemser, 2005). Changing the mentor and mentee to a team better suits the knowledge-of-practice approach where knowledge is gained while practicing (Langdon & Ward, 2015; Salas et al., 2018). The team collective is often greater than the individual (Salas et al., 2018). An effective model for this mentoring is cognitive apprenticeship (Dennen & Burner, 2008). “Cognitive apprenticeship is the process that utilizes cognitive and metacognitive skills and processes to guide learning” (Dennen & Burner, 2008, p. 426). Metacognitive training improved the quality of decisions made in the experimental group of math students compared to the other students (Dennen & Burner, 2008). Making the unseen in teaching is an important feature of learning to teach (Collins et al., 1991; Darling-Hammond, 2006; Dennen & Burner, 2008).

Educative mentoring was introduced by Feiman-Nemser (1998, 2001b). Educative mentoring is co-learning while creating growth-producing experiences for a novice teacher

(Stanulis et al., 2019) and employs the cognitive apprenticeship through specific mentoring activities to make the unseen seen with the mentor being a co-thinker (Feiman-Nemser, 2001b; Stanulis et al., 2019). Wexler (2020a) added to this including mentor teachers are a model for learning from practice and provide the novices opportunities to experiment in practice. In addition, when learning a new skill, teachers become more adept practitioners when they try the new skill in practice, reflect, and can be improved when peer-supported (Joyce & Showers, 2002).

Darling-Hammond (2006) claimed teacher programs are educative especially when they employ systematic reflection on student learning with opportunities to retry and to improve. An important feature of educative mentoring is that student teachers need authentic learning activities with reflection to consider the professional choices built on theories (Schwille, 2008; Andreasen, 2023). This makes way for mentor teachers as a key in professional development of student teachers (Leshem, 2012). The research supports the mentors coaching teacher candidates by rehearsal, in-the-moment coaching, and reflective discussions are effective (Averill et al., 2013; Gardiner, 2016a; Stoetzel & Taylor-Marshall, 2022). Mentors were also found to be successful with supporting novice teachers in shifting their teacher practice when the mentor had a targeted practice, they sought support to become an effective mentor and met the mentee where they were but kept the goal in mind (Schwille, 2008; Stanulis et al., 2014).

Schwille (2008) brought to the forefront, in the cross-national study of 26 mentor and novice pairs, that educative mentoring is a professional practice. This study brought common language and organized distinctive practices that mentors enact to support their novice mentors to learn to teach. The temporal framework conceptualized educative mentoring practices that

happen inside the action of teaching (with students present) and outside the action of teaching (students not present), and they are flexible and integrated practices to create productive changes in new teachers' practice (Gardiner & Weisling, 2015; Schwille, 2008). Schwille (2008) labeled these practices as follows: Coaching and Stepping In, Teaching Together (collaborative teaching), Demonstration Teaching, Brief Interactions or Mentoring on the Move, Mentoring Sessions and Debriefing Sessions, Co-planning, Videotape Analysis, and Writing (journals). Building on this research, Stanulis et al. (2019) found in a qualitative study of mentors that mentors benefit from professional development focused on concrete practices that include mentor's talking about and enacting co-planning, observing and debriefing, and analyzing student work (Gardiner, 2016b). Likewise, these educative mentoring activities mattered and have proven to support the learning to teach of novice teachers (Wexler, 2020c). Highlighted in these practices of educative mentoring, debriefing has been found to sustain training effects and continues learning beyond the event (Salas et al., 2018). In addition, the educative mentoring practice of focused feedback for teacher candidates was crucial for improving their instruction, as well as sustained for the teacher candidates in their first year of teaching to continue seeking feedback for the purpose of improving their instruction (Hudson, 2016; Wexler, 2020b). Noting these are mentoring practices outside the action of teaching, some discussion is needed for what is known for mentoring inside the action of teaching.

Mentoring inside the action of teaching, also known as mentoring in the moment, has been established to be educative (Marciano et al., 2019; Schwille, 2008). Nonetheless, little is known about mentoring in the moment (Marciano et al., 2019), nor has it been fully utilized (Gardiner, 2016b; Gardiner & Weisling, 2015). Gardiner and Weisling (2015) noted another part

of the reluctance to utilize in the moment practices could be in part to existing school norms or beliefs that do not facilitate educative mentoring.

Given that some practices of in the moment mentoring are not abundantly utilized, the practices have been expanded (Marciano et al., 2019). Marciano et al. (2019) stated:

Mentoring in the moment occurred when the mentor teacher and student teacher made decisions about whether and how to adjust course during lessons to better support student learning; and highlighted [mentor-mentee teaching] strengths and recognized weaknesses across multiple and distinct moments” (p. 134).

Mentoring in the moment has also been enacted during teacher modeling and taking the stance of a learner (Marciano et al., 2019). This allows for a more thorough view of what educative mentoring can look like in the moment of teaching.

Figure 2

Educative Mentoring Practices Elaborated (Gardiner, 2016a, 2016b; Marciano et al., 2019; Schwille, 2008; Stanulis et al., 2019; Wexler, 2020b)

Educative Mentoring Practices, Elaborated (Gardiner, 2016a, 2016b; Marciano et al., 2019; Schwille, 2008; Stanulis et al., 2019; Wexler, 2020b)
<p>‘Inside’ practices are predicated on a belief that some learning is better attained in ‘real time’ via intentional scaffolding (Schwille, 2008).</p> <p><u>‘Inside’ the action mentoring includes:</u></p> <p><i>stepping-in</i>; a mentor ‘steps in’ during instruction to provide cues or feedback (Schwille, 2008)</p> <p><i>collaborative teaching</i> (coteaching); involves teaching together in a predetermined fashion (Schwille, 2008)</p> <p><i>demonstration teaching</i>; planned mentor modeling of a particular practice or strategy that includes an observational focus for the new teacher (Schwille, 2008)</p> <p><i>transparent decision-making</i>; deciding together about whether and how to adjust course during lessons to better support student learning (Marciano et al., 2019)</p> <p><i>taking the stance of a learner</i>; highlighting and using strengths and/or weaknesses of mentor-mentee to build learning (Marciano et al., 2019)</p>
<p><i>flexibility, humility, a desire to learn and improve</i>; unique characteristics that enable educative learning to occur in the moment of teaching (Marciano et al., 2019)</p>
<p>‘Outside’ practices provide time for problem-solving, and guide analysis and reflection into teaching and learning. (Schwille, 2008)</p> <p><u>‘Outside’ the action mentoring includes:</u></p> <p><i>brief interaction</i>; quick conversation: “bounced” ideas, comments, and suggestions among mentors/mentees when having a few minutes together (Schwille, 2008)</p> <p><i>debriefing session</i>; regularly scheduled sessions for guided in-depth reflection, self-assessment and analysis (Schwille, 2008)</p> <p><i>Co-planning lesson</i>; mentor and the novice work together to share the thinking and decision-making process for planning, the <i>how</i> and <i>why</i> of instruction lesson planning. It includes thinking beyond the lesson plan, exploring what students walk in with to a lesson, and focusing on what teachers want students to walk out with from a lesson (Schwille, 2008; Stanulis et al., 2019)</p> <p><i>analyzing videotape</i>; understand teacher actions or to see how students responded to teacher actions through video (Schwille, 2008)</p> <p><i>journal writing</i>; record and respond to questions and insights (Schwille, 2008)</p> <p><i>demonstration teaching</i>; modeling a practice when children are not present (Schwille, 2008)</p> <p><i>analyzing student work</i>; encouraging professional discourse about teaching and learning, engaging teachers in reflection, and moving the focus from teaching performance to student learning. It includes reflecting on instructional moves, figuring out what students do not understand, and planning what to do next (Stanulis et al., 2019)</p> <p><i>observation and debriefing</i>; using evidence to analyze pupil learning while also helping the student teacher learn from her teaching and plan future instruction (Gardiner, 2016b; Stanulis et al., 2019)</p> <p><i>focused feedback</i>; debriefing based on data collected on a focused purpose (Wexler, 2020b)</p> <p><i>peer observation</i>; focused purpose observation of another novice implementing the needed practice (Gardiner, 2016b)</p> <p><i>rehearsal</i>; an approximation strategy where a lesson is enacted verbatim in which the teacher has and uses all materials and would position their bodies in the same ways they intend for the lesson. Mentors pause the rehearsal and provide feedback and coaching (i.e., modeling a practice and problem solving) at the points they deem appropriate. (Gardiner, 2016a)</p>

Shifts in mentoring practices to an inquiry knowledge-of-practice can happen but take time and do not come easy (Langdon & Ward, 2015). It is in part due to mentors needing to learn and mobilize mentoring practices over time (Schwille, 2008). It is also in part due to the underlying expectations and beliefs about teaching and mentoring of the mentors and of the mentees (Izadinia, 2016; Lesham, 2012; Wang, 2010). The decisions that were made by mentors for when and how to intervene in mentee practice surfaced the conflicts in their beliefs and values as a teacher and those as a mentor (Jaspers et al., 2014; Jaspers et al., 2018; Wang, 2010). When part of these tensions was displayed as interventions of mentor teachers while the mentee teacher was teaching, they intervened primarily for guiding pupils (Jaspers et al., 2014; Jaspers et al., 2018; Wang, 2010). Other times, mentors intervened for the mentee's benefit (Jaspers et al., 2018). This spotlights the relationship between the mentor and mentee is interconnected and is not easy to separate the jobs of the roles as co-thinkers from the contextual support and emotional support (Ambrosetti & Dekkers, 2010; Orland-Barak & Wang, 2021). Tensions felt by mentor and mentee that drive the how and why in their decision-making, can be mediated through the educative practice of co-planning (Wexler, 2019). The shifts in practice happen over time but can be further supported.

In addition to practices to support shifts in practice and to learning educatively, mentor-mentee characteristics do as well. Mentor-mentee characteristics that support educative learning to occur are flexibility; humility; and a desire to learn and improve (Marciano et al., 2019).

Evaluating Professional Development

Guskey (2000) stated professional development needs to be able to be evaluated for being effective. Wei et al. (2009, pg. 3) defined ““high quality” or “effective” professional

development as that which results in improvements in teachers' knowledge and instructional practice, as well as improved student learning outcomes." Likewise, Archibald et al. (2011, p.3) said for it to be effective:

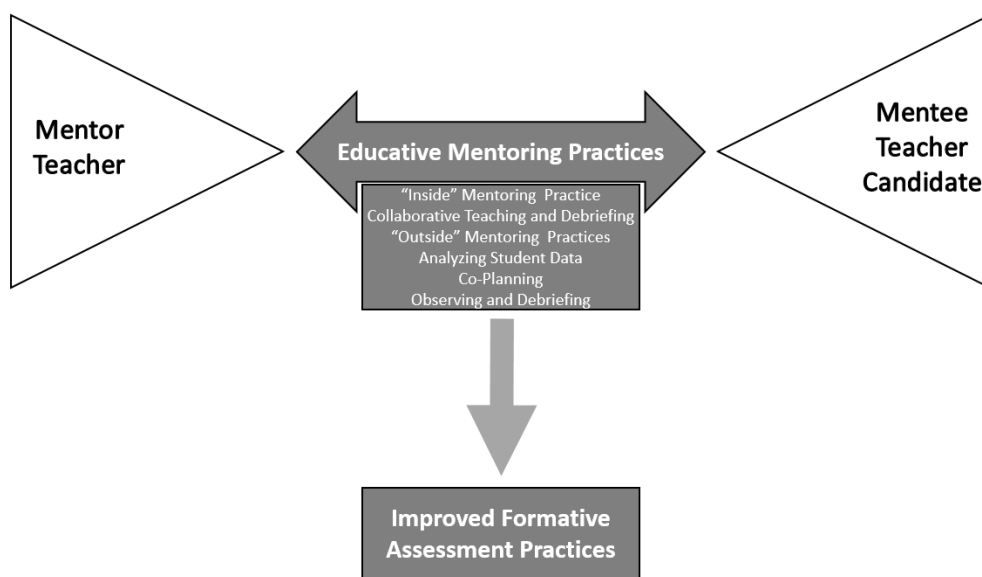
...professional development must be delivered in a way that yields direct impact on teacher practice. In order to influence student achievement, the teacher practice designated for change must clearly relate to student learning so that professional development will result in more students learning the content at higher levels. (p. 3)
Guskey (2000) created a model for evaluation of professional development before

hosting it, and the model is inclusive as formative and summative in nature to guide the professional development process and make adjustments as necessary. Guskey's (2000) model is a table of four main questions, purpose, and evidence to use as a guide to evaluate professional development for support of effectiveness and justification. Hunzicker (2011) designed a checklist as a tool for education to use for designing a more effective professional development. Hunzicker (2011) included key components as Darling-Hammond et al. (2017) captured. The checklist included the key components of supportive, job-embedded, instructional-focus, collaborative, and ongoing (Hunzicker, 2011).

Conceptual Framework

Figure 3

Conceptual Framework Visual



The conceptual framework for my qualitative study centers on the theory of educative mentoring for improving instruction (Schwille, 2008; Gardiner, 2016b). I utilize the theory in my study by the relationship designed to be collaborative and reciprocal through the educative mentoring practices. Each of these educative mentoring practices have tools, scripts, or routines that are focused on formative assessment in the moment of teaching.

The educative mentoring practices are designed to utilize making the mentor's thinking and decision-making visible and anchored in Vygotsky's Zone of Proximal Development to move (scaffold) the mentee along in their knowledge of practice that they wouldn't otherwise do alone (Dennen & Burner, 2008; Lave & Wenger, 1991; Vygotsky, 1978). The "Inside"

mentoring practice is Collaborative Teaching and Debriefing. This mentoring practice is planned coteaching, where both mentor and mentee are responsible for a part of the lesson, with debriefing afterwards to have an in-depth discussion of the event. The “Outside” mentoring practices are Analyzing Student Data, Co-planning, and Observing and Debriefing. Analyzing Student Data is a tool to systematically look at student work to create student data for the purpose of making instructional decisions. Co-planning is a way to share the decisions made about the why and how of student learning for lesson planning. The Observing mentoring practice is for the mentee or the mentor to observe for a targeted reason, specifically formative assessment in the moment of teaching. Then, during Debriefing, this focused observation is used as the center of a guided discussion.

Each mentor is a part of the Mentor Study Group where, in a cyclical process, they learn from the researcher the educative mentoring practice, they then engage in the learned educative mentoring practice with their mentee and come back together at their next meeting and discuss what went well and what to do next.

These educative mentoring practices being enacted within the mentor-mentee reciprocal relationship produce outcomes in improved formative assessment practices for both mentor and mentee.

Summary

Novice teachers need support in learning the complex work of teaching (Feiman-Nemser, 2001b; Feiman-Nemser, 2010; Grossman et al., 2009) and need to build their assessment literacy practices (Center for the Study of Teaching and Policy, 2001; Marshall, 2013; Popham, 2011, 2020; NCEE, 1983; U.S. Department of Education, 2002; U.S. Government, 2015; Weisberg et

al., 2009) since they have been found lacking in assessment knowledge and skills (Bennett, 2011; DeLuca & Klinger, 2010). Specifically, they need to build formative assessment practices to check student understanding within the lesson to meet the demands of the diverse students they serve and meet the students' varied needs (Black & Wiliam, 1998, 2004; Chappuis, 2015; Heritage, 2022; Popham, 2011, 2018; Stiggins, 1999; Wiliam, 2017, 2018). To do this, novice teachers need quality professional development, especially in putting theory and practice together (Darling-Hammond, 2006; Drago-Severson, 2009b; Grossman et al., 2009; Jansen et al., 2018; Orland-Barak & Wang, 2021; Stanulis & Brondyk, 2013). Mentoring, specifically educative mentoring, is proven to be quality, effective professional development (Athanasios & Achinstein, 2003; Feiman-Nemser et al., 2014; Hope et al., 2022; Orland-Barak & Wang, 2021; Schwille, 2008; Stanulis & Brondyk, 2013; Wexler, 2020a). Uniquely, teacher residency is conceived as one of the most influential experiences for teacher candidates based on a literature review from Clarke et al. (2014). This influence is contingent on the mentor teacher in creating and offering opportunities which are constructed for the novice teacher (Grossman, 2010). Providing a mentor teacher group in which mentors learn (Andreasen et al., 2019; Schwille, 2008; Stanulis et al., 2019), they can develop educative mentoring strategies which include focus work in formative assessment practices that provide deliberate learning experiences for the novice teachers (Baricaua Gutierrez, 2016, Chappuis, 2015; Mertler, 2004). Much of this work will be using tools, scripts, and routines blended into the educative mentoring for supporting mentors and mentees (Athanasios et al., 2008; Helgevold et al., 2015). This study considered how teacher candidates built their assessment literacy skills in their teacher residency semester. Likewise, this study considered how mentor teachers understood educative mentoring over time

with teacher candidates during their teacher residency semester. Next, the study methodology used to try and answer these research questions will be discussed.

CHAPTER III: METHODOLOGY

Research has found assessment literacy, in general, (Center for the Study of Teaching and Policy, 2001; Popham, 2011, 2020; NCEE, 1983; U.S. Department of Education, 2002; U.S. Government, 2015; Weisberg et al., 2009), and more specifically formative assessment within the lesson, are important in teacher efficacy and meeting diverse student learning and their needs (Black & Wiliam, 1998, 2004; Chappuis, 2015; Heritage, 2022; Popham, 2011, 2018; Stiggins, 1999). Research has also found teacher candidates, as novice teachers, need professional development in assessment literacy (Bennett, 2011; DeLuca & Klinger, 2010) and note their teacher residency experience is important in their growth (Darling-Hammond, 2006; Grossman et al., 2009; Jensen et al., 2018; Orland-Barak & Wang, 2021; Stanulis & Brondyk, 2013). More needs to be known about how mentors can support teacher candidates' formative assessment practices during teacher residency and how mentors understand educative mentoring focusing on formative assessment and my study adds to that need in the research.

In this chapter, I outline my dissertation plan using an embedded single-case study design. This chapter will describe my research questions, study context, methodology, data collection plans, and data analysis plans.

Research Purpose and Research Questions

The purpose of this qualitative study was to describe how educative mentoring can support teacher candidates' formative assessment practices and how their mentors enacting educative mentoring practices understand their roles. With this purpose in mind, my research questions are:

1. How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester?
2. How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester?

Subjectivity/Positionality Statement

One of the most influential reasons I am currently working in the field of public education is being raised to believe each person has something to offer in this world and should leave the world better than it was before they were there. This belief shaped me to value generosity and compassion. These have guided my life choices and greatly influenced my work as a teacher.

As my career in education progressed, I have been applying what I have learned in my graduate studies. I pursued further education because I wanted to grow personally. This was not just for me but also to benefit my students and fellow teachers. My values of generosity, compassion, responsibility and growth have directed how I have spent my time, skills, and resources. Here are a few of those decisions that have brought me to my interest in this study.

I had nearly fifteen years of experience in early childhood education when I decided to become a public-school teacher through my state's voluntary pre-kindergarten (VPK) program in partnership with Head Start. I believed working with children and families during these early years could impact their educational journey positively. However, my experiences being a new teacher in public education taught me great compassion for all new teachers. I realized there was a big gap between theory and practice. Navigating new systems and expectations was tough. My

efforts alone weren't enough; I had to reconcile inner conflicts and develop a more strategic way to improve my teaching. This journey taught me to move from trial-and-error to careful planning and reflection. I saw how setting focused goals, backed by research and regular adjustments, could bring about real progress. It has made the difference in my own classroom, and I have found that offering other teachers support in the same fashion bolsters their agency.

I soon understood that my degrees coupled with my past experiences in early childhood education didn't fully prepare me for the challenges of public-school teaching. New teachers, including myself, often received little support and had minimal resources. This situation mirrored the stereotype: new teachers get the leftovers, the least desirable tasks and the least amount of help. These early years fueled my desire to push for better support for new teachers who deserve more than the bare minimum.

During this time, the district assigned me a mentor. My mentor was an experienced teacher and came in once a quarter to check in and bring me a small goodie bag. She was a great emotional support to encourage me to continue working hard and just do the best I can. My mentor provided me with a feeling of not being alone in my new journey struggles. However, I did find myself still in the same place with my new teacher struggles and no better answers. My moments of feeling at a loss on how to be better in my classroom motivated me to seek out fellow teachers and ask for their advice. In a journal entry from that first year, reads "mentors need to be more than a pat on the back and a 'you can do it' cheer but needs to be someone to help guide you through making decisions in a logical way with their expertise."

When I realized the state voluntary pre-k program was moving within the zoned schools and learned positions were being eliminated from the pre-k program, I chose to transfer within

the same school district into Green Row Elementary—a small Title I school. I liked the idea of a close-knit environment where supportive relationships could grow. It was at my new school, Green Row Elementary, that I began my new role as a second-grade teacher. Green Row Elementary experienced high teacher turnover and a high number of new teachers, as is common in urban Title I schools. Seeing the need for structured support, I proposed a school-based mentoring program for new teachers. For two years, we received positive feedback from teacher surveys. However, my co-leader and I realized we weren't fully meeting the instructional needs of new teachers. In its third year, the program ended when the district started a larger mentoring initiative. Despite this, I continued to mentor new teachers informally and lead mentor meetings.

At Green Row, I also worked with college students doing their field placements. These experiences deepened my understanding of the need for supportive relationships and mutual learning. I liked having teacher candidates, believing that a meaningful partnership could be beneficial for both of us. I saw these moments as chances to provide the kind of guidance and support I once needed.

It was during my time at Green Row Elementary I began another graduate studies program at the local university. I knew if I wanted to make a change to make teaching a better profession, specifically for new teachers so students can benefit, I would need quality learning and then apply that knowledge practically.

Eventually, I moved to Cheery Cove Elementary for logistical reasons and now teach third grade. I continue to use what I learned in graduate school to improve student outcomes and support my colleagues. As a third-grade teacher at Cheery Cove Elementary, I have found a place where teachers work with other teachers to promote student growth and learning in many

different capacities. I've used my leadership skills to guide my grade-level team in analyzing data during PLC meetings and have mentored both a new teacher and a teacher who is new to the state. I've welcomed many visitors, university students, and observers into my classroom to see student engagement and learning firsthand.

During my years of public-school teaching, I have learned the importance of data-driven learning both in instruction and in meeting student needs. I believe my success as a teacher comes from building strong relationships with students and using assessments to guide instruction, personalize it, and change strategies as needed. I am dedicated to improving how I use assessment data. I am confident I can become more effective using available assessment methods and be more strategic to direct their usefulness.

Over time, I have cultivated a belief that building relationships is “high tide lifts all ships”. As I have worked with fellow colleagues, I have grown an appreciation for “paying it forward” and found necessity in using the collective to make the individual stronger. This belief has driven me to mentor, train, and support teachers in my school and beyond. Many of my experiences mentoring new teachers have been invigorating and additionally discouraging. The majority of the new teachers I have been with were not able to discuss assessments nor use the assessments for making instructional decisions before, or after a lesson and rarely in the moment of teaching. Out of the 17 teacher candidates I've worked with, only two showed the ability to use formative assessment during instruction, beyond basic tools like exit tickets.

I am more committed after these experiences to help improve the preparation and support for new teachers. I begin this research to help create a better system that provides tools and relationships to support their growth.

Methodological Approach

My epistemological assumption is that adults construct meaning and make sense of things out of their own experiences and interactions within their social context. Reality is socially constructed and there is no single reality, only multiple interpretations of an event (Merriam & Tisdell, 2016). This kind of sense-making based on people's experiences needs to be context situated with details of social interactions, communications, and how it is interpreted (Bhattacharya, 2017; Merriam & Tisdell, 2016). Based on these assumptions, I sought to understand how teacher candidates built their formative assessment practices while working alongside their mentor. I also sought to understand how mentor teachers experienced educative mentoring when working alongside their teacher candidate. More specifically, I sought to examine two pairs of mentors and teacher candidate mentees who were implementing formative assessment practices within lessons, examine how engaging in educative mentoring influenced these formative assessment practices of the teacher candidate, and the impact of educative mentoring for the mentor's understanding of mentoring.

I conducted an embedded single-case study design to examine these issues. A case study is an empirical method that deeply investigates a contemporary phenomenon in its real-world context, and the phenomenon and the context are not markedly distinct (Yin, 2018). Furthermore, an embedded design is defined as a case study having a unit or units "lesser than and within the main case study, from which data are also collected" (Yin, 2018, p. 287). An embedded single-case design was preferable for this dissertation because I was able to collect further detailed data within the main case study (see Figure 4). This afforded the possibility of increased specific data to more thoroughly investigate the issues. The embedded units of analysis

of the mentor teachers and teacher candidate mentees were powerful within the context for answering my research questions. The details and insights about understanding the mentoring role of mentor teachers and the educative mentoring supporting teacher candidates' formative assessment practices were more complex.

Based on three criteria outlined by Yin (2018), I used case studies as my method of research. Yin (2018) stated his criteria:

- (1) your main research questions are "how" or "why" questions,
- (2) you have little or no control over behavioral events, and
- (3) your focus of study is a contemporary (as opposed to entirely historical) phenomenon-a "case." (p. 2)

This research design and method best fit my study because I wanted to generate an in-depth understanding of a complex issue in its real-life as reflected in my research questions.

Additionally, the focus of my research was a contemporary phenomenon as is reflected in the educative mentoring in the context of formative assessment.

Further, considering the purpose of my case study, a descriptive approach best fit the design and methods employed. Yin (2018) defines a descriptive case study as one that presents a complete description of a "phenomenon within its context" (p. 286). This dissertation research was conducted as a descriptive case study, providing a detailed account of how educative mentoring was implemented to support teacher candidates' formative assessment practices and how their mentor teachers enacting educative mentoring practices understood their roles.

This single-case study research design was at one site and had two embedded units of analysis (Figure 4). Each embedded unit of analysis had a pair consisting of one mentor teacher

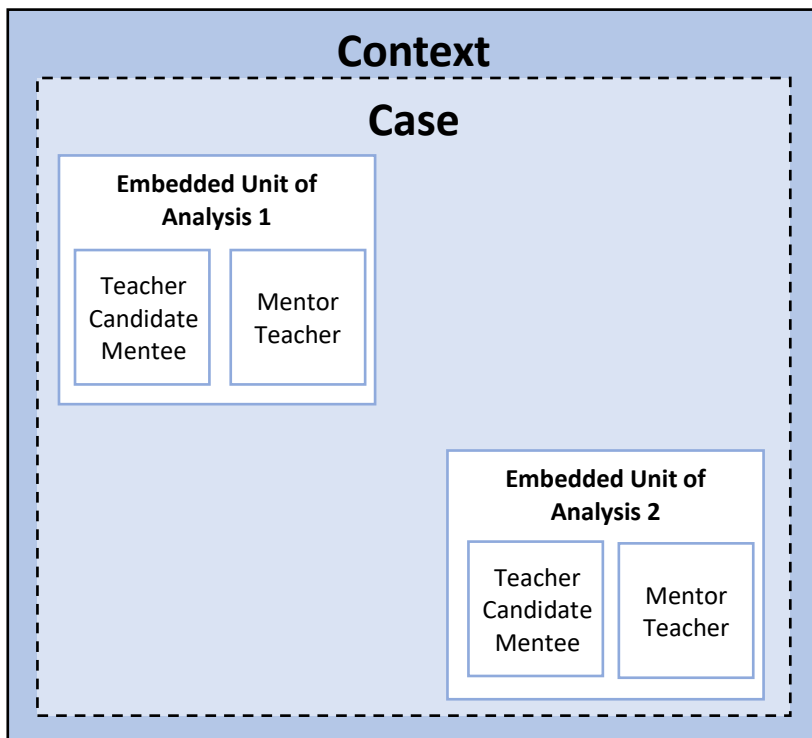
and one teacher candidate mentee in their teacher residency semester, where each mentor teacher was a part of a mentor study group. The case study took place in one semester (August to December).

An embedded single-case study design was appropriate for this study. According to Yin (2018), a single-case study is justifiable if it meets one of five rationales. These five rationales are when the case represents (1) critical test of existing theory; (2) an extreme or unusual circumstance; (3) a common case; (4) revelatory purpose; or (5) longitudinal purpose (Yin, 2018). My embedded single-case study was over one semester, and the questions reflect “build” and “understand” that share distinction for over a set amount of time.

Having embedded units of analysis helped maintain my study’s focus and was a great device to guard against the downfall of single-case study, drift. Drift happens, knowingly or unknowingly, when the original case study assumes a different orientation and produces different insights and new discoveries (Yin, 2018). However, embedded units of analysis can hinder a case study by the focus remaining on the subunit level (Yin, 2018). I ensured my embedded units of analysis returned to the main level of analysis and continued to answer the research questions. The analysis questions I had in my data analysis methods guarded against this common pitfall.

Figure 4

Design of Case Study (adapted from Yin, 2018, p. 48)



Study Context

I conducted an educative mentoring program that ran the course of one semester, late August to December. This mentoring program consisted of two Cheery Cove Elementary teachers (each were a mentor teacher to a teacher candidate mentee). The educative mentor study group met for a total of 5 meeting times and 1 additional meeting time for a focus group conversation. I hosted each meeting in my classroom on Mondays after school, with the exception to meeting 5 because of a scheduling conflict and meeting 6 because of the end of the semester with the teacher candidates. Meeting 5 was hosted on Wednesday and meeting 6 was hosted on Friday. Each meeting lasted no longer than forty minutes and had a minimum of one

<p>September Week 1 (Sept. 4th)</p>	<p>September Week 1 (Sept. 4th)</p> <p>Check in with Educative Mentor Study Group (weekly in-person/email):</p> <ul style="list-style-type: none"> -create rapport around the role as a mentor -encouragement and appreciation shared -create clarity for any questions that arise -keep metacognitive actions in the forefront around Formative Assessment in the moment of teaching <p>Member check of data</p>
<p>September Week 2 September 11, 2023, 3:45 PM</p> <p>Educative Mentor Study Group Meeting: Session 2</p> <p>Part A Norms (including “Be frank”)</p> <p>Part B Explain Educative Mentoring</p> <ul style="list-style-type: none"> -Establish a fundamental understanding and common language <p>Briefly discuss the Six Is for mid-lesson responses, give article for reading</p> <p>Follow-up Discussion on Formative Assessment</p> <p>Video for Observation of Formative Assessments during a lesson</p> <p>Discuss-rehearsing the debriefing phase (for teacher candidate mentee observing the mentor) while we debrief the video observation</p> <p>Part C Reflection: Discussion Parking Lot</p>	<p>September Week 2 (Sept. 11):</p>
<p>September Week 3 (Sept. 18):</p>	<p>September Week 3 (Sept. 18):</p> <p>Educative Mentor Study Group Check ins</p> <p>Member check of data</p>
<p>September Week 4 (Sept. 25):</p>	<p>September Week 4 (Sept. 25):</p> <p>Educative Mentor Study Group Check ins</p>
<p>October Week 1 October 2-6: Fall Break</p>	<p>October Week 1 October 2-6: Fall Break</p>

<p style="text-align: center;">October Week 2 October 9, 2023, 3:45 PM</p> <p>Educative Mentor Study Group Meeting: Session 3 Part A Norms (including “Be frank”) Part B Follow-up from Educative Mentoring Meeting Part C Starting Out with clarity with your teacher candidate mentee Get to Know You Mentor-Mentee Briefly discuss the Six Is for mid-lesson responses from their reading Part D Rehearsal for Analyzing Student Work (existing student work set) Part E Logistics of data collection, Otterai, audio use, resources Part F Reflection: Discussion Parking Lot</p>	<p style="text-align: center;">October Week 2 (Oct 9):</p>
<p style="text-align: center;">October Week 3 (Oct. 16): Oct 16-17 MTSU Fall Break</p>	<p style="text-align: center;">October Week 3 (Oct. 16): Oct 16-17 MTSU Fall Break</p> <p>Educative Mentor Study Group Check ins Member check of data</p>
<p style="text-align: center;">October Week 4 October 23, 2023, 3:45 PM</p> <p>Educative Mentor Study Group Meeting: Session 4 Part A Norms (including “Be frank”) Part B -Follow-up Conversations: Data Collection Enactment of Debriefing Enactment of Analyzing Student Work Part C Rehearsal of Co-planning (student work set) Discuss Effective Collaborative Teaching and Debriefing Part D Reflection: Discussion Parking Lot</p>	<p style="text-align: center;">October Week 4 (Oct. 23):</p>

<p>October Week 5 (Oct.30):</p>	<p>October Week 5 (Oct.30):</p> <p>Mentor and Mentee introductions, discuss mentor-mentee roles and examples; Get to Know You Mentee/Mentor</p> <p>Mentor and Teacher Candidate Mentee Begin Collaborative Teaching Engage in Observation (Mentee observing the Mentor): <i>record</i> Engage in Analyzing Student Work (prefer to use student work from what they observed): <i>record</i></p> <p>One-on-One Cognitive Interviews with Mentees</p> <p>Educative Mentor Study Group Check ins Member check of data</p>
<p>November Week 1 November 8, 2023, 3:45 PM</p> <p>Educative Mentor Study Group Meeting: Session 5 Part A Norms (including “Be frank”) Part B -Follow-up Conversations: (audio recordings) Enactment of Collaborative Teaching Enactment of Analyzing Student Work Enactment of Co-planning Part C Debriefing -Set time for Collaborative Teaching and Debriefing (around parallel teaching for student work formative assessment) -Discuss Next Steps in Educative Mentoring Part D Reflection: Educative Mentor Study Group Reflection Journal page EMSG2 Parking Lot</p>	<p>November Week 1 (Nov. 6):</p> <p>Mentor and Teacher Candidate Mentee Engage in Collaborative Teaching Engage in Co-planning (Analyzing Student Work embedded with using student work in planning): <i>record</i> Mentor-Mentee Selected Needs Mentee Reflection Journal page: TC1</p>
<p>November Week 2 (Nov. 12):</p>	<p>November Week 2 (Nov. 12):</p> <p>Mentor and Teacher Candidate Mentee Engage in Collaborative Teaching Engage in Co-planning (Analyzing Student Work embedded with using student work in planning) Continue Mentor-Mentee Selected Needs Mentee Reflection Journal page:TC2</p> <p>Educative Mentor Study Group Check ins</p>
<p>November Week 3 Nov. 20-24 Break</p>	<p>November Week 3 Nov. 20-24 Break</p>

<p>November Week 4 (Nov. 27):</p>	<p>November Week 4 (Nov. 27):</p> <p>Mentor and Teacher Candidate Mentee Engage in Co-planning (Analyzing Student Work embedded with using student work in planning) Engage in Collaborative Teaching (parallel focus): <i>record</i> Continue Mentor-Mentee Selected Needs</p> <p>Educative Mentor Study Group Check ins Member check of data</p>
<p>December Week 1 & Week 2 WED December 6: Last Day of Classes TH December 7: Study Day December 8, 2023, 3:45 PM Educative Mentor Study Group Meeting: Session 6 Focus Group Conversation with Mentors Parking Lot</p>	<p>December Week 1 & Week 2 (Dec. 4 and Dec. 11): WED December 6: Last Day of Classes TH December 7: Study Day</p> <p>Mentor and Teacher Candidate Mentee Finish Work with Mentor-Mentee</p> <p>One-on-One Cognitive Interviews with Teacher Candidate Mentees</p> <p>Write thank you letters</p> <p>Member check of data</p>

Educative Mentoring Practices

There were several educative mentoring practices utilized within the educative mentor study group. The educative mentor study group had the purpose of learning, rehearsing, and discussing intentional mentoring practices designed to deepen professional learning and foster collaborative growth between mentors and mentees. Rooted in the belief that effective mentoring is a process of co-constructing knowledge, these practices emphasized joint meaning-making and reflective dialogue to talk about teaching and learning (Feiman-Nemser, 2001a; Norman & Feiman-Nemser, 2005; Stanulis et al., 2019). By establishing routines and using tools for professional conversations and work, the group aimed to build a mentorship grounded in inquiry and reciprocity (Schwille, 2008; Orland-Barak & Wang, 2021).

The practices explored were metacognitive talk to make thinking visible (Collins et al., 1991; Sherin & Lynn, 2019), structured observation and debrief sessions, analysis of student work, co-planning of instruction, and collaborative teaching experiences (Aguilar, 2013; Gardiner & Weisling, 2015; National Council for Accreditation of Teacher Education [NCATE], 2001; Norman & Feiman-Nemser, 2005; Wexler, 2020c). These practices align with the model of cognitive apprenticeship, which emphasizes modeling, coaching, and guided participation in authentic tasks (Collins et al., 1991; Lave & Wenger, 1991; Dennen & Burner, 2008; Spooner-Lane, 2017; Stanulis & Brondyk, 2013). To support mentor teachers in working educatively with teacher candidate mentees, tools and protocols were adapted from Stanulis et al. (2019).

Metacognitive Talk. In teacher mentorship, talking out loud or verbalizing instructional thinking is a powerful metacognitive strategy based in cognitive apprenticeship (Collins et al., 1991; Dennen & Burner, 2008). By sharing their reasoning, especially around formative assessments, mentors make expert thinking visible and model how effective teachers adapt instruction (Sherin & Lynn, 2019; Stanulis & Brondyk, 2013). Narrating pedagogical choices before, during, and after teaching helps mentees understand that teaching is not a set script, but a responsive process informed by data, observation, and reflection (Feiman-Nemser, 2001a; Lave & Wenger, 1991).

In this study, the practice of metacognitive talk was discussed at the first Educative Mentor Study Group meeting to give mentor teachers ample time to internalize and rehearse talking through their thinking and decision-making in the moment of teaching. This practice was embedded in the educative mentoring protocols and used throughout the semester in the work between the mentor teacher and the teacher candidate mentee. For example, in the protocol for

Analysis of Student Work, it states, “Think aloud as you consider how student work aligns (or does not align) to the learning objectives” (adapted from Stanulis et al., 2019; see Appendix A for full protocol).

Observation and Debrief. Structured observation and debrief sessions allow mentors and mentees to engage in reflective dialogue, analyze teaching moves, and refine practice (Stanulis et al., 2014; Wexler, 2020c; Rozelle & Wilson, 2012). Educative observing and debriefing focus on one instructional feature, like formative assessment. This targeted focus makes feedback more purposeful, providing an opportunity for further development in a specific area of teaching (Hudson, 2016). An educative debrief utilizes evidence gathered during the observation to focus on an area of instruction to explore together, while also encouraging teacher candidate voice (Stanulis et al., 2014).

Educative observing and debriefing was chosen for the first practice for the mentor-mentee meeting so that it could create a shared focus, common language, and purpose for the semester, laying a foundation for reflective dialogue and collaborative learning throughout the mentoring process. The observation tool was initially used by the teacher candidate mentee to observe the mentor teacher, focusing on formative assessments in the moment of teaching. The mentor teacher used the debriefing protocol to facilitate a collaborative conversation about the formative assessment focused observation (see Appendix B for Observation and Debrief tools and protocols). Later in the semester, the observation tool and a similar protocol were used by the mentor teacher to observe the teacher candidate mentee focusing on formative assessments in the moment of teaching.

Student Work Analysis. Collaborative analysis of student work serves as a tool for making student thinking visible and informed instructional decisions grounded in evidence (Ruiz-Primo & Li, 2013; Sadler, 1989; Sherin & Lynn, 2019). The practice of analyzing student work encourages professional discourse about teaching and learning, engages teachers in reflection, and shifts the focus from teaching performance to student learning (Stanulis et al., 2014). Student work analysis promotes evidence-based reflection, supports mentees in understanding student thinking, and fosters instructional adjustments rooted in student needs (Ruiz-Primo & Li, 2013; Sherin & Lynn, 2019; Stanulis et al., 2019).

Within the program, analysis of student work became a routine method for examining instructional practice, supporting a shared inquiry into how students make sense of content and how teaching can be adjusted in response (Stanulis et al., 2014; Wexler, 2020c). The student work analysis tool and protocol were used as a solo practice first and then subsequently used in conjunction with the co-planning practice (see Appendix A for Student Work Analysis tool and protocol).

Co-planning. Co-planning of instruction enables mentors and novices to co-construct lessons, share pedagogical reasoning, and make instructional choices in partnership (Stanulis & Brondyk, 2013; Orland-Barak & Wang, 2021; Wexler, 2019). Co-planning that involves mentors and mentees verbally reflecting on their instructional choices and considering the specific learning needs of students can lead to deeper understanding of effective planning (Stanulis, Brondyk, Little, & Wibbens, 2014). Co-planning supports mentees in developing the skills and dispositions needed to make instructional decisions grounded in student learning, while also

cultivating pedagogical reasoning through dialogue and collaboration (Grossman et al., 2009; Orland-Barak & Wang, 2021; Stanulis et al., 2019).

The practice of co-planning within the program happened frequently and was used in tandem with the practice of analyzing student work. The co-planning practice protocol was used to support the mentor teachers in facilitating co-construction of lessons with the teacher candidate mentees (see Appendix C for co-planning protocol).

Collaborative Teach and Debrief. Collaborative teaching experiences, including co-teaching and shared classroom responsibilities, provides opportunities for modeling, scaffolding, and reciprocal learning (Stanulis et al., 2019; Wexler, 2020a; Post, 2007). Collaborative teach and debrief positions teaching as a shared space for learning, allowing the mentor to model and scaffold instruction while the mentee grows in autonomy, decision-making, and reflection through evidence-based dialogue (Feiman-Nemser, 2001a; Stanulis et al., 2014; Wexler, 2020c).

Within the program, the practice of collaborative teaching was implemented from the first week through to the final day. The collaborative teaching tool supported a range of co-teaching strategies and focused on collaborating with the leadership in responsibility and decision-making shifting over time to the teacher candidate. The collaborative teaching tool also was a way to collect evidence of learning (see Appendix D for Collaborative Teach and Debrief Tools and Protocols). Additionally, a debriefing protocol was used for a focused conversation and used to make a plan of action based on learning evidence collected from formative assessments during the lesson.

These educative mentoring practices were the major work of the educative mentor study group. These practices were studied during five of the six sessions of the educative mentor study group and enacted with mentees in the in-between educative mentor study group meeting times.

Educative Mentor Study Group Sessions

The educative mentor study group sessions and their specific practices are explained in detail in the following section, providing a closer look at the mentors' professional development.

Educative Mentor Study Group: Session 1 was held August 28, 2023 (see Appendix E). This initial meeting included an explanation of the study as a whole. I then discussed any questions they had, including any clarifications they needed. I then invited each person to participate in the study. We had a brief break and when we reconvened, I obtained study consent forms with signatures for those who were willing to participate in the study. The second half of the meeting was forming the educative mentor study group and creating norms. The educative mentor study group consisted of myself and one other mentor. I asked members to respond to a few questions on their Educative Mentor Study Group Reflection Journal page. I also shared an overview of the educative mentoring premise, explained formative assessment practices and then encouraged them to finish the questions on their Educative Mentor Study Group Reflection Journal page. I also proposed another question and reflection format that carried over from one meeting to the next called a Post-it Note Parking Lot (see Appendix F). The Post-it Note Parking Lot was a piece of paper posted on the wall near the meeting table for all the members of the meeting to see; had a place to add questions, suggestions, ideas, or "ah-ha moments"; and mentors were able to use this as they moved throughout the meeting as well as carry over to each meeting. It ensured all felt comfortable in sharing their thoughts and helped to make sure I had

answered questions that arose. The reason behind this meeting being early was to give think time around the educative mentoring premise and more so, time to do metacognitive work with formative assessments while they taught.

During the in-between meeting time, I met with administration to explain the study again and to answer any questions. I also piloted and revised my research tools and my interview questions and prepared meeting materials. I also checked in with the mentor teachers to create rapport around the role as an educative mentor, to give encouragement and appreciation, to create clarity for any questions that arose, and to keep metacognitive actions in the forefront around formative assessment in the moment of teaching. I gave the mentor teachers transcripts of the educative mentor study group meeting to check its accuracy and to then sign the document. I also sent an email to give the next meeting agenda.

Educative Mentor Study Group Meeting: Session 2 was held September 11, 2023 (see Appendix G). The meeting began with reviewing the norms and an in-depth explanation of educative mentoring and gave time for establishing a fundamental understanding and common language of educative mentoring. A brief discussion occurred around the Six Is for mid-lesson responses and Post's (2007) *The Cooperating Teacher I's* article was given to read in between meetings. Further discussion took place around the debriefing with the teacher candidate mentee after they observed their mentor teaching. To become familiar with the observation tool, a short segment of a video for formative assessments during a lesson was observed. To practice educative mentoring debriefing, we had rehearsal of debriefing after an observation. The meeting closed with discussion reflection and Post-it Note Parking Lot. The reason behind this was to give ample time for the mentors to process the information and for asking questions before they

meet their mentee. It was also to give time to ensure there was an established shared understanding of formative assessment practices during a lesson and time to work with the educative mentoring practice (debriefing) before they conducted it with their teacher candidate mentee.

During the in-between meeting time, I continued educative mentor study group check-ins with the mentor teachers. I gave the mentor teachers transcripts of the educative mentor study group meeting to check its accuracy and to then sign the document. In addition, I met with a mentor teacher to confirm that the initial coding accurately reflected their perspectives and to clarify the meanings of their words and experiences. I also sent an email to give the next meeting agenda, including a list of needed items like a set of student work for analysis.

Educative Mentor Study Group Meeting: Session 3 was held October 9, 2023 (see Appendix H). The first half consisted of a review of the norms and a follow-up from previous meetings to answer any questions. A discussion revolved around starting out with clarity with the teacher candidate mentee that included clarifying expectations and roles, along with Post's (2007) *The Cooperating Teacher I's*. The second half consisted of educative mentoring rehearsal of analyzing student work routine using tools and script. I also explained the study's data collection process, how to use Otterai, spent time exploring the Otterai app, and exploring the educative mentor study group resources. The meeting closed with discussion reflection and Post-it Note Parking Lot. The purpose of this was to use clarity as an anecdote for anxiety. It was also to give mentors time to work with the educative mentoring practice, so they are prepared with their teacher candidate mentee.

The in-between time, I conducted check-ins with the mentor teachers. I gave the mentor teachers transcripts of the educative mentor study group meeting to check its accuracy and to then sign the document. I also sent an email to give the next meeting agenda, including a list of needed items like a set of student work for analysis and lesson plans.

Educative Mentor Study Group Meeting: Session 4 was held October 23, 2023 (see Appendix I). The meeting began with a review of the norms and follow up conversations about enactment of educative mentoring practices debriefing and analyzing student work, as well as data collection. The second part of the meeting was rehearsal of co-planning using tools and scripts and discussing effective collaborative teaching and debriefing. The meeting closed with discussion reflection and Post-it Note Parking Lot. The rationale for this is to increase the educative mentoring practices for the mentor teacher.

The in-between meeting time, the mentor teachers met their teacher candidate mentees, discussed their roles, spent time to know one another, and began collaborative teaching. The mentor teachers engaged in educative mentoring practices with their teacher candidate mentees as outlined in the meetings ensuring they were making their thinking visible for their teacher candidate mentee. Mentor teachers also recorded two sessions of their study educative mentoring practices: observation and debriefing as well as analyzing student work. I gave the mentor teachers transcripts of the educative mentor study group meeting to check its accuracy and to then sign the document. I gave the mentor teachers transcripts of the mentor-mentee meetings to check their accuracy and to then sign the documents. I gave each of the teacher candidate mentees transcripts of their interview and transcripts of the mentor-mentee meetings to check their accuracy and to then sign the documents. I also sent an email to the educative mentor study

group to give the next meeting agenda, including a list of needed items like a segment of one of the recordings of a mentor-mentee meeting where they found a great example of educative mentoring to share.

Educative Mentor Study Group Meeting: Session 5 was held November 8, 2023 (see Appendix J). The meeting began with a review of the norms and following up with conversations about the enactment of the educative mentoring practices of collaborative teaching, as well as observation and debriefing and analyzing student work (by playing an audio recording segment chosen by the mentor). The second part of the meeting was discussing the enactment of educative mentoring practices of co-planning and then discussing the debriefing phase of collaborative teaching. Time was spent discussing setting a time for collaborative teaching and debriefing, and the next steps in educative mentoring with their teacher candidate mentee based on the mentee's needs as assessed by the mentor. The meeting closed with an Educative Mentor Study Group Reflection Journal page and Post-it Note Parking Lot. The reasoning was to continue their learning of the educative mentoring practices, to meet the needs of their teacher candidate mentee, and to meet the general expectations of the residency placement.

The in-between meeting time, the mentor teachers continued working with their teacher candidate mentees ensuring the mentees are making the majority of the decision-making for student learning and sharing their thinking in that process. The mentor teachers engaged in educative mentoring practices with their teacher candidate mentees as outlined in the meeting. Mentor teachers also recorded their study educative mentoring practices. I gave the mentor teachers transcripts of the educative mentor study group meeting to check its accuracy and to then sign the document. I gave the mentor teachers and teacher candidate mentees transcripts of

the mentor-mentee meeting to check their accuracy and to then sign the document. Additionally, I met with participants to confirm that the initial coding accurately reflected their perspectives and to clarify the meanings of their words and experiences. I also conducted check-ins with the mentor teachers as well as teacher candidate mentees.

The final Educative Mentor Study Group Meeting: Session 6 was held December 8, 2023 (see Appendix K). This mentor study group meeting was a focus group conversation among the mentor teachers (see Appendix L for Focus Group Conversation). The reasoning was to allow the group to continue in its authenticity of their group sharing, to prompt each other's thoughts for responding to the interview questions, and for ending the official group.

At the conclusion of the educative mentor study group meeting, I had the final Post-it Note Parking Lot discussion and personally thanked each mentor with a thank you card to share my appreciation. After the conclusion of the educative mentor study group meeting, I gave the mentor teachers transcripts of the educative mentor study group meeting to check its accuracy and to then sign the document, as well as the final mentor-mentee meeting to check their accuracy and to then sign the documents. Furthermore, I gave each of the teacher candidate mentees transcripts of their interview and transcripts of the mentor-mentee meeting to check their accuracy and to then sign the documents.

Research Site

The research site was Cheery Cove Elementary, an urban Title I public zoned school, within Cavern city limits. Cheery Cove Elementary served a total of 869 students and employed 57.47 full-time equivalent teachers, resulting in a student-to-teacher ratio of approximately 15.12 to 1. The student population was divided between 508 students in pre-kindergarten through

second grade and 361 students in grades three through six. The school's demographic makeup reflected a racially and ethnically diverse student body: 0.11% identified as American Indian or Alaska Native, 3.68% as Asian, 29.11% as Black, 17.14% as Hispanic, 37.87% as White, 0.23% as Native Hawaiian or Pacific Islander, and 11.62% identified with two or more races. The gender distribution was fairly balanced, with 52.47% of the students being male and 47.52% female (U.S. Department of Education, National Center for Education Statistics, 2024). Cavern was a mid-sized city with a population of approximately 158,000 residents. The city's demographic composition included 71% White, 18.5% Black or African American, 7.3% Hispanic or Latino, 3.3% Asian, 0.1% American Indian, 0.1% Native Hawaiian or other Pacific Islander, and 5.2% identified as two or more races. Additionally, 12.1% of the population lived below the poverty line. Cheery Cove Elementary was part of the Inlet District that served over 9,400 students. The Inlet District, the broader educational region relevant to this study, was located within Bay County. Bay County had a population of approximately 360,600 residents and was characterized by a diverse demographic composition. The population was 75% White, 17.1% Black or African American, 10% Hispanic or Latino, 3.9% Asian, 0.6% American Indian, 0.1% Native Hawaiian or other Pacific Islander, and 3% identified as two or more races. The county also faced economic challenges with 8.7% of residents living below the poverty line. The city of Cavern is within 50 miles of Nashville, the state capital. Inlet District's teachers, including Cheery Cove Elementary, regularly worked with a variety of college/university programs and teacher candidates in residency placement during their final college semester. Of the faculty and staff members of Cheery Cove Elementary, about 15 teachers (27.8%) had worked with a teacher candidate in their final college semester.

Participant Selection

Participant selection was by convenience for the teacher candidates and their mentor teachers (Creswell & Poth, 2016). Three teachers were selected that worked within Cheery Cove Elementary of various grade levels. These teachers in particular were asked because I had an established relationship with them (authenticity), they had a predisposition for learning and had displayed a desire for mentoring and typically worked with college/university students regularly. Additionally, they were asked the following screening questions (see Appendix M) for the Mentor Study Group: (1) Are you interested in professional development to help you share how you use formative assessment in your teaching?; (2) Are you interested in professional development in specific mentoring practices that help your teacher candidate learn from your teaching practices and decision-making?; (3) Have you been a mentor teacher previously? If so, in what way? Have any of your mentees been residency II students?; (4) Do you currently have a Residency II student working with you? In their responses to these questions, I was able to ensure similar beliefs, values, and experiences of each mentor teacher. The final educative mentor study group consisted of two mentor teachers, including me engaging in participant-observation contributing both as a mentor and the person responsible for conducting research (Yin, 2018). The third teacher invited to participate in the study was unable to do so due to a limited number of teacher candidates during this semester of residency and was also unable to commit to attending all scheduled educative mentor study group meetings.

Participant Information

Mentor Teachers

This study included two mentor teachers who were actively supervising teacher candidates during their final semester in a year-long teacher residency program at a local higher education institution. Both teacher mentor participants were experienced full-time classroom teachers working in Cheery Cove Elementary. For an overview of my mentor teacher participants, see Table 3.

Mentor Teacher Participant 1. Mentor teacher participant 1, referred to by the pseudonym “Anna,” was a 37-year-old female educator who identified as White. They held a bachelor’s degree in organizational communication and a master’s degree in Curriculum and Instruction elementary K-6 and had been teaching for 10 years. Mentor teacher participant 1 had mentor experience prior to this research study. At the time of the study, she was teaching in a fifth-grade classroom teaching math and science subject areas. She was actively engaged in both mentoring her teacher candidate mentee and participating in the educative mentor study group.

Mentor Teacher Participant 2. In this study, I engaged as mentor teacher participant 2, referred to by the pseudonym “Cindi,” as participant-observer (Yin, 2018). At the time of the study, I was a 49-year-old female educator who identified as White. I held a bachelor’s degree in early childhood education PK-3, a master’s degree in education and supervision, completing requirements for a doctorate in education and had been teaching for 12 years. I had mentor experience prior to this research study. At the time of the study, I was teaching in a third-grade classroom teaching math and science subject areas. I was actively engaged in both mentoring the teacher candidate mentee and participating in the educative mentor study group as a participant

and researcher. Although I served as mentor teacher 2, Cindi, in this study, I will refer to myself as a mentor in the third person throughout the dissertation to maintain consistency, promote analytical distance, and minimize potential bias in the analysis and presentation of findings.

In addition to their mentoring responsibilities within the university residency program partnership, each participant voluntarily took part in the research study and completed the research study components.

Table 2

RQ #2 Cross-Sectional Table Participant Profile

	Age	Gender	Ethnicity	Educational Level	Grade Level and Subjects	Years of Teaching Experience	Prior Mentoring Experience
Mentor Teacher 1 "Anna"	37 years	Female	White	Master's	5 th grade math and science	10 years	Yes
Mentor Teacher 2 "Cindi"	49 years	Female	White	Master's	3 rd grade math and science	12 years	Yes

Teacher Candidate Mentees

This study included two teacher candidate mentees who were completing their final semester of their teacher preparation program as part of a year-long teacher residency at a local higher education institution. Both participants had been placed as teacher residents in public school classrooms under the guidance of a university supervisor for their field experience. These teacher candidate mentees were assigned a teacher mentor at Cheery Cove Elementary. These teacher candidates were selected because they were placed by the university with my selected mentor teachers. For an overview of my Teacher Candidate Mentee Participants, see Table 3.

Teacher Candidate Mentee Participant 1. Teacher Candidate Mentee Participant 1, referred to by the pseudonym “Heidi,” was a 32-year-old female. She identified as White and was pursuing a bachelor’s degree in elementary education K-5 with teacher licensure. Prior to entering the residency, Participant 1 had completed all required coursework and was in the final phase of certification while engaged in full-time residency at the time of data collection.

Teacher Candidate Mentee Participant 2. Teacher Candidate Mentee Participant 2, referred to by the pseudonym “Olivia,” was a 26-year-old female. She identified as White and was pursuing a bachelor’s degree in early childhood education PK-3 with teacher licensure. Prior to entering the residency, Participant 2 had completed all required coursework and was in the final phase of certification while engaged in full-time residency at the time of data collection.

Both participants were placed in public schools and worked alongside experienced mentor teachers. Both teacher candidates voluntarily participated in the research study and completed the research study components while they also participated in daily instructional activities, co-teaching, independent lesson delivery, and fulfilled residency requirements in alignment with the residency program’s expectations.

Table 3

RQ #1 Cross-Sectional Table Participant Profile

	Mentor Teacher	Age	Gender	Ethnicity	Educational Level	Degree
Teacher Candidate Mentee 1 “Heidi”	“Anna”	32 years	Female	White	Last Semester Bachelor’s	Elementary Education K-5 with teacher licensure
Teacher Candidate Mentee 2 “Olivia”	“Cindi”	26 years	Female	White	Last Semester Bachelor’s	Early Childhood Education PK-3 with teacher licensure

To protect participant confidentiality, all names used in this dissertation are pseudonyms. These pseudonyms were randomly selected by the researcher and applied consistently throughout data analysis and reporting. Where necessary, identifying details such as job titles or organizational affiliations were modified. Pseudonyms were also used for organizations and locations when needed to prevent indirect identification. This practice aligns with ethical research standards. With participant confidentiality assured, the following section outlines the methods and procedures used for data collection in this study.

Data Collection

In this dissertation, I considered Yin's (2018) four guiding principles of data collection: using multiple sources of evidence for triangulation for construct validity, creating a case study database to increase reliability, maintaining a chain of evidence for construct validity, and exercising care when using data from social media sources. The first three are applicable to this dissertation. I will further elaborate in the rest of this chapter.

In planning for data collection, I considered using multiple sources of evidence for data triangulation. Using data from multiple data sources, as well as different methods to compensate for their individual limitations ensured a variety of ways to view the data (Shenton, 2004; Yin, 2013). It also gave multiple measures of the same phenomenon and could corroborate the findings from convergence. Yin (2018) stated "evidence can come from at least six sources: documentation, archival record, interviews, direct observations, participant-observation, and physical artifacts" (p.110). I collected data from multiple data sources: documentation, direct observations, semi-structured interviews, and a focus group conversation. For an overview of my methods see Table 4.

Table 4*Methods Overview*

Methods Overview		
Research Questions	Data Collection Plan	Data Analysis Plan
RQ #1: How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester?	<p>Direct Observations -four mentor-mentee meetings with audio recording observations</p> <p>One-On-One Semi-structured Interviews -two per teacher candidate mentee (beginning and end)</p> <p>Documentation -two Mentee Reflection Journal pages</p>	<p>-Researcher Journal Reflections -prompts -study suggestions, changes</p> <p>-Analytical Memos -mini-analyses about learning -emerging concepts and patterns -any matrixes</p> <p>Cycle 1: Open Coding (“ground up” inductive process strategy) -in vivo coding to capture exact words Cycle 2: Axial Coding -pattern matching: explanation building to capture categories Cycle 3: Themes Coding Use Matrix Display for further cross-unit comparison (time and mentor-mentee pairs) Make Interpretations</p>
RQ #2: How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester?	<p>Direct Observations -four mentor-mentee meetings with audio recording observations -five Educative Mentor Study Group meetings with audio recording observations</p> <p>Focus Group Conversation -one of the Educative Mentor Study Group (end)</p> <p>Documentation -Two Educative Mentor Study Group Reflection Journal pages in the Educative Mentor Study Group -Educative Mentor Study Group Agendas -Post-it Note Parking Lot -email check-ins and responses -Mentor notes to me from mentor-mentee meetings</p>	<p>-Researcher Journal Reflections -prompts -study suggestions, changes</p> <p>-Analytical Memos -mini-analyses about learning -emerging concepts and patterns -any matrixes</p> <p>Cycle 1: Open Coding (“ground up” inductive process strategy) -in vivo coding to capture exact words Cycle 2: Axial Coding -pattern matching: explanation building to capture categories Cycle 3: Themes Coding Use Matrix Display for further cross-unit comparison (time and mentor-mentee pairs) Make Interpretations</p>
Case Study Database and Backup: (1) Data/evidentiary Base and (2) Researcher’s Report Chain of Evidence		

Data Collection for Research Question #1

Observations

The set of observations were each of the four mentor-mentee meetings. Each of these were audio recorded by the mentor-mentee and shared with me. These varied in length of time but did not exceed 40 minutes. They were audio recorded to maintain the authenticity of the mentor-mentee relationship and not impose myself in their meeting. To make sure mentors were able to use the audio recording app, the mentors obtained access to Otterai app and practiced using it during the educative mentor study group. I transcribed each audio recording as I collected them. I provided each teacher candidate mentee and mentor teacher with a transcript of each of their meetings to review for accuracy. After making any necessary corrections, they each signed their own finalized transcripts.

Through the use of observations, I gained insights and any changes within the teacher candidate mentee's use of formative assessment practices during a lesson.

One-on-one Interviews

Yin (2018) stated that interviews are one of the most important sources of evidence. Each teacher candidate mentee was interviewed one-on-one, two times (one at the beginning of their placement at Cheery Cove Elementary and one at the end) and each interview was no more than 45 minutes with prewritten questions (see Appendix N) to address how they have built their formative assessment practices during their teacher residency semester. In these one-on-one Interviews, I gained an understanding of each teacher candidate mentee's own thoughts and ideas on how they built their assessment literacy using formative assessment practices while working with a mentor in their teacher residency.

I conducted the interviews as a guided discussion and took care to ask my questions in an unbiased manner while keeping my line of inquiry (Yin, 2018). I transcribed each audio recording as I collected them. I shared with each teacher candidate mentee their own interview transcriptions to ensure accuracy.

Before conducting the one-on-one interviews, I conducted a pilot interview to analyze and revise the questions. In early September 2023, I conducted three mock interviews with three volunteer teachers who were not in the study. I took notes from their responses to each interview question and analyzed these notes to see if the questions were effective for capturing the mentor's formative assessment practices and any support from educative mentoring practices (checked for leading questions). I revised the questions for clarity, for question openness and ensured questions were designed to obtain data that helped answer my research question.

Documentation

I used the documents to corroborate and increase evidence found from other sources (Yin, 2018). The documents I collected are as follows: Mentee Reflection Journal pages completed by each teacher candidate mentee.

I collected two teacher candidate Mentee Reflection Journal pages (see Appendix O). Teacher candidate mentees completed these reflection journals at the end of their mentor-mentee meeting number two and at the end of their mentor-mentee meeting number three. These prompts were intended to probe their ideas on what they were learning and understanding formative assessment practices through educative mentoring with their mentor. The prompts I used for the first Mentee Reflection Journal page were (1) What are two or three things I thought about in analyzing student work with my mentor?; (2) What are two or three things I connected

in co-planning with my mentor?; (3) In light of these experiences, what might still be confusing about formative assessment that I need to seek clarity? The prompts I used for the second Mentee Reflection Journal page were (1) What are two or three things made clearer for me in my co-planning with my mentor?; (2) What are two or three things I experienced in my co-teaching and debriefing with my mentor?; (3) In light of these experiences, what am I still thinking about with formative assessment?

Through the use of these documents, I saw corroboration and further evidence to gain an understanding of how the teacher candidate mentees made sense of formative assessment practices and how they built them during their teacher residency.

Data Collection for Research Question #2

Observations

A set of observations were conducted for each of the four mentor-mentee meetings. Each of these were audio recorded by the mentor-mentee and shared with me. These varied in length of time but did not exceed 40 minutes. The meetings were audio recorded to maintain the authenticity of the mentor-mentee relationship and not impose myself in their meeting. To make sure mentors were able to use the audio recording app, the mentors obtained access to Otter.ai app and practiced using it during the educative mentor study group. I transcribed each audio recording as I collected them. I shared with each teacher candidate mentee and mentor teacher their own meeting transcriptions to ensure accuracy. After making any necessary corrections, they each signed their own finalized transcripts.

The last set of observations was during five Educative Mentoring Study Group meetings. During these meetings, reflection discussions took place to have conversations about mentoring.

Per mentor, one reflection discussion collected was around their own selected segment of a mentor-mentee recording the mentor believed captured the practice of educative mentoring. Five other observations were reflection discussions. These reflection prompts were offered at the closing of each of the educative mentor study group meetings as a discussion to reflect on educative mentoring and their learning. The reflection questions I asked during the Educative Mentor Group meeting #1 were (1) What are your current thoughts about our meeting and concepts discussed? (2) What do you want to learn? The reflection questions I asked during Educative Mentor Group meeting #2 were (1) What might be tricky in sharing your thinking with the mentee? (2) What might you do to remediate that? The reflection questions I asked during Educative Mentor Group meeting #3 were (1) What are your current thoughts about our meeting and concepts discussed? (2) What are you looking forward to when working with your mentee? The reflection questions I asked during Educative Mentor Group meeting #4 were (1) How are your current understandings of mentoring and educative mentoring the same? (2) How might this shift your current understanding of mentoring? (3) How can you practice these principles before your mentee arrives? The reflection questions I asked during Educative Mentor Group meeting #5 were (1) How do you feel about adding the analyzing student work along with your co planning for your mentee to make connections? Each of these were audio recorded by me to capture the discussion and the mentors in their own words of their experiences.

Through the use of observations, I created a shared understanding of formative assessment in the moment of a lesson with the mentor. I also gained insights and patterns within the mentor-mentee meetings as well as the reflection discussions for the mentor teachers' understanding of educative mentoring.

Focus Group Conversation

Yin (2018) stated interviews are one of the most important sources of evidence. A focus group conversation was used to maintain the integrity of the educative mentor study group that had been formed. The ideas, insights, and thoughts shared as a group were an avenue for richer insights into their experiences. I conducted this focus group conversation for no more than 60 minutes for the last educative mentor study group meeting. The focus group conversation was hosted as a guided discussion, and I asked my prewritten questions (see Appendix L) in an unbiased manner while keeping my line of inquiry (Yin, 2018). I desired the questions to capture how the mentors had experienced educative mentoring with teacher candidates during their teacher residency semester.

In the focus group conversation, I gained an understanding of the mentors' experiences with educative mentoring in their own words. These insights and patterns were a cornerstone to understanding how educative mentoring supported their teacher candidate mentees and their understanding of their roles.

Before conducting the focus group conversation, I did a pilot interview to analyze and revise the questions. In early September, I conducted two mock interviews with two volunteer teachers who are not in the study. I then analyzed and revised the questions to check clarity, check question openness and check if the questions were able to obtain data that helped answer my research questions.

Documentation

I used the documents to corroborate and increase evidence found from other sources (Yin, 2018). The documents I collected were: Educative Mentor Study Group Reflection Journal

pages, Post-it Note Parking Lot notes, email check-ins and responses and mentor notes to me from mentor-mentee meetings.

Another set of documents I collected was two Educative Mentor Study Group Reflection Journal pages (see Appendix P). These were pages of reflection prompts the mentors completed at the beginning and end of their educative mentor study group. The reflection questions I asked on the first Educative Mentor Study Group Reflection Journal page were (1) How do I define my role as a teacher and using formative assessment in the moment of teaching?; (2) How will this impact my mentoring of a teacher resident?; (3) How do I currently define mentoring (be specific)? The reflection questions I asked on the last Educative Mentor Study Group Reflection Journal page were (1) How do I define my role as a teacher and using formative assessment in the moment of teaching?; (2) Thinking about my experiences, how has this impacted my mentoring of a teacher resident?; (3) How do I currently define mentoring (be specific)? These were prompts to probe their ideas on what they were learning and understanding formative assessment practices through educative mentoring with their mentor.

The last set of documents I collected were Post-it Note Parking Lot items (previously discussed in Study Context, Educative Mentor Study Group: Session 1), email check-ins and responses, and any mentor notes to me from mentor-mentee meetings. This data gave me insight into my case study research, changes that needed to take place, and ensured clarity for my mentors in addressing anything they shared regarding the study.

Using these documents, I saw corroboration and further evidence to gain an understanding of how the mentors make sense of educative mentoring with their teacher candidate mentee.

Case Study Database

A case study database is a systematic archive of all the data from a case study (Yin, 2009, 2018, p. 286). For this dissertation, I used my MTSU Google Drive (with no shared components while researching) with five folders to create a case study database to increase reliability. I added in documents as I collected them. Of the five folders, one folder was solely for tools, instruments, and documents used in the embedded single-case study. Four folders contained all the data collected for each pair of mentor teachers and teacher candidate mentees. Within each of these four folders there were two additional folders. One folder for the evidentiary base of data and the second folder was for my data analysis reports, coding, and notes about the data. In addition to these folders, each item uploaded to these folders was labeled with item name and date. This case study database ensures others, if needed, can inspect the data apart from my interpretations and any of my reports of that data in my dissertation (Yin, 2018). For further data integrity, a second place for each of these items was a designated physical hard drive with password protected access by only me.

Data Analysis

Yin (2018) suggests using formal procedures for quality control. I collected various pieces of data throughout the research timeframe, August 2023 until December 2023, and analyzed the data in chronological order as it was collected (Saldana, 2013). I continued data analysis by repeating the initial “playing” with the data and all cycles of data analysis unto completion from December 2023 through June 2025. The following are my detailed procedures for data analysis.

Research Question #1: Data Analysis

In order to understand and examine how teacher candidates build their formative assessment practices, I kept each embedded unit of analysis separate ensuring that patterns or findings within one unit are fully understood without prematurely generalizing. I began first by “playing” with the data and seeing what patterns, insights, or concepts surfaced (Yin, 2018). I did not start with preconceived notions of what the codes should be but allowed the ideas to emerge from the data itself. Some of the work that surfaced may have come from my researcher journal reflections or from my analytical memos as I collected the data (Saldana, 2013). Researcher journal reflections and analytical memos were documents where I wrote ideas, thoughts, and codes to myself. The Researcher Journal Reflections (see Appendix Q) were question prompts for my own reflection of my learning, effectiveness, documenting changes I needed to take, and prompts that helped me to push back on my biases. The second document was Analytical Memos (see Appendix R) which was my mini-analyses about what I thought I was learning about teacher candidate mentees building their assessment practices and whatever I needed to generate concepts and patterns that might have been emerging in the data. This housed any matrixes of developing ideas, codes, themes, theoretical statements to answer my research question.

After “playing” with the data and seeing what patterns, insights, or concepts surfaced (Yin, 2018), I worked with my committee chair to discuss data analysis. I realized I needed to break my analysis into two parts: (1) how did the teacher candidate understand formative assessment knowledge and practices; (2) what processes (activities and events) did the teacher

candidate do to support their formative assessment development. I did my analysis for both parts of my research question #1 by the following plan.

In beginning Cycle 1 open coding (also known as initial coding), I used one of the general analysis strategies suggested by Yin (2018) entitled “working from the ‘ground up’”. Working from the “ground up” strategy is an inductive strategy that begins with a useful concept or two from the data and provides a path into the analysis of that data that can in turn offer additional relationships to consider (Yin, 2018). I worked with my committee chair to discuss data analysis and useful concepts that had surfaced.

In this study, I began open coding by analyzing the data collected from my teacher candidate mentee interviews since it was first in my data collection chronologically. I used in vivo coding to assign codes by the exact word or phrase used in the data. Line by line, I gained codes from the data. This process continued with documentation and direct observations. Some of the codes I gained from my data during this time were: needs assessment, plan lesson, and use on the spot (see Appendix S). I worked with my committee chair to discuss data analysis and codes that had surfaced.

Cycle 2 axial coding was collapsing codes into categories. A specific pattern matching analytic technique called explanation building is one of the useful techniques suggested by Yin (2018). This technique fit well to explain how teacher candidates build their formative assessment practices alongside their mentor. I worked with my committee chair to discuss data analysis and categories that had surfaced. I did several iterations of categories and returned to coding to finalize my categories found in the data. With these findings, I worked with my

committee chair to discuss data analysis, categories that had surfaced, and an initial theoretical statement.

After initial coding, category generating and making an initial theoretical statement, I compared the data from my first embedded unit of analysis (first mentor-mentee pair) against this initial theoretical statement. Based on the data presented, I then revised this theoretical statement. I then compared other details of the embedded unit of analysis against this revised theoretical statement. I continued to the second embedded unit of analysis (second mentor-mentee pair) engaging in the same process beginning with the revised theoretical statement. For an overview of the codes see Appendix T.

Research Question #2: Data Analysis

In order to understand and examine how mentor teachers understood their role with their teacher candidate mentee using educative mentoring, I kept each embedded unit of analysis separate ensuring that patterns or findings within one unit are fully understood without prematurely generalizing. I began first by “playing” with the data and seeing what patterns, insights, or concepts surface (Yin, 2018). I did not start with preconceived notions of what the codes should be but allowed the ideas to emerge from the data itself. Some of the work that surfaced came from my researcher journal reflections or from my analytical memos as I collected the data (Saldana, 2013). Researcher journal reflections and analytical Memos are documents where I wrote ideas, thoughts, and codes to myself. The Researcher Journal Reflections (see Appendix Q) were question prompts for my own reflection of my learning, effectiveness, documenting changes I needed to take, and prompts that helped me to push back on my biases. The second document is Analytical Memos (see Appendix R) which were my mini-analyses

about what I thought I was learning about mentors enacting educative mentoring practices understand their roles and whatever I needed to generate concepts and patterns that emerged in the data. This also housed any matrixes of developing ideas, codes, themes, theoretical statements to answer my research question.

The early data analysis began concurrently with data collection but was temporarily paused due to unforeseen personal circumstances. The data analysis was restarted at a later stage once these events were resolved. Once data analysis resumed, analysis proceeded using “playing” with the data and seeing what patterns, insights, or concepts surfaced with each unit separately (Yin, 2018).

In beginning Cycle 1 open coding (also known as initial coding), I used one of the general analysis strategies suggested by Yin (2018) entitled “working from the ‘ground up.’” Working from the “ground up” strategy is an inductive strategy that begins with a useful concept or two from the data and provides a path into the analysis of that data that can in turn offer additional relationships to consider (Yin, 2018). I worked with my committee chair to discuss data analysis and useful concepts that had surfaced.

In this study, I began open coding by analyzing the data collected from my educative mentor study group reflection discussion since it was first in my data collection chronologically. I used in vivo coding to assign codes by the exact word or phrase used in the data. Line by line, I gained codes from the data. Several codes found in the data were directive through guide / lead, mutual trust in learning, and both take risks (see Appendix U). I worked with my committee chair to discuss data analysis and codes that had surfaced. Several rounds of in vivo coding took

place when coding the remaining reflection discussions and the focus group conversation (Saldana, 2013).

Cycle 2 axial coding was collapsing codes into categories. A specific pattern matching analytic technique called explanation building is one of the useful techniques suggested by Yin (2018). This technique fit well to explain how educative mentor teachers understood educative mentoring over time while enacting educative mentor practices with their teacher candidate. I worked with my committee chair to discuss data analysis and categories that had surfaced.

After initial coding, category generating and making an initial theoretical statement, I compared the data from my first embedded unit of analysis (first mentor-mentee pair) against this initial theoretical statement. Based on the data presented, I then revised this theoretical statement. I then compared other details of the embedded unit of analysis against this revised theoretical statement. I continued to the second embedded unit of analysis (second mentor-mentee pair) engaging in the same process beginning with the revised theoretical statement. For an overview of the codes see Appendix V.

Trustworthiness and Rigor

I maintained trustworthiness by adopting well established research methods. I began the study by participating in bracketing (Creswell & Poth, 2016). Bracketing is a procedure in which the researcher sets aside their own experiences as much as possible to try and see the experience anew (Creswell & Poth, 2016). I did this by writing analytical memos to record my thinking. As the researcher, I had a Reflective Journal to monitor the progress of the study, had running notes, wrote thoughts, impressions, patterns, tracked effectiveness of techniques, wrote any emerging theories, recorded any biases or contradicting information I came across in the work, and kept a

record of reflections and continued writing Analytical Memos as I engaged in data coding and data analysis (Saldana, 2013; Shenton, 2004). By setting aside my prior experiences for a fresh approach, I suspended my own understandings and cultivated a sense of curiosity, which contributed to the trustworthiness of the study through an effort to maintain a neutral stance toward what the data revealed.

I also maintained credibility by using tactics for honesty. These included giving mentor participants multiple opportunities to refuse to participate (initial email soliciting interest, a follow up email inviting participants to a meeting to understand the study, and another opportunity when discussing and signing the study consent form). Teacher candidate mentee placement occurred after agreeing to participate in the study. Honesty was further expressed through encouraging participants to be frank in all sessions and during interviews (Shenton, 2004). I utilized the familiarity of the culture in which the study took place. I was currently working within the culture in which the study took place and had established relationships with those participants of the study to ensure authenticity (Shenton, 2004). I maintained credibility by using triangulated data from multiple data sources, as well as, different methods to compensate for their individual limitations (reflection journals, field notes, observations and debriefings, document artifacts, audio recordings of mentor study group sessions, audio recordings of one-on-one interviews, audio recordings of focus group conversation, audio recordings from mentor-mentee sessions) (Shenton, 2004; Yin, 2013). I maintained credibility by engaging in frequent debriefing sessions with my committee chair to support collaboration of ideas, alternative approaches, developing interpretations, probing to recognize my own biases and preferences, and to support in course of action (Saldana, 2013; Shenton, 2004). I had peers give feedback in

presentations, sessions, interview questions, mock interviews, during observations and debriefs, and welcomed any feedback from the dissertation committee.

Lastly, I conducted member checks at multiple checkpoints throughout the study to ensure the accuracy of the data, particularly to confirm that the words captured in audio recordings reflected participants' intended meanings (Saldana, 2013; Shenton, 2004). On several occasions, participants noted that their statements "did not sound right," prompting revisions, which they then reviewed and approved. Member checking also involved verifying that initial codes accurately represented participants' intended meanings, and this process occurred during the same checkpoints (Saldana, 2013; Shenton, 2004). During one such checkpoint, a participant shared that a code definition felt misaligned with their thinking. I revised the definition accordingly and shared the updated version with the participant for confirmation. Feedback was used to refine definitions, adjust code labels when necessary, and ensure that the findings were grounded in the authentic voices and intentions of those involved. Taken together, these actions enhanced the study's credibility by fostering openness, responsiveness, and a commitment to rigor and integrity throughout the research process.

I was descriptive and specific with the context and participants, so this allows the reader to make decisions for transferability of the study and of the study findings (Shenton, 2004). I was also collaborative with my committee chair to consider multiple interpretations of the data and consider the data questions, even after coding, as a way to falsify/complicate/problematize my interpretation of the data (Bhattacharya, 2017). This ensured I have addressed multiple perspectives and interpretations of the data (Bhattacharya, 2017). These steps ensured credibility by offering the data in full.

Other considerations to maintain trustworthiness by my subjectivity statement and transparency. I maintained my respect for and minimized my influence on the mentor-mentee relationship by not being present for their educative mentoring meetings and asked for audio recording, so I was as minimally invasive as possible. I asked many open-ended questions in my one-on-one semi-structured interviews with the teacher candidate mentees. I also asked many open-ended questions in my focus group conversation with the mentors. The focus group setting kept the mentor study group relationships intact and minimized my influence in the conversation process. These actions supported transparency by lowering the risk of my influence and supports proper interpretation and dissemination of results by others.

Chain of Evidence

Yin (2018) states to use a chain of evidence for construct validity. Construct validity is “the accuracy with which a case study’s measures reflect the concepts being studied” (Yin, 2018, p. 286). This principle is specifically for the reader to be able to trace the evidence anywhere in the work of a study from the questions to the findings. This tightness within the evidence ensures I was able to convey in my final report the same evidence that was collected from the data process. This Chain of Evidence is connected to the Case Study Database and any work with the data is documented, labeled and stored for tracing along the chain of evidence and data.

Limitations

This qualitative research study was not unlike other research studies and limitations have to be considered. First, the embedded single-case study design used in the study was concentrated on a particular context and a small group of participants: two teacher candidate mentees and two mentor teachers. Even further, participants were middle-class White women

from urban areas, which may limit the range of perspectives represented. Although this design enabled an in-depth exploration of educative mentoring and the development of formative assessment practices in a specific setting, the results are not meant to be generalized beyond the case. Transferability of results may be lacking due to a small number of participants and participant homogeneity, but the rich detailed, contextual descriptions provide ideas in similar contexts.

Second, the fact that I am a researcher and at the same time a participating mentor teacher opens up the issue of bias. Though this role positioning provided me with an insider view and relational access to participants, there is a possibility that it also affected the way the participants responded and related with each other in the context of the study group meetings and interviews. The impact of this was attempted to be mitigated with the help of journaling, member checking, chain of evidence, debriefing with my committee chair, and triangulation of data sources, but the influence of the researcher can be minimized but cannot be eliminated.

Third, the pre-existing institutional settings influenced the dynamics in the mentor-mentee relationship and the pre-existing professional relations and institutional settings influenced the dynamics in the mentoring study group. Though such relational elements were considered a part of the strengths for openness and authenticity, it might also have affected the openness or the willingness of the participants to share their difficulties or the view on the mentoring process. Also, the time limits and other professional commitments could have influenced participation and engagement throughout the study.

Even with these shortcomings, the study has significant contributions to the knowledge of educative mentoring in supporting novice teachers' formative assessment practices and how

mentors understand their roles. It also provides a base for further research which can be carried out in the future to study a similar process in other contexts or with more participants and with more diverse participants.

Summary

In this chapter, I explained the research methodology that was used in this study, and it involved qualitative embedded single-case study design. This was chosen to develop a deep understanding of what contributes to building teacher candidates' formative assessment practices and the influences of educative mentoring on the mentor experiencing the practices in its real-life context. The study was educative mentoring in the context of formative assessment and two embedded units of analysis were studied to get a variety of perspectives and processes within the case.

The semi-structured interviews, observations, focus group conversation, and document analysis were used to collect data which made it possible to use triangulation and to have a more detailed perception of the case. Participants were selected based on convenience and it was applicable in selecting participants in order to make them relevant to the research questions. Data interpretation included category analysis, following established qualitative procedures to ensure rigor and trustworthiness. Member checking and triangulation were used to enhance credibility and dependability.

The chosen methodology facilitated a nuanced exploration of how educative mentoring may support teacher candidates' formative assessment practices and how their mentors enacting educative mentoring practices understand their roles. This methodology offered a solid framework of studying the intricate social processes in the context of this case.

CHAPTER IV: FINDINGS

Introduction

This chapter presents the findings of the qualitative study using a descriptive embedded single-case study design. This study explored the development of teacher candidates' formative assessment practices and the understanding of mentoring of mentor teachers implementing educative mentoring during the teacher residency semester. The two guiding research questions were: (1) How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester? and (2) How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester? Data were collected through semi-structured interviews, focus group conversation, observations, and reflection journals for both mentor teachers and teacher candidate mentees across two embedded units. The participants in this study included two mentor teachers, Anna and Cindi, and two teacher candidate mentees, Olivia and Heidi. The mentor-mentee pairs were Anna with Heidi, who worked together in a fifth grade classroom teaching math and science, and Cindi with Olivia, who worked together in a third grade classroom, also teaching math and science. All participants were based at Cheery Cove Elementary, which served as the research site for this study.

Changes in Teacher Candidate Understanding of Formative Assessment

This section provides findings related to how teacher candidates developed their understanding regarding formative assessment practices when working with a mentor teacher during their teacher residency semester. As teacher candidates were involved in educative

mentoring experiences, their understanding of formative assessment changed in response to collaborative conversations, guided reflection, and targeted feedback. By examining these changes, this section shares findings through which educative mentoring supports the development of formative assessment in teacher candidates.

Teacher Candidates' Understanding of Formative Assessment at the Beginning of the Semester

This section explores how teacher candidates initially made sense of formative assessment. These early conceptions set the stage as a great starting point for understanding how teacher candidates build formative assessment practices. There were two main themes for how teacher candidates understood formative assessment at the beginning of the program: (1) formative assessment as a check for understanding and (2) formative assessment as a tool for making instructional decisions.

Formative Assessment as a Check for Understanding. At the beginning of the mentoring experience, teacher candidates defined formative assessments as in the following ways as a: test, needs assessment and check for understanding. In general, their definitions focused on formative assessments as a tool to find out what students know. For example, Heidi simply said, “So formative assessment is something a test.” This quote exemplifies Heidi’s understanding formative assessment as a check for understanding can be a tool like a test.

Heidi framed her definition of formative assessments as a needs assessment. During her initial interview, she stated, “We would do, in my previous job I was a trainer, I would do needs assessments with the client...so I would see what they knew...” In this quote, Heidi explained

how she used formative assessments as an adult trainer for using computer software and defined formative assessments as needs assessments for the purpose of seeing what her clients knew.

Teacher candidates also defined formative assessments as a check for understanding. Olivia, during her initial interview, said “When I think of formative assessment, I think of like every time you teach a skill, or a like, module or something like that. It's when you have a check for understanding of the concept that's being taught.” In this quote, Olivia described how formative assessment is used to find out what students know after a teacher has taught. In her initial interview, Olivia further elaborated on the idea of formative assessment as a check for understanding. She said, “Just being able to see how they're responding to my teaching, and how they're comprehending the lesson.” This quote captured Olivia’s understanding that you can evaluate if students comprehended a lesson or if students are responding to the content using formative assessment as a tool to check understanding.

Another initial concept of how teacher candidates understood formative assessment as a check for understanding was as an action like collecting information and collecting data about student knowledge. Heidi, during her initial interview, said “I guess, you are collecting information and data to figure out what your student knows.” In this quote, Heidi shared her thoughts of formative assessments as a check for understanding as an action of gathering data and information for the purpose of learning what knowledge a student has.

Formative Assessment as a Tool for Making Instructional Decisions. At the initial stage of the project, teacher candidates also conceptualized formative assessments as a tool for making instructional decisions to adapt and be responsive or for planning. Teacher candidates described formative assessments as a tool for a teacher to adapt and respond so they can target

student learning. Heidi said, “So that you can target their learning and their instruction.” The teacher candidate shared her understanding that using formative assessment as a tool could then allow her to make decisions for instruction to target student learning, essentially responding to students’ understanding.

Teacher candidates also described formative assessments as a tool for a teacher to adapt and respond by changing the teaching to meet students’ needs. During the initial interview, Olivia shared, “I use the student understanding to inform my teaching by if what I’m doing is effective, and if I need to change it to meet those different students’ needs.” This spotlights the teacher candidate’s understanding that formative assessment is a tool to adapt instruction to meet diverse student needs.

At the initial stage of the project, teacher candidates also described formative assessment as a tool to make instructional decisions about planning lessons. Heidi said, “I use the student understanding to plan lessons and to know what to teach for the next lesson.” This quote demonstrates the teacher candidate’s initial understanding of formative assessment as a tool to make instructional decisions for future lessons.

Teacher candidates’ initial understandings of formative assessment show perspectives that are more foundational in conceptions, such as formative assessments as assessing what students know, collecting information, and as a tool for instructional decision making. These early views focused on gathering learning evidence of students to direct teaching practices. These concepts for teacher candidates’ initial understanding were essential for studying how the concepts of formative assessment held by teacher candidates might be changing through experience and support from a mentor teacher during their teacher residency semester.

Teacher Candidates' Understanding of Formative Assessment at the End of the Semester

This section explores how teacher candidates later made sense of formative assessments at the end of the teacher residency semester. These later-stage conceptions display a shift from initial ideas to a more refined view of formative assessments as actions and as tools for guiding student learning and informing in the moment instructional decisions. More specifically, teacher candidates also became aware of the benefits of using formative assessments in real-time and adjusting their instruction on the spot based on student responses and needs. There were two main themes for how teacher candidates understood formative assessment at the end of the program: (1) formative assessment as a quick check and (2) formative assessment as a tool for making in the moment instructional decisions.

Formative Assessment as a Quick Check. At the end of the mentoring experience, teacher candidates defined formative assessments in the following ways as a: quick check, check for understanding, and use on the spot. Teacher candidates understood formative assessment as a quick check for student understanding was as an action like collecting information throughout a lesson. This contrasts with the teacher candidates' definition of a check for understanding at the beginning of the semester, which they viewed primarily as an end-of-lesson or unit activity. In comparison, the mentor's definition at the end of the semester emphasized quick checks as a type of checking for understanding that is embedded throughout the lesson, not limited to its conclusion. Heidi, during her second interview, stated "They're checks that we do throughout the lesson to inform teaching." This quote presented the teacher candidate's understanding that the data collected from the checks can be used to inform teaching.

To further explore formative assessment as an action, teacher candidates understood formative assessment as a tool for collecting and interpreting data about student knowledge. This could be further used to prepare formative assessments for purposeful gathering of data. Olivia explained:

To build the formative assessments, I used data from what I knew the students were learning that day, what they were showing or struggling with and used, created assessments to really see if they understand the skill based on prior lessons, and prior learning throughout the week.

In this quote, the teacher candidate elaborated on how she built formative assessments for the day's lesson based on the data she collected in the lesson as well as data collected that week. She also included her interpretations of their learning from prior lessons to build those formative assessments.

Another concept of formative assessments as a quick check was how teacher candidate definitions focused on formative assessments as a tool to find out what students know at different points of a lesson, as well as the end of the lesson. Teacher candidates added to their initial understanding of formative assessment to include checking understanding during and throughout the lesson. For example, during her second interview, Olivia explained, "I define formative assessment as a checking for understanding as either at the end of the lesson or sometimes throughout the lesson as well. Or our learning segments as well." This quote exemplifies the teacher candidate's understanding of the various times formative assessments can be used to check what students know, including throughout the lesson.

Teacher candidates defined formative assessments as a quick check. A quick check is a brief formative assessment that is used during or after a lesson to quickly assess student understanding of a specific skill or concept. Olivia stated, "Especially quick checks to look at

one thing of learning during parts of a lesson is a big help to do what's best for kids." In this quote, the teacher candidate expressed her understanding that a quick check is a formative assessment tool that can quickly tell you what students know at different points during a lesson.

Teacher candidates also defined formative assessments as a tool that could be used immediately at any time during a lesson. Heidi simply stated in our second interview, "Formative assessment is for on the spot." This highlighted the teacher candidate's perception that formative assessment has a use as a tool to use during a lesson on the spot to tell you what students know.

Formative Assessment as a Tool for Making in the Moment Instructional Decisions.

At the end of the project, teacher candidates conceptualized formative assessment to inform and adapt instruction, primarily in real-time. This is a major change from the beginning of the program when it was understood to largely be about planning and meeting students' needs. Teacher candidates' understanding did not shift away from that foundational understanding; however, they expanded their understanding of formative assessments and their use for instructional decision making. One way teacher candidates used formative assessment as a tool to make instructional decisions was to use the results quickly. For example, Heidi shared, while discussing using formative assessments:

So, if I walk around the room, and I see that there's, as a whole group where we're struggling on a concept, the whole lesson can be let's stop and let's focus on this one problem. And then I can also have some materials ready where if it's just one group that's struggling and then there's a group that's really got it and there's a group that maybe needs to work partner work then you can kind of do some small groups from there... ready to put the results of the assessment to work in the classroom quickly.

The teacher candidate described how she used formative assessment, embedded within a lesson, as a tool to find out students' knowledge of a concept and where they are struggling with the

concept. With that data, she then described how she could make decisions for instruction and act on those decisions quickly.

Another way teacher candidates used formative assessments as a tool to make instructional decisions was to use them to make changes for that lesson or the subsequent lesson. Heidi wrote in her journal about formative assessments as, “Most helpful when you can immediately make changes to that or subsequent lessons based on what you see.” This quote emphasized the teacher candidate’s understanding that formative assessments are a tool to support instructional decision making for the current lesson or a subsequent lesson.

Teacher candidates also used formative assessment as a tool to make instructional decisions for changes for the next class group teaching the same lesson. Heidi said, “And so that was one of those moments where I was like, I am really happy that I was able to factor that in and make changes for the next block.” This quote clarified teacher candidate awareness that formative assessments can inform instructional decisions and support making changes when teaching the same lesson with another group of students.

Teacher candidates also used formative assessments as a tool to make instructional decisions to make changes within a lesson based on student needs. This is a change from the beginning when they conceptualized using it for future lessons. At the end of the program, teacher candidates used these student needs to inform them about what to teach next within the lesson, how to teach it, or to use a different mode of instruction. Olivia shared:

But when [Cindi] and I was hands on and realizing how important formative assessments are and will not only benefit the students but will help dictate what you need to teach next and what you need to adjust maybe in yourself or what the students aren't understanding if you need to teach in different ways so that they can reach the goal and reach the day objective that you have for them.

This quote established the teacher candidate knew formative assessments offer insights into student needs which can inform and guide instructional adjustments during a lesson.

Much like the beginning of the program, teacher candidates conceptualized formative assessment to inform and adapt instruction in planning. Teacher candidates described formative assessments as a tool for a teacher to adapt and respond during planning so they can target student learning. The use for decision-making in planning varied from planning the “next lesson” or the “next day lesson” and to use during the “next planning period.” For example, Heidi shared she used formative assessments “to inform the next day's teaching and to inform my next planning period.” Olivia also shared an aha moment in using a formative assessment, “Oh, I know what the misconception is, and then using that to create the next lesson to address those misconceptions.” These quotes attest the teacher candidates retained the practice of using formative assessments as a tool for planning lessons.

Another way teacher candidates used formative assessments as a tool to make instructional decisions was regarding student assessments. For example, in her second interview, Olivia stated, “...knowing that you can use what they do as a guidance towards your next lesson or next teaching or lesson planning or assessment even.” This quote showed Olivia considered formative assessment as a means to inform and shape assessments.

Additionally, teacher candidates used formative assessments as a tool to make instructional decisions regarding written feedback. In her second interview, Olivia stated,

I used as in formative assessments were these sticky notes to give feedback on students' work. There'd be times where I'd want to give them oral feedback instead of giving them the written feedback, so they weren't able to show me. I wasn't able to see the progress if my feedback was effective towards them because it wasn't written down.

This quote exhibits how the teacher candidate conceptualized formative assessment as using written feedback for instructional decisions and using it to see if her feedback to the students was effective in her instruction.

Teacher candidates' later understandings of formative assessment show a growing recognition of formative assessment as an ongoing, student-centered process. Formative assessment as a quick check and formative assessment as a tool for making in the moment instructional decisions helped teacher candidates internalize formative assessments as responsive teaching.

Changes Across the Semester

Teacher candidates' later understandings of formative assessment show a meaningful change from their initial conceptions into a more refined conceptualization. At the beginning of their teacher residency at Cheery Cove Elementary, teacher candidates defined formative assessments more in terms of a thing to find what students know and as an action to gather information about student knowledge. By the end of their teacher residency at Cheery Cove Elementary, teacher candidates described a deeper understanding of formative assessment, particularly its use at various points during a lesson to check student learning. They also expressed greater emphasis on using formative assessments as a continuous process to monitor and support student learning. Heidi explained it best when she said:

I've come to realize that before, it was something that I would kind of use to inform the next day's teaching and to inform my next planning period. I'm realizing that it's most effective when I can kind of use it on the spot and I have some materials ready for whatever way the lesson goes in that moment.

Teacher candidates' use of formative assessments was more for evaluation and some for decision making for instruction at the beginning of the program. This use moved to more decision-making

and for various kinds of planning for instruction. It was a shift, and it reflects that they built upon their foundational understanding of uses for formative assessments.

Another change in building formative assessment practices was in the focus of the formative assessment. Its aim moved from being more teaching-focused to being more student-focused. Though both have a place in formative assessments, this refined shift coincides with formative assessments as an ongoing process in responding to student learning.

Activities That Prompted Changes in Understanding of Formative Assessment

This section explores the specific activities and experiences that contributed to the moves in the teacher candidates' understanding of formative assessment throughout their teacher residency semester. Through the strategy of explanation building, the data presented these activities to be important to the teacher candidates in the building of their formative assessment practices during their teacher residency semester. Activities found to be important were observations, direct conversations with mentor teachers, practicing formative assessments (planning, analyzing student work, collaborative teaching of enacting in the moment formative assessments, enacting in the moment formative assessments), learning from challenges and failures, and reflection.

Observations

Teacher candidates built their formative assessment practices through the observations they conducted. Observations include teacher candidates' observation and debriefing, collaborative teaching and debriefing, other general observations mentioned by the teacher candidates that include observing formative assessments and observing the mentor teacher.

As part of the research study, each teacher candidate participated in observing her mentor teacher using formative assessment practices while teaching and participated in a debriefing of that observation. Olivia remembered her observation of a math lesson where students were learning the concept of division with Cindi. She said:

And the very first few days I got to do an observation where my mentor was using formative assessments [check math task model; think-pair-share; peer share and feedback] and a tool for the formative assessments [clipboard with post it notes with written feedback based on formative assessment checks] as well. This made an impact since I was able to see formative assessments all through a lesson and saw it as so much more in how to teach. And being able to ask her questions afterwards helped me connect things to try while I have her to help.

This quote emphasizes the influence on a teacher candidate of observing the mentor teacher utilizing formative assessment practices. The teacher candidate expressed a better understanding of formative assessment practices, especially embedded formative assessment practices, in the work of teaching.

In another part of the research study, the teacher candidate participated in collaborative teaching with her mentor teacher using formative assessment practices while teaching and participated in a debriefing of that collaborative teaching. Heidi and Anna were teaching a math lesson. Heidi observed Anna walk around and check one question on the students' worksheet so she could decide whether to move on or to pull small groups so students could understand the math concept. Heidi stated an observation of students:

And I saw the way that unfolded for her and how the kids the attitude was just different among the classroom and the kids were walking away feeling like they were able to be successful at something. I realized if I'm gathering this information and using it as quickly as I possibly can, then the kids are going to be the most successful.

This quote reveals the teacher candidate's observation of students' disposition and perceived learning success because of the mentor teacher adjusting the collaborative lesson due to using formative assessments.

Outside of the research study, the teacher candidates participated in other teacher residency work with their mentor teachers. Within the daily classroom work, Heidi shared an observation of her mentor teacher, Anna, by saying:

Seeing her firsthand, do the formative assessments, narrow her focus to one or two questions that she's looking for. Specific things in the questions she knows what she wants so to walk around the room and see, and she can. She has like a little sheet that she has behind one of those laminated folders and she kind of marked it off on her sheet as she walks around the room and just watching her do all the things like that. Like eventually I came to realize I needed to do in my own lesson like how I watched her put those things to work. So, it was very impactful just to see it done correctly.

This quote illustrates how observing mentor teacher's use of formative assessment tools helped the teacher candidate reflect on and better understand her own approach to using formative assessments.

Direct Conversations with Mentor Teacher

The direct conversations teacher candidates had with their mentor teacher supported the building of their formative assessment practices. This includes teacher candidate references to the mentor-mentee meetings that were part of the research study. This also includes other general conversations within the teacher residency with the mentor teacher.

As part of the research study, teacher candidates and mentor teachers met to co-plan together and conduct student work analyses as a basis for planning. Talking about this particular mentor-mentee meeting, Olivia stated, “[Cindi] has taught me a lot of different formative assessments and how to analyze assessments by talking through their thinking and use that in

future lessons as well as how to create small groups out of them as well.” This quote notes the teacher candidate learned how to analyze assessments to use for creating small groups and for planning future lessons because of this direct conversation with her mentor teacher.

A direct conversation that supported teacher candidate learning formative assessment practices was debriefing after collaborative teaching. As part of the research study, teacher candidates and mentor teachers participated in collaborative teaching and debriefed about that experience during a mentor-mentee meeting. Heidi reflected on her Mentee Reflection Journal page about collaborative teaching with Anna during a math lesson:

I tried a grouping strategy that I was not pleased with in execution. I was able to discuss in mentor debrief and approach Block 2 with a new strategy that felt more successful. In my debrief we talked about narrowing to one question at a time for formative assessment to help quicken quick checks. I used this strategy successfully in Block 2.

This quote captures a direct conversation during a debrief that supported the teacher candidates’ use of formative assessment in practice.

A mentor teacher practice during the direct conversation that supported teacher candidate learning formative assessment practices was when mentor teachers engaged in thinking aloud their decision-making and thought processes. As part of the research study, mentor teachers used transparent thinking as an educative mentoring strategy for teacher candidates in the mentor-mentee meetings. Heidi shared in her second interview:

[Anna] had a tendency to think out loud through her thought process and her planning. And there was a part of that that took a lot of pressure off of me because in seeing how she thought things out loud and how she got to the decisions that she eventually made. It helped me to realize that teachers don't just come knowing everything to do and it takes a lot of pressure off to know that they don't have all the answers and they don't just come knowing exactly what to do with everything, but they have to kind of think through these things and reason through things and there's a lot of quick decisions that are being made and that they're constantly

adapting too. She wasn't a keeper of knowledge. She was happy to share so that I learned how and why.

This quote exemplifies transparency in the role of teaching where the teacher candidate engaged in the reasoning, reflection, and adaptation of teaching. In essence, the teacher candidate expressed understanding the in-the-moment instructional decision-making process, and that effective teaching involves continuous learning and adaptation. The candidate also noted that these transparent thinking direct conversations took place within the research study mentor-mentee meetings, as well as outside the study.

Practicing Formative Assessments

There were many ways the teacher candidates expressed practicing formative assessments that helped them build their formative assessment practices. These ways included teacher candidate references to components that were a part of the research study and other general experiences in the teacher residency. Some of these practices that teacher candidates expressed were planning, analyzing student work, collaborative teaching enacting in the moment formative assessments, and enacting in the moment formative assessments.

Planning. Teacher candidates expressed that planning with their mentor teacher helped them build their formative assessment practices. This includes teacher candidate references to the mentor-mentee meeting components that were a part of the research study and other general planning within the teacher residency. As part of the research study, teacher candidates and mentor teachers met to co-plan. Heidi shared about co-planning:

I think in using formative assessments I have learned maybe to chop learning up into the smallest segments. So, in co-planning, I can then work with my mentor to know how to break it up into smaller teaching parts. In teaching, I can then see if there's a disconnect with material to be able to kind of chunk it into bite sized pieces, and then to teach in a more like micro level. Okay, we're really struggling

with place value. So, let's back up to that spot. That's where if you can pinpoint exactly what the struggles are, and the concerns are, then you're better able to teach to that.

This quote depicts the teacher candidate working with her mentor to plan formative assessments.

This co-planning helped the teacher candidate improve her ability to break lessons into smaller parts and check for student understanding, allowing her to adjust instruction as needed.

Olivia also wrote about co-planning stating that co-planning with her mentor, Cindi, helped her connect “how to change instruction in the middle of a lesson, how to deliver the content effectively for students to understand the objective and how to create an assessment that will demonstrate the students learning.” This quote illustrates how co-planning with the mentor teacher strengthened the teacher-candidate’s ability to plan a lesson and plan for making instruction decisions during the lesson by developing formative assessments that measure student understanding.

Teacher candidates also learned about formative assessment practices by general planning within the teacher residency, like preparing so they can adapt instruction when acting on in the moment formative assessments. When Heidi talked about the challenges of formative assessments, she said:

...no matter how the lesson goes, you can have something...So I think it's building a library of work or having problems that you can come up with quickly in your head to demonstrate a concept that they're working on. I think that's really how to overcome all the challenges is just to be as prepared as you possibly can and then to not be super married to any plans that you make, so that you can be flexible.

This quote emphasizes the teacher candidate’s growing understanding that while careful planning and preparation for expected results from formative assessments within the lesson are

essential, it is equally important to remain flexible and ready to adjust the lesson based on insights gained from the formative assessments.

Analyzing Student Work. The analysis of student work teacher candidates performed with their mentor teacher helped them build their formative assessment practices. This included teacher candidate references to the mentor-mentee meeting components that were part of the research study.

As part of the research study, teacher candidates and mentor teachers met to analyze student work. Olivia and Cindi were analyzing students' thinking using science exit tickets for a lesson about change in matter from a solid to a liquid and back to a solid. When they were sorted into three groups based on percentage correct, each group was analyzed for patterns in student thinking. Olivia shared this about analyzing student work with Cindi:

I think an aha moment when it came to formative assessments was as we were like assessing the students on in science, and we got their, like exit tickets, their assessments. We were realizing that there were some misconceptions that were happening. So, then that was the AHA like, "Oh, I know what the misconception is," and then using that to create the next lesson to address those misconceptions.

This quote demonstrates the teacher candidate's understanding of the formative assessment practice of analyzing student work can reveal misconceptions that drive planning for the next lesson.

Collaborative Teaching Enacting in the Moment Formative Assessments. Teacher candidates, with help from their mentor teachers, engaged in scaffolded practice of implementing in the moment formative assessments, which helped them develop their formative assessment skills. This scaffolded practice included teacher candidates' references to the mentor-mentee meeting components that were part of the research study. Olivia and Cindi collaboratively taught

a science lesson on weather and climate. During part of the lesson, students were analyzing graphs but showed low levels of engagement as they answered questions. A formative assessment check using student response cards was used and the lesson was changed based on student responses to teacher questions of the quick check. For example, Olivia wrote:

[I experienced in my collaborative teaching and debriefing with Cindi] how we changed the lesson mid-way because the students weren't understanding how to read a graph. [I experienced] how and when to change instruction during a lesson when you notice the instruction isn't benefiting the students or [is] making misconceptions.

This quote captured the teacher candidate's collaborative teaching supported practical experience of formative assessment in action by gathering, interpreting, and adapting instruction to meet students' needs.

Enacting in the Moment Formative Assessments. Teacher candidates engaged in implementing formative assessments in the moment, which helped them foster their formative assessment practices. This includes teacher candidate references to the mentor-mentee meeting components that were part of the research study and other general enacting of formative assessments in the moment of instruction in the teacher residency. For example, Heidi shared:

I love the kids, and I love teaching, that's why I'm here, but it's given me a more positive experience in the classroom where I don't feel...like sometimes you can feel like you're just talking information at the kids or you're trying to put push learning on the kids. And when you're able to implement formative assessments and use them successfully to change your lesson, it feels more like you're collaborating with the kids a little bit and they feel positive, they feel successful. Overall, it's just, it's a better feeling in the classroom.

According to this quote, the teacher candidate experienced teaching as collaborative with the students and felt positive and successful when implementing formative assessment practices within a lesson. Additionally, Olivia expressed:

I will definitely be using formative assessments and implementing them in my own classroom. Because I've seen the positive effects it has on instruction and as well as students to whereas watching these students reach the objective after they had struggles with it because you address it and were able to assess what they're able to do. I think it's just very beneficial to yourself as a teacher and the students as well. So, it's definitely something I will continue to use and challenge myself to use different formative assessments based on the students and what works best for them.

According to this quote, the teacher candidate experienced teaching as positive and successful when implementing formative assessment practices within a lesson and planned to continue the practices.

Learning from Challenges / Failures

Teacher candidates learning from their own challenges or failures also helped them build their formative assessment practices. These challenges or failures are referenced in the mentee meeting components that are part of the research study and other general challenges in the teacher residency.

A moment a teacher candidate learned from a challenge or failure happened during an observation and debrief component of the research study. Heidi was teaching a particular strategy in her math lesson for students to divide decimals. In sharing about this experience, Heidi said:

There was one session that was really, really bad. I think that's actually the one that was [Anna] and I talked about last time where she was observing in the first block. And I had this whole plan for small groups, and I thought everything was orchestrated perfectly based on where I had seen the students the previous day. And then they just showed up that day, and they were not ready to focus. They were not connecting with the concept like they were the previous day. And it just felt like that whole session, that whole period was lost. And I was able to make changes by the next block [based on data from small group work and exit tickets]. And I saw that things went really, really well on that next block. And everyone seemed like to walk away from that class feeling empowered and feeling like they got the subject. It was just a completely different attitude walking away from it.

And so that was one of those moments where I was like, I am really happy that I was able to factor that in and make changes for the next block. But I saw how if I had adapted sooner, we could have ended a lot differently in the first block.

This quote illustrates how the teacher candidate recognized the influence made on a lesson from adapting in real-time when using formative assessments throughout a lesson.

Reflections

Reflections supported the teacher candidates building their formative assessment practices. During their residency semester, teacher candidates took part in reflection practices in two main ways. These two main ways were through inquiry strategies the mentor teacher used in mentor-mentee meetings and in the Mentee Reflection Journal pages of the study. For example, Olivia reflected on formative assessment in a Journal page:

I see how beneficial [formative assessments] are during a lesson to see where students are and how they are receiving the content. It is important to use formative assessments during a lesson to create changes for each student to be successful & master the objective. Without formative assessments, a lot of confusion & misconception can form with the students. You can find them & address them as you do formative assessments.

This quote exhibits how the teacher candidate has grown in their understanding of formative assessments in their purpose, their use for informing instruction, its value as a preventative tool, and use in taking immediate action for student learning. Olivia remarked later about reflections and about her Journal pages,

I'm just very thankful for this opportunity and to learn and to grow from being able to talk and interview as well as talk about assessments, and to reflect in the journals to help me learn about formative assessments and how to do what's best for the kids.

This quote displays, in the teacher candidate's own words, that reflecting about her thoughts and experiences in the program and in her journal writings helped her learn about formative assessments.

Summary

Table 5, below, presents a summary of how Heidi and Olivia developed their formative assessment practices over the course of the residency semester. The table highlights key changes in their understanding and use of formative assessments, drawn from two one-on-one semi-structured interviews, four direct observations of mentor-mentee meetings, and two Mentee Reflection Journal pages.

The table is organized by the beginning of the semester time 1 and the end of the semester time 2. Each row includes each teacher candidate's understanding of formative assessments by the major themes, while the columns display the two candidates' growth across the time.

Both candidates began the semester with a foundational view of formative assessment as a tool to find out what students know. Initially they also understood formative assessment to be a tool for planning to make decisions to adapt and respond to the data. At the end of the semester, both teacher candidates had broadened their formative assessment practices to also be used in real-time during a lesson to monitor and to make changes in instruction for student learning. Notably, Heidi emphasized the importance of using formative assessment practices in the moment and being prepared to respond immediately to support student learning, while Olivia focused on providing feedback that students could use to advance their understanding and also reflected on whether her feedback was effectively promoting student learning.

The final section of the table lists the activities the teacher candidates took part in that helped them build their formative assessment knowledge and practices. These activities combine organized learning experiences with practical application. Such as observations, engaging in collaborative dialogue with mentor teachers, and applying formative assessment strategies in classroom environments. Teacher candidates took part in planning lessons focused on formative assessment, analyzing student work to determine subsequent actions, and collaboratively delivering lessons that required immediate instructional adjustments based on student learning. They also gained insights through challenges and setbacks. Reflection was a component throughout, supporting candidates in processing their experiences. These activities supported teacher candidates to build formative assessment practices and understand formative assessment as both a planned and responsive instructional tool.

Table 5*RQ #1 Cross-case Table of Results*

	Time 1	Time 2
Teacher Candidate #1 Heidi	<p>FA as a Check for Understanding Define FA assessing what students know Needs assessment Test Collecting information To collect info student knowledge</p> <p>FA Tool for Making Instructional Decisions Tool for instructional decision making Adaptive/responsive Planning</p>	<p>FA as a Quick Check Define FA as a quick check Quick check Use on the spot Collecting & interpreting Checks throughout the lesson</p> <p>FA Tool for Making in the Moment Instructional Decisions Use to Inform Instruction Use results quickly Inform teaching Next class session (same lesson) Teaching to change ITM Planning decision making Plan next day lesson Next planning period</p>
Teacher Candidate #2 Olivia	<p>FA as a Check for Understanding Define FA assessing what students know Check for understanding How students are responding to teaching Checking lesson comprehension</p> <p>FA Tool for Making Instructional Decisions Tool for instructional decision making Adaptive/responsive</p>	<p>FA as a Quick Check Define FA as a quick check Checking for understanding Quick check Collecting & interpreting Checks throughout the lesson Collects information/data</p> <p>FA Tool for Making in the Moment Instructional Decisions Use to Inform Instruction Use results quickly Teaching to change ITM Planning decision making Plan next lesson Next planning period Inform assessment Inform student assessment Written feedback Written feedback Feedback as effective</p>
<p>Activities That Prompted Changes in Understanding of Formative Assessment Observations Direct Conversations with Mentor Teacher Practicing FA Planning Analyzing Student Work Collaborative teaching enacting in the moment FA Enacting in the moment FA Learning From Challenges / Failures Reflections</p>		

Becoming Educative Mentors

As mentor teachers participated in an educative mentor study group, they also worked with teacher candidate mentees during their teacher residency semester at Cheery Cove Elementary. This section addresses the research question: How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester? The findings presented here illustrate how mentors came to understand and enacted educative mentoring practices while participating in an educative mentor study group and working alongside their teacher candidate mentee. There were four distinct time points across the program to examine how mentor teachers understood and applied educative mentoring practices Time 1: the beginning of the program; Time 2: the end of foundational training; Time 3: the start of work with the mentee; and Time 4: the conclusion of work with the mentee. This section shares findings through which the educative mentor study group and working alongside their teacher candidate mentee supported the understanding of their mentoring role over time.

Beginning of the Program (Time 1)

The educative mentor study group was formed with two mentor teachers with one of the mentors serving as the researcher as well. In the first session, the members started thinking about their positions as mentors using the guided reflections in their Educative Mentor Study Group Reflection Journals. I gave a brief description of the educative mentoring framework and described the practices of formative assessment to have a foundation for future talks. This session was held August 28, 2023, early in the process because it gave mentors an opportunity to internalize the educative mentoring concepts and reflect metacognitively during times they were

engaging in the process of formative assessment use in their teaching. It was from their initial journal reflections and this meeting I saw how the mentor teachers first made sense of their role as a mentor.

Anna (mentoring as directive). Anna's early concepts of being a mentor were, in general, to direct the teacher candidate mentee in what they need to do and to be a guide. For example, Anna wrote in her journal, "A mentor is someone with more experience or talent showing their mentee how to be successful." This quote reveals the teacher candidate's belief that mentoring was to be the expert and direct each part of the mentoring process with their mentee. Anna also said, "These student teachers are going to be leading classrooms before we know it and better to help them, be a guide and teach them. It's better to tell them how to do it now than later." This quote also revealed her assertion that the mentor's role was to tell the teacher candidate mentee what to do, reflecting mentorship as mentor-focused.

Cindi (mentoring as reciprocal). Cindi initially viewed mentoring as a balanced, relationship-focused dynamic with the teacher candidate mentee's needs at the center of the relationship. For example, Cindi wrote, "Mentoring is a give and take relationship where the mentee's needs are front and center, so they benefit." This quote showed initial perceptions that the mentor-mentee relationship was balanced, with the mentee's needs central to the mentoring process. Additionally, Cindi said, "I want to learn how to be just the right scaffold so teacher candidates and teachers can learn and discover and learn together. The back and forth of teaching and learning together." This quote further reflected her belief that mentoring was a reciprocal relationship.

Anna's beginning understanding of mentoring was a place of directive in teaching her teacher candidate mentee and Cindi's initial understanding of mentoring was as a balanced and needs focused relationship.

End of the Foundational Training (Time 2)

At this time point, the educative mentor study group had met a total of four times and had participated in an in-depth discussion about educative mentoring, learned key points to establish a strong foundation with the teacher candidate, and studied collaborative teaching along with the Six Is for mid-lesson responses (Post, 2007). In addition, the mentor teachers learned, discussed, and had rehearsals of several of the protocols for educative mentoring strategies (observation and debriefing, analyzing student work, and co-planning).

Anna (mentoring as guided). During this time, Anna's developing understanding of mentoring moved from a directive style of mentoring to being more of a guided style within the view of mentorship as mentor-focused. For example, Anna stated:

So, what I think of as mentoring would be within the academic educational sphere, but I'm not like making them [mentoring and educative mentoring] different. So I think as a mentor, your role is to guide and help support the person in their life growth, and help kind of find areas that they maybe have as, like a weak spot or an area that they're you know, need to kind of grow a little more in and kind of give them your expertise and experience and help build them up in it.

This quote tells Anna's understanding of mentoring as guided, noting, Anna did not perceive a difference between traditional mentoring and educative mentoring at time 2.

Cindi (mentoring as collaborative). Cindi's understanding of mentoring did not show development beyond her initial conception during this time but shifted to more collaborative from reciprocal. She continued to view mentorship as a balanced partnership, where both mentor and mentee contribute and learn, but with an increasing emphasis on shared decision-making and

joint problem-solving. For example, Cindi said, “I am looking forward to my mentee to come because I love the energy they bring, and I want that energy, and I want to learn their new ideas they bring.” Cindi also said:

When I think about doing mentoring but doing it educatively, that piece is that making the thinking seen, the think aloud that is so often with students that I do it automatically for being a seasoned teacher. I think it will really build the relationship between us.... I think that my approach to this go around is more of having that relationship piece that way I can truly know where their next step is instead of just like I don't know what you need.... So, my intent is just really getting to know her. I know it's going to be a short amount of time but just trying to use that piece so that there is a comfort level that I can say, truly ‘I'm sharing a lot with you. But right now, this is where you need to focus but it's here if you want to have it for now or later.

These two quotes reflect Cindi’s belief that the relationship between mentor and mentee was collaborative where they work together toward a common goal and both led in that process.

Even though Cindi’s understanding of mentoring did not have a change from a balanced mentorship, it did shift to a collaborative concept, and Anna’s understanding changed from a directive stance to a guided conceptualization.

Start of Work with the Mentee (Time 3)

At this time point, the educative mentor study group had met one additional time after the mentor teachers had been working with their teacher candidate mentee. This fifth educative mentor study group meeting consisted of discussions about their work so far, specifically discussing the protocols and enacting the educative mentor strategies. The meeting also included each mentor sharing an audio recording highlighting a moment they believed captured them engaging in educative mentoring with their teacher candidate mentee. The meeting concluded with rehearsal of the protocol for the collaborative teaching and debriefing strategy.

Anna (mentoring as collaborative). Anna made a shift in her understanding of mentoring in that she saw it more as collaborative and reciprocal than a directive approach to guiding her teacher candidate mentee. For example, Anna shared:

Because we were having a discussion instead of me just telling, she asked about students working with calculators. But the part you heard [mentor-mentee meeting recording] is where I had asked about other trends or patterns. We moved from a discussion to collaborating about what the students' needs are. We did move into talking about strategies but not full-on planning but responding. Having her confidence develop to share back and forth makes me feel happy about the experience. Even small improvements are still taking us in the right direction this early on. Even though it is a small improvement right now, it still was easy to know where we are going by the end though.

This quote shows the mentor teacher discussing an experience working with her mentee and used an inquiry strategy for a collaborative discussion. This quote captures Anna's evolving concept of mentorship from a mentor-focused guided process to a balanced mentorship with a collaborative process.

Cindi (mentoring as mentee development). Cindi also developed her understanding of mentoring to be more mentee as first and more important instead of the relationship being balanced. Cindi shared:

That is where the recording picks up with her sharing her questions for clarification. I liked being able to ask her what she was thinking about it and why she thinks I chose what I chose. It truly seemed to validate her that I affirmed her thinking and added on to it. The conversation seemed to shift at that point to where she shared more of her own thinking without prompting. It also moved into her saying something she wanted to try. It made it easy to pick a short-term goal within my goals for her whether next steps or at the end. It was nice for it to be more about her than it was about me sharing. It was a great experience especially since it seemed to build rapport quickly.

The mentor teacher describes a moment where a shift occurred in a conversation from a more collaborative discussion to more of a mentee-driven dialogue. This emphasizes a

change in perception occurring from experience. Later, Cindi notes her new perception of mentoring.

Cindi wrote:

Mentoring is putting the other person first so they can learn what they need to learn to be successful. In some regards, some things they don't know they need to learn it and I have to support them in that, built on a relationship of trust, they can learn what they see/want and need.

These two quotes capture Cindi's changing view to see mentoring as putting her teacher candidate mentee and her development first in the relationship.

Anna refined her understanding of mentoring to be a more collaborative approach when working with her teacher candidate mentee. Cindi grew in her ideas about mentorship as mentee-focused instead of the mentorship being balanced between mentor and mentee.

Conclusion of Work with Mentee (Time 4)

The educative mentor study group completed their group with the sixth and last meeting, with a focus group conversation. This meeting occurred during the concluding two weeks of their teacher candidate mentees' residency. It was in this focus group conversation that I saw how the mentor teachers made sense of their role as mentors at this final time.

Anna (mentoring as mentee development). Anna's understanding of mentoring at this final time was collaborative, putting the mentee first and relinquishing control. Anna stated:

I realized this whole experience actually pushed me a lot more than I expected. The mentorship really helped me grow by changing how I saw the whole process. At first, I felt like I needed to be in control and lead everything, but I realized it's actually more helpful to give my intern space to think and figure things out on their own... It became a two-way learning experience... that made it feel more like a collaboration than a leader and follower setup... I feel more collaborative as a mentor, especially by putting her first in what we are doing. Like her first matters.

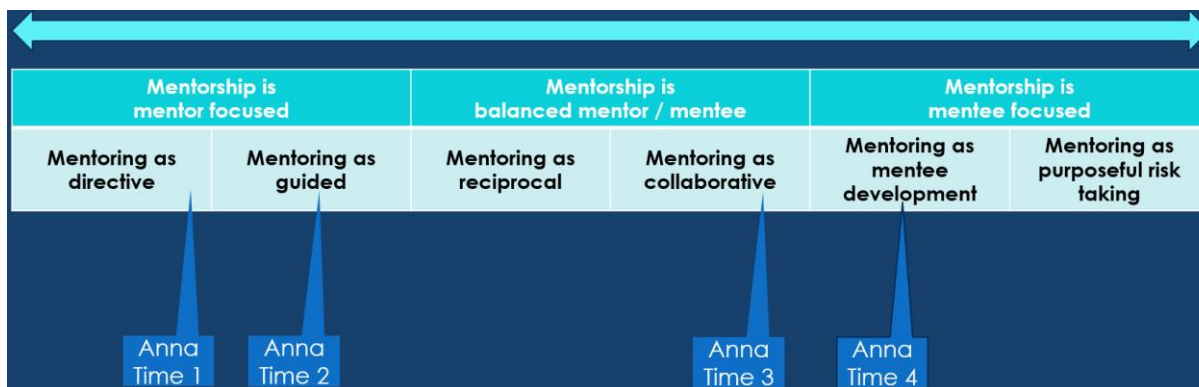
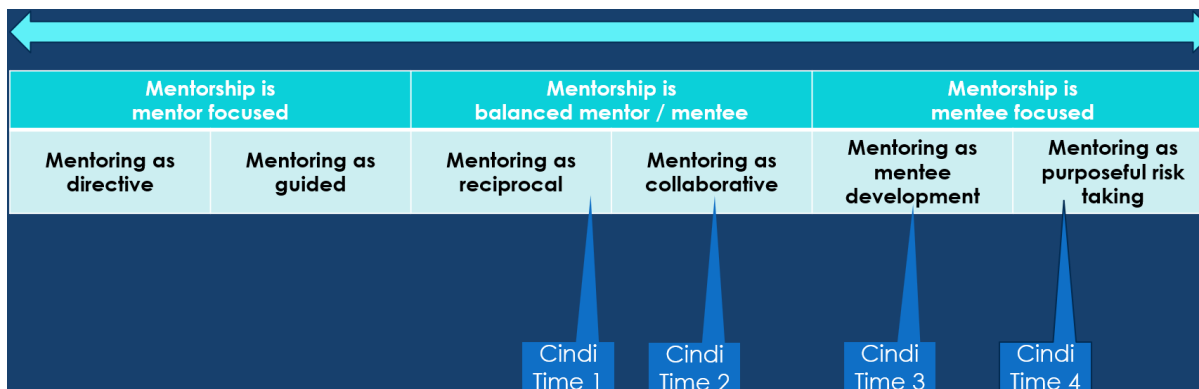
This quote presents Anna's perception change in mentoring from being in control and leading the relationship to being the mentee being first in the relationship.

Cindi (mentoring as purposeful risk taking). Cindi's understanding of mentoring was that it was risk-taking for both mentor and mentee. Risk-taking in mentoring is a shared process where both mentor and mentee are both vulnerable- mentees by trying new ideas, and mentors by making purposeful decisions that create uncertainty and may even show their own failures. Cindi expressed this by stating:

I think about what she taught me and what I gained from her was that it's okay to have a plan, but then if the next day what I had planned, doesn't work. It's okay to have somebody see that. And I know that sounds like I already know that. I do know that. But the vulnerability, just like she has vulnerability and takes risks, for me to say this whole thing is scrapped. I'm doing something completely different than what I've had planned. I'm not just tweaking it, I'm not just changing, I'm scrapping it and having to explain to her why I was making that decision because that's hard to say, 'Look, I planned that really, really poorly.' So, I think that is what she taught me is more of that vulnerability part. I wasn't really expecting because most of the time I'm pretty good at predicting what I expect will happen with the kids that didn't. Anyways, so I say that. That's pretty much what I learned, and I think that shaped me even more to have someone with me, and I'm in a mentor role and that a complete utter failure is just as important, if not more to the little failures that happen where you have to adjust or change or say 'Oh, this lesson is going terrible. Let's just up and change in the moment versus the next day even like the rest of the week.

This quote shares Cindi valued vulnerability, realizing both people in the relationship can be risk takers. It also shows Cindi's understanding mentoring can be planned risk taking.

Anna's understanding of mentoring at this final time is an evolutionary stance from the beginning from a directive approach to a refined mentee is first approach (see Figure 5). Cindi's understanding of mentoring also evolved from one of a balanced relationship to mentoring is risk-taking (see Figure 6).

Figure 5*Anna Mentor Teacher #1 Mentorship Visual***Figure 6***Cindi Mentor Teacher #2 Mentorship***Summary**

Both mentor teachers had changes in their mentoring practice, as well as significant changes in their understanding of mentoring during their time in the educative mentor study group and working with their teacher candidate mentees. At the beginning of the program, Anna approached mentoring from a directive stance, seeing her role as one of expert guidance and

control. Cindi began with a more balanced, reciprocal perspective. As they advanced through the educative mentor study group meetings and engaged in collaborative work with their mentees, both mentors gradually shifted toward more mentee-focused mentoring that aligns with educative mentoring practices. Their changing conceptions show the altering power of sustained, practice-based professional development in educative mentoring.

Activities that Supported Development as Educative Mentors

The educative mentor study group had recurring topics of conversation that discussed meaningful practices as an educative mentor. Two meaningful practices that arose often and throughout the semester were (1) collaborative conversations and (2) a focus on one specific area. This section outlines these two key activities that contributed to the mentor teachers' development.

Collaborative Conversations

Collaborative conversations were conversations between the mentor teacher and the teacher candidate mentee to debrief. Collaborative conversations were initially discussed in the educative mentor study group as discussions and transitioned into being talked about as collaborative conversations. Cindi, discussing a mentor-mentee meeting, shared:

But it was how fast we were able to create a back-and-forth discussion. I did like starting out asking her to discuss what she noticed or what she wondered. She seemed to feel comfortable. It naturally moved into her asking a question about feedback for the students. After I shared my decision making with the feedback, I was able to probe her by asking if anything she noticed was kind of confusing or anything she wanted to know more about.

This quote highlights the use of educative mentoring inquiry strategy for conversations and debriefing with the mentee. It also highlights the educative mentoring transparent thinking practice. Both supported collaborative conversations. These practices help mentor teachers to

reconceptualize mentoring as a form of cognitive apprenticeship focused on supporting the mentee's development.

Anna engaged in discussion practices that changed her thinking about mentoring as well.

For example, Anna, discussing a mentor-mentee meeting, shared:

Discussing it made it easy to share my thought process and even the behavior management that is also included in students working while the teacher has a small group. Because we were having a discussion instead of me just telling, she asked about students working with calculators. But the part you heard is where I had asked about other trends or patterns. We moved from a discussion to collaborating about what the students' needs are.

This quote highlights the mentor engaging in transparent thinking practice as well as utilizing an inquiry strategy. The mentor acquired the concept that dialogue can be collaborative in the mentorship.

When conversations and discussion strategies were used intentionally, the mentee's development became apparent through their metacognitive work.

Cindi shared, at the closing Educative mentor study group meeting:

...some of the skills that I gained was actually being able to be more explicit in what my thinking is. And I found that that supported her because she was able to compare her thinking and my thinking, and she said that several times. She said I really like that I can compare my thinking to your thinking. And I hadn't had that as a thought going into it *that* would be what she would take out of it. The collaborative conversations have made an impression for sure.

This quote captures a benefit of collaborative conversations when the mentor teacher utilizes transparent thinking. This pushed the mentor teacher to rethink sharing one's own thinking is essential mentoring to foster deeper mentee metacognition and growth and not simply explaining.

One Focus on a Specific Area

One focus on a specific area is the mentor teachers' concept to work with their teacher candidate mentee with a focus on one specific area of need. Within this educative mentor study group, the mentor teachers' one focus was formative assessments within the three practices of educative mentoring (Gardiner, 2016b). Even in goal setting for teacher candidate mentees, the focus was still on formative assessments.

Anna shared her thoughts on keeping one focus even with a goal for her teacher candidate mentee, "Our focus is going to be on using our formative assessments and how those can be tools with behavior management. So, I'm getting a check for understanding and I'm also managing behavior simultaneously." This quote reinforces the power of the focus on one specific area that still allowed room to view it through a lens of other teaching practices, in this case, behavior management.

Anna reflects on how shifting the focus of mentoring to being about formative assessments transformed her approach and mindset during the semester. Anna, at the closing meeting, said:

Yeah, because you do have to keep in mind like this is a student intern. This is not a seasoned teacher and so no, it's not going to be perfect because we're not perfect and we've taught for forever. So having the formative assessments be the focus, made it much less like where I was feeling like I'm critiquing her as opposed to collaborating. So, I did like that setup. I feel like I will use that if I'm a mentee mentor, again is to pick a focus with them and say, okay, hey, this is what I'm going to be looking on and talking to you about throughout and that's going to be my main focus. And so, you know, we can have conversations outside of that. Yeah, but I'm not going to be critiquing every time that a kid is off task, and you did it in a way like because then I feel like that's disheartening and kind of, you know, negative to them. So, I feel like this kept my intern engaged and encouraged instead of being like, alright, well, let's, let's go through like you would on a rubric on the team and be like, well, that was that was weak, this was weak, or you know, it just feels less critical.

This quote catches the mentee-focused aspect of mentorship and the benefit of focusing on one specific area. This practice pushed Anna to rethink mentoring as a process of targeted support, rather than evaluation, ultimately deepening her understanding of what it means to mentor a developing teacher.

The educative mentor study group found that having collaborative conversations and focusing on one specific area were significant to effective mentoring. These two ideas helped mentor teachers working with their teacher candidate mentees grow professionally in a deeper way. Talking together helped both mentors and new teachers understand each other better and share knowledge about teaching. Focusing on just one area, formative assessments, made it easier for mentors to provide clear and purposeful guidance.

The data of the mentor teachers who participated in the and worked with teacher candidate mentees throughout their residency semester show the lived experiences of educative mentoring. Mentor teachers were not only able to further develop their knowledge about educative mentoring practices through their involvement in the educative mentor study group but also actively use the practices through their daily work with their teacher candidate mentees. The experiences demonstrate the combination of planned professional learning and real-life mentoring can enhance the experience of the mentor teachers.

Summary

Table 6, below, presents a summary of how Anna and Cindi developed their understanding of mentoring over time when working with teacher candidates during their teacher residency semester. The table highlights key changes in their understanding of mentoring, drawn from five direct observations of educative mentor study group meetings, four direct observations

of mentor-mentee meetings, one focus group conversation, two Educative Mentor Study Group Reflection Journal pages, and mentor notes from the Post-it Note Parking Lot.

The table is organized by Time 1: the beginning of the program; Time 2: the end of foundational training; Time 3: the start of work with the mentee; and Time 4: the conclusion of work with the mentee. The table has two rows, one for each mentor teacher showing each mentor teacher's conceptualization of mentoring during each time across the semester.

Both mentor teachers began the semester viewing mentoring as supporting their teacher candidate. Anna conceptualized mentorship as mentor-focused where she was primarily in a directive role with the teacher candidate mentee. Cindi conceptualized mentorship as balanced where she and the teacher candidate shared equally and she saw her role as more reciprocal. At time 2, Anna conceptualized mentorship as still mentor-focused but had shifted to where she was primarily in a guiding role with the teacher candidate mentee. Cindi still conceptualized mentorship as balanced where she and the teacher candidate shared equally but shifted and saw her role more collaborative with shared goals. At time 3, Anna shifted her conceptualization of mentorship as balanced and had a role of collaborative with the teacher candidate mentee. Cindi changed her conceptualization of mentorship to a view of mentee-focused and her role as mentee development. At the end of the semester, time 4, Anna shifted her conceptualization of mentorship to a mentee-focus and had a role of mentee development with the teacher candidate mentee. Cindi conceptualized mentorship as mentee-focused, and her role shifted to mentoring as purposeful risk taking. Though each mentor teacher had at differing views of mentoring and their roles, they each developed a deeper understanding at each time point. Both mentors changed their understanding of mentoring to include more collaborative and inquiry-based practices. They

began to view mentoring as a process that supports mentee autonomy, reflection, and growth through collaborative conversations and shared thinking. Noting, Anna emphasized the shift from directing to collaborating. Cindi highlighted the importance of making her own thinking visible to help her intern reflect. Both mentors came to view mentoring as a mentee-focused relationship. Largely, the findings suggest that mentors reconceptualized their roles as facilitators of growth and co-learners rather than solely as experts or balanced relationship but with different goals.

The final section of the table outlines the key activities that contribute to the mentor teachers' evolving understanding of their role. These included collaborative conversations and having one specific area for focus, naming formative assessments.

Table 6*RQ #2 Cross-case Table of Results*

	Time 1 beginning of the program	Time 2 end of foundational training	Time 3 start of work with the mentee	Time 4 conclusion of work with the mentee
Mentor 1 Anna	Mentorship is mentor-focused Mentoring as directive	Mentorship is mentor-focused Mentoring as guided	Mentorship is balanced Mentoring as collaborative	Mentorship is mentee-focused Mentoring as mentee development
Mentor 2 Cindi	Mentorship is balanced Mentoring as reciprocal	Mentorship is balanced Mentoring as collaborative	Mentorship is mentee-focused Mentoring as mentee development	Mentorship is mentee-focused Mentoring as purposeful risk taking
Meaningful Practices That Supported Development as Educative Mentors Collaborative Conversations One Focus on a Specific Area				

Conclusion

Overall, the results of this descriptive embedded single-case study help to shed light on the ways which teacher candidates built formative assessment practices as well as how their mentor teachers understood educative mentoring over time during the teacher residency semester. Using detailed qualitative data collected from a variety of sources, important patterns and categories occurred which demonstrated the complexity of the mentoring relationship. The experiences and voices of teacher candidates and mentor teachers provided understandings of how purposeful educative mentoring facilitates the development of formative assessment practices. It shows how structured, thoughtful, and goal-driven educative mentorship played a

crucial role working with teacher candidates. These results respond directly to the guiding research questions and form the basis of further interpretation and synthesis in Chapter 5 where implications of the findings on teacher preparation, mentoring practice and future research are deliberated.

CHAPTER V: DISCUSSION AND CONCLUSIONS

Introduction

This chapter presents a discussion of the key findings of this study in relation to the research question and the existing literature. As outlined in Chapter 1, this research was aimed to investigate how educative mentoring can support teacher candidates' building their formative assessment practices and how their mentors understand educative mentoring practices over time. The two guiding research questions were: (1) How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester? and (2) How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester?

The chapter begins by interpreting the main findings, then connects them to prior research. It then outlines implications and concludes with implications for future research.

Summary of Findings

In Chapter 4, changes in teacher candidate understanding of formative assessments were examined. The data indicated that teacher candidates had meaningful growth in their perception and use of formative assessments during their teacher residency semester at Cheery Cove Elementary. Teacher candidates began the semester with the perception that formative assessment was used in part to find out what students know and may be used for evaluation or to also plan for future lessons. By the end of their teacher residency semester, their understanding

deepened to view formative assessment as an ongoing and responsive process integrated throughout instruction.

Markedly, teacher candidates started to understand how useful formative assessments could be when used during instruction to check for student understanding in real-time, rather than primarily as a tool for future planning. Teacher candidates moved from using assessments to inform planning to adapting instruction “on the spot” based on student responses. This shift illustrates a growing awareness of formative assessment as a dynamic and interactive process.

A shift in the purpose of their use of formative assessments also was observed. There was a shift from predominantly evaluating student learning to making informed instructional decisions. This change indicates that formative assessment supports not only decisions about teaching but also useful in meeting immediate student learning needs.

In addition, teacher candidate understanding of formative assessment shifted from an emphasis on a teaching-focused approach toward a more student-focused approach. This development underlined the increased teacher candidate awareness of formative assessments being a resource not only to guide classroom instruction and teaching practices but also help to guide student learning in real-time.

The data presented activities that were important to the teacher candidates in building their formative assessment practices during their teacher residency semester. Activities found to be important were observations, direct conversations with mentor teachers, practicing formative assessments (planning, analyzing student work, collaborative teaching enacting in the moment formative assessments, enacting in the moment formative assessments), learning from challenges and failures, and reflection.

Also in Chapter 4, findings were shared to illustrate how mentor teachers came to understand and enact educative mentoring practices while participating in an educative mentor study group and working alongside their teacher candidate mentee. Through six structured educative mentoring study group meetings, mentor teachers had a space to engage in reflective dialogue, rehearse mentoring protocols, and analyze their own mentoring practices. Two central practices emerged as essential to effective educative mentoring: engaging in collaborative conversations and focusing on one specific area (formative assessments). These practices supported mentor teachers to build stronger mentorships and offer their teacher candidates more purposeful guidance for growth.

The mentor teachers both moved to understand mentorship as mentee-focused. Educative mentoring is a kind of mentorship that is mentee-focused because it is mentoring for development and growth. The mentor teachers moved to this type of mentorship because of their experiences and learning within the educative mentor study group program.

Understanding of Formative Assessments Can be Developed

In Chapter 2, the literature developed formative assessment as a dynamic process aimed at providing ongoing feedback to improve learning and teaching. Black and Wiliam (2009) emphasized the role of formative assessment in informing instruction and promoting student agency. However, the literature pointed out that educators struggle in formative assessment practice implementation. Black and Wiliam (1998, 2004) suggested teachers need living examples of formative assessment practices in action and the literature emphasized teachers need to engage in training and learning to implement formative assessment practices (Bennett, 2011; DeLuca & Klinger, 2010; Popham, 2011).

My findings revealed that teacher candidates understanding of formative assessments evolved significantly through educative mentoring and practicing formative assessments. Unlike the literature, which presented many barriers to effective professional development for the already complex process of teaching (Allen et al., 2018; Cohen, 1990; Darling-Hammond et al., 2017; Garet et al., 2001; Guskey, 2000; Kohen, 1990; Norman & Feiman-Nemser, 2005; Stanulis et al., 2019; Stosich, 2016; Wang, 2010), this study showed that with targeted support, teacher candidates could shift from understanding formative assessments as a check for understanding and a tool for planning to utilizing formative assessment as a tool for continuous ongoing student growth process.

My research suggests that practical, school-based interventions such as peer observation and reflective dialogue can be powerful in developing teachers' assessment literacy. This finding extends the current discourse by illustrating that even in the absence of top-down mandates, professional growth in formative assessment practices is possible.

Educative Mentoring Shifts the Practice of Mentoring

Chapter 2 reviewed the dominant paradigms of mentoring in educational settings, highlighting that traditional mentoring often centers on logistical support and survival skills for new teachers (Feiman-Nemser, 2001b). Although such models provide basic guidance, researchers have criticized these practices for lacking pedagogical depth and lacking in reflective practice. In contrast, educative mentoring, as described by scholars like Stanulis et al. (2014), focuses on professional growth, co-inquiry, and student-centered learning.

My findings suggest that when mentors adopt an educative approach, the nature of mentoring relationships shifts from mentor-focused or balanced to mentee-focused. These shifts

suggest a deeper conceptual engagement with teaching practices, echoing elements of the educative mentoring model outlined in the literature (Feiman-Nemser, 2001b; Schwille, 2008; Stanulis et al., 2014; Stanulis et al., 2019).

My findings illustrate that with mentor training, educative mentoring protocols and tools, and dedicated collaborative time, educative mentoring can become a sustained and practical model. These results confirm the theoretical benefits proposed by prior studies while offering concrete examples of implementation (Feiman-Nemser, 2001b; Schwille, 2008; Stanulis et al., 2014; Stanulis et al., 2019; Stoetzel & Taylor-Marshall, 2022).

The Collaborative Nature of Teacher Candidate and Mentor Teacher Growth in Educative Mentoring

The findings showed growth for each mentor teacher and each teacher candidate mentee. The findings showcased collaborative experiences that proved significant in professional growth for all participants. Each of the four participants shifted their perspective to be more learner-focused moving away from an emphasis on their roles as teacher or facilitator. This shift was reflected in the dual focus of the work: teacher candidates concentrated on formative assessment, which by nature emphasizes student learning and growth, while mentor teachers engaged in educative mentoring, which is inherently focused on supporting the professional growth of the mentee. These findings illustrate a core principle of educative mentoring, where both mentor and mentee actively engage in their own learning while supporting each other's professional growth (Feiman-Nemser, 2001a; Norman & Feiman-Nemser, 2005; Stanulis & Brondyk, 2013). The co-constructed nature of the relationship emphasizes that educative mentoring is not a one-way process but a reciprocal one, fostering mutual development through shared inquiry, reflection,

and collaborative learning (Orland-Barak & Wang, 2021; Schwille, 2008). This aligns with the cognitive apprenticeship model, which emphasizes guided participation and joint meaning-making between mentor and mentee as essential to professional development (Collins et al., 1991; Dennen & Burner, 2008).

Implications for Teacher Preparation

In light of the findings from this study, there are several implications for teacher preparation programs, particularly in building teacher candidates' understanding of formative assessment and embedding structured educative mentoring as a core component.

Building Teacher Candidate Understanding of Formative Assessments

One of the most important findings emerging from this research is the development of teacher candidates' understanding of formative assessments and their application. To address the gap between theoretical learning in coursework and real classroom contexts, programs should put greater emphasis on practice-based experiences where candidates can apply formative assessment strategies, interpret student data, and adjust that instruction (Black & Wiliam, 1998, 2004; Rozelle & Wilson, 2012; Siegel & Wissehr, 2011).

Teacher preparation programs would need to structurally embed these concepts into multiple points across the preparation curriculum. For example, foundational coursework in learning theory and lesson planning would include sessions for formative assessment strategies, such as eliciting student thinking, interpreting student work, and using feedback. Assignments could focus on analyzing student work, planning the next steps based on student thinking, and planning assessments that inform rather than evaluate (Black & Wiliam, 1998, 2004; Grossman et al., 2009; Wiliam, 2017). This would be most advantageous by partnering them with field

experiences like observing and then debriefing with the teacher they observed or teaching a small group utilizing formative assessments in the moment of teaching (Wexler, 2020a).

Embedding Structured Educative Mentoring as Core Component

Another important finding emerging from the research is the value of educative mentoring in strengthening teacher candidates' assessment literacy. Integrating educative mentoring, mentee-focused mentorship, supports the development of assessment literacy as an ongoing learning process by its core practices. Integrating this form of mentorship as a foundational component of teacher preparation can lead to skilled and responsive novice teachers.

Teacher preparation programs would need to structurally integrate educative mentoring as a formal component of its capstone work and its residency experience (Feiman-Nemser, 2001b; Stanulis et al., 2019). One way to implement these changes in a teacher preparation program would be to incorporate structured educative mentoring practices during teacher residency. For example, in lieu of a formal observation, it could be a video analysis of a collaborative teaching session with co-reflection.

Another way to implement these changes in a teacher preparation program would be to incorporate graduate-level coursework in educational leadership that focuses specifically on educative mentoring practices. Graduate students would study the theory and application of educative core practices (including the use of mentoring tools, protocols, and structured scripts). As part of the course, graduate students could participate in structured class sessions where they work directly with undergraduate students enrolled in courses focused on lesson planning and assessment where they also have field experience or graduate students could work with residency

I students (Darling-Hammond, 2006; Schwille, 2008; Stanulis et al., 2014). This provides graduate students with authentic opportunities to practice mentoring and coaching and gives undergraduate students the experience of being mentored in making student-centered instructional decisions.

Another way teacher preparation programs could structurally integrate educative mentoring as a formal component of its capstone work and its residency experience would be by regular, structured mentor-mentee collaboration time and establishing educative mentor study groups where mentor teachers can develop and rehearse mentoring practices (Feiman-Nemser, 2001b; Stanulis et al., 2019). Stipends or incentives can be offered for mentor participation in study groups. Each study group could be coordinated by the university supervisor for field experience and invite those teachers who are hosting a residency student in their classroom. For ongoing professional development, an online mentor community platform or resource hub could be utilized.

Implications for Students Benefit from Targeted Instruction and Responsive Teaching

This study demonstrates that understanding of formative assessments is something that can be developed. Schools can make that development possible. With the focus of continuous learning and instructional responsiveness, school instructional leaders could provide and facilitate regular opportunities for teachers to collaboratively analyze student work, engage in data-informed planning sessions and planning formative assessment strategies (Darling-Hammond et al., 2017; Gardiner, 2016b; Hung & Yeh, 2013; Jacobs et al., 2007; Langdon & Ward, 2015; Salas et al., 2018). Professional learning communities could focus on using real-time student data to adjust instruction (Dennen & Burner, 2008; Wilam, 2016, 2017).

Instructional coaches could be utilized in providing coaching cycles of collaborative teaching and debriefing with the focus on formative assessments in the moment of teaching (Athanases et al., 2008; Cash et al., 2022; Darling-Hammond, 2006; Grossman et al., 2009; Jensen et al., 2018; Orland-Barak & Wang, 2021; Stanulis & Brondyk, 2013; Wexler, 2020b). School leaders could target instructional feedback and recognition to be given about formative assessment practices.

This study contributes to a focused way to think about professional learning in education. For schools, this means reimagining professional development not as isolated workshops, but as ongoing, job-embedded learning experiences anchored in work within the classroom. A powerful approach would be to create a structured mentorship program to develop educative mentors. The school would formalize mentor support through an educative mentor study group and mentorship support through regularly scheduled co-planning sessions, peer observations with debriefs, and targeted inquiry cycles focused on formative assessments (Ambrosetti & Dekkers, 2010; Langdon & Ward, 2015; Schwille, 2008; Stanulis et al., 2019).

Implications for Future Research on Assessment Literacy

The findings of this study point to several important directions for future research for assessment literacy.

Future research might explore how university-school partnerships support or constrain the enactment of practice-based education, and what roles mentors play in bridging the gap between coursework and classroom practice, especially with assessment literacy practices.

This study did not investigate if professional growth of formative assessments practices for teacher candidates was accelerated in this program, though educative mentoring is a model for accelerating professional growth. Further research may add to the body of literature.

This study did not investigate the ways the mentor teacher deepened their understanding of assessments. Further research could be valuable to understand how that occurs and the impact on assessment acumen.

Implications for Future Research on Educative Mentoring

The findings of this study point to several important directions for future research for educative mentoring. This study contributes to the literature of how educative mentoring can support teacher development through co-learning, reflection, and focused instructional support. More research is needed to investigate how mentors evolve in these roles, and what program structures most effectively sustain educative mentoring practices across time.

Although cross-sectional studies provide invaluable views, only long-term data can show patterns or trends in adaptation and influence over time. Future longitudinal study is important to evaluate the long-term impacts of mentorship, assessment literacy, and responsive instruction. The potential for understanding the sustainability of teacher education reforms and the impacts of educative mentoring on school improvement.

While the current study highlighted the understanding of educative mentoring practices over time, additional research is needed to explore the developmental paths of mentor teachers who are practicing educative mentoring. Future research could aim to develop conceptual models or frameworks that explain conditions, experiences, and supports that influence mentor teacher growth.

Conclusion

In conclusion, this study set out to examine how educative mentoring could support teacher candidates' building their formative assessment practices and how their mentors

understood educative mentoring practices over time. The findings indicated understanding of formative assessments can be developed and educative mentoring shifts the practice of mentoring, offering new insights into teacher education and professional development in teaching.

The findings contribute to teacher learning theory in two main ways. It contributes by the concept of educative mentoring transforms mentoring practices as well as by the concept of educative mentoring highlighting the ways mentor teachers support teacher candidate assessment literacy. The findings also contribute to teacher education practice by informing how mentoring programs can better scaffold formative assessment skills in teacher candidates. Future research could expand upon these findings by exploring models for understanding how mentors evolve, future longitudinal studies, explore the way that mentor teachers are also deepening their understanding of assessments, or practice-based teacher education for teacher candidates.

This research gave in-depth insight into how educative mentoring facilitates the acquisition of formative assessment practices through mentorship and how educative mentoring changes mentoring practices. Despite limitations related to the study's sample size and context, the findings could develop our understanding of educative mentoring as a construct in teacher education and possibilities for designing more formative assessment-focused mentoring experiences. These insights have the potential to inform future research and contribute to efforts in improving mentor professional development and teacher candidate learning in teacher preparation programs.

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APPENDICES

Appendix A

Analysis of Student Work and Debrief: Tool and Protocols

Analysis of Student Work Educative Mentoring

Educative mentors provide growth-producing experiences and understand mentoring to be:

- Organized (planned, focused, not the kitchen sink)
- Continuous (built on prior focal areas, goals, etc.)
- Unique (adapted to each individual)
- Interactive (conversing, not just telling)

What is Educative Analysis of Student Work?

- A close analysis of student work using learning objectives to assess student learning
- A reflective practice that provides an opportunity for educators to scaffold and differentiate learning opportunities based upon students' learning needs and strengths

Why do an Educative Analysis of Student Work?

- To provide timely evidence of students' understanding in order to reflect on effectiveness of teaching as well as make future instructional decisions
- To help a novice make the shift to focusing more on students as individuals
- To help the novice learn and apply knowledge about the central role assessment plays in identifying what students need to learn as well as designing and implementing strategies for teaching
- To encourage novices to learn *from* teaching

Traditional v. Educative:

- Traditional analysis of student work is often reviewing test scores or grading papers.
- Educative analysis of student work is looking closely at which concepts students have mastered or need further instruction and determining appropriate next steps.

Educative Analysis of Student Work Includes:

- Figuring out what students do not understand
- Reflecting on instructional moves
- Planning what to do next

How Do I Do an Educative Analysis of Student Work Session?

- Sort student work into piles according to progress toward objectives (objectives not met, objectives met, or objectives exceeded) and provide reasoning for decisions. Think aloud as you **consider how student work aligns** (or does not align) to the learning objectives
- **Reflect** with the novice on the instruction of the lesson and the alignment of student performance to intended outcomes.
- Discuss how the process of analyzing student work can/should influence future planning and instruction.
- **Co-plan** with the novice to meet the needs of individuals that become evident during the analysis

Appendix A (continued)

Analysis of Student Work Educative Mentoring Putting It Into Practice

Questions to consider as you plan for an educative analysis of student work session:

- What are my growth goals for my mentee? How are my goals for my mentee related to student learning?
- What do I want my mentee to learn from this analysis of student work experience?
- How will I know my mentee learned what I hoped they would learn from this analysis of student work experience?

Analysis of Student Work Protocol

1. Select a task/assignment for analysis (an artifact from the lesson – a formative or summative assessment)
 2. Discuss learning targets/objectives from the lesson and explain expectations for the task/assignment.
 3. Define what it means to meet expectations, exceed expectations, or to not meet expectations.
 4. Split the stack of student papers with the novice and sort it into piles according to progress toward objectives (the three categories). Discuss the quality of the work and explain your justification for sorting decisions.
 5. Together, sort the student papers from the ‘does not meet expectations’ stack into the different ways that students did not meet expectations. Discuss what each student understands, is struggling to understand, and what the student needs next.
 6. Create a plan to help these specific students reach the learning objectives.
 7. Reflect on the influence of the instruction on student learning. Consider teacher moves made, explicitness of instructions, appropriateness of activities, etc. to take into account the various factors that may influence student learning.
- *Consider repeating the sorting for students who ‘met expectations’ or ‘exceeded expectations’ and discuss what these students understood, struggled to understand, and what each student needs next.

Analysis of Student Work Sentence Stems

Evidence of meeting this learning objective would be ...because...

This student wrote ...which indicates...

I see this to be important to student learning because...

I wonder if s/he understands... because...

This is telling me...because...

Analysis of Student Work Question Starters

What do you think this student was thinking when s/he wrote...? Why?

From this pile of papers, what themes/trends do you notice?

What would it take to support this student’s learning on this objective?

What instructional moves did/could we make to better support student learning related to this objective?

What do you think makes sense as an action plan as we move forward?

What do you think about the plan? Do you agree?

Feiman-Nemser, S., & Beasley, K. (1997). Mentoring as assisted performance: A case of coplanning. In Richardson, V.(Ed.) *Constructivist Teacher Education: Building New Understandings*.

Adaption of “New ASW” protocol by Dr. Randi Stanulis. Influenced by New Teacher Center, Cynthia Carver and the Tuning Protocol developed by the Coalition of Essential Schools.

Mentors as Teacher Educators Program Materials (Dr. Randi Stanulis)

Stanulis, R. N., Wexler, L. J., Pylman, S., Guenther, A., Farver, S., Ward, A., ... & White, K. (2019). Mentoring as more than “cheerleading”: Looking at educative mentoring practices through mentors’ eyes. *Journal of Teacher Education, 70*(5), 567-580.

Appendix A (continued)

Analysis of Student Work Tool

1. Performance objective:

Define what it means for a student to *meet* the objective:

2. Sort the students' work and write the students' names in the appropriate column.

Objective not met	Objective met	Exceeding object
_____ % of class	_____ % of class	_____ % of class

3. Describe the performance of groups of students in each column.

Objective not met	Objective met	Exceeding object

4. Describe the learning needs of the students.

Objective not met	Objective met	Exceeding object

5. Identify differentiated strategies/instruction to move students forward. Note any patterns and trends. Consider resources and/or personnel to support you.

Objective not met	Objective met	Exceeding object

Appendix B

Observation and Debrief: Protocols and Tools

Observing and Debriefing Educative Mentoring

Educative mentors provide growth-producing experiences and understand mentoring to be:

- Organized (planned, focused, not the kitchen sink)
- Continuous (built on prior focal areas, goals, etc.)
- Unique (adapted to each individual)
- Interactive (conversing, not just telling)

Traditional v. Educative

- Traditional observations and debriefing conversations attend to only immediate needs.
 - The mentor tries to address and “fix” everything observed
 - Observation notes record impressions and general observations
- Educative observations and debriefings have a specific **focus** and address both immediate and long-term novice learning goals

Why does an observation and debriefing need to be educative? *Isn't any feedback valuable?*

- It helps novices recognize the impact of their instructional choices on student learning
- It provides intentional and focused feedback for novices so they can target *a few areas of growth* at a time. (Too many areas to fix can be overwhelming.)
- While attending to immediate needs is important, it is also important to keep working on long-term novice learning goals
- It develops and reinforces habits of mind (being open-minded, analytical, curious)
- It provides a growth-producing experience for the novice where together you learn from the experience

Educative Observations and Debriefs Include:

- Getting rid of the kitchen sink to focus on one aspect of effective teaching
- Using evidence to target learning about teaching
- Asking questions to elicit novice teacher thinking

What does an educative observation look like? An educative observation involves:

- Selecting a specific *focus* prior to the observation, such as teacher/student talk, questioning, student understanding, pacing, consistency in expectations
- Collecting *evidence* in a targeted manner on the focus area such as number of times certain students talk, number of boys v. girls called on, teacher talk time v. student talk time, timing of each part of the lesson, positive/neutral/negative feedback, etc.
- Taking novice learning needs into account
- Intentionally selecting teachable moments

What does an educative debrief look/sound like? An educative debriefing involves:

- A *focused* conversation that is guided by evidence to help a novice target improvement
- Providing *observation data* with examples to illustrate why it is a concern
- Discussing how this particular concern correlates with student learning
- Asking *questions* to *elicit novice thinking* rather than “telling”
- Reinforcing the effective teaching practices observed
- Providing consistent feedback on progress toward novice learning goals
- *Checking* to see in what way (or not) the novice shares your concern
- Giving advice *with reasons* why you might approach the issue in a particular way (your decision-making)
- Developing a shared action plan with a way to follow-up after implementation of new ideas

Appendix B (continued)

Observing and Debriefing Educative Mentoring Putting It Into Practice

Questions to consider as you plan for an educative observing and debriefing session:

- What are my growth goals for my mentee?
- How are my goals for my mentee related to helping the novice focus on student learning?
- What do I want my mentee to learn from the observation/debrief experience?
- What evidence will support this goal?
- What long-term novice goal could I bring into this conversation? (differentiated instruction, instruction aligned to standards/objectives, focusing on student learning instead of teacher performance)

Debriefing Question Starters

From the observation notes, what do you notice? What do you wonder?

What do you think makes sense as an action plan as we move forward?

What do you think about it? Do you agree?

How do you see this influencing student learning?

May I explain the...instructional decision I made? Do you see the reason for...?

Debriefing Sentence Stems

I was impressed by ... because...

I focused on ...in this observation because...

In this observation, I noticed You can see from this data...

I might think about this like....

An idea in the future could be... because...

I see this to be important for student learning because...

Appendix B (continued)

Sample Focused Observation Protocol for Formative Assessment

Mentor Notes:**Before the observation:**

1. Together, with the mentee, choose a set date and time for the mentee to observe the mentor and for the debriefing process as well.
2. Use your previous observation notes from the Educative Mentor Group to have an example so you can discuss.
*Discuss with the mentee what they are listening and looking for during the observation (the focus for the observation is formative assessment practices of checks for understanding in the moment of teaching).
3. Discuss expectations for the observation with a mentee.
 - circulating
 - observing
 - note taking, formulating questions to discuss with mentor
4. Share what student work will be collected, as needed for further use especially in Debriefing.
5. FA Check: Ask the mentee to tell you their understanding of the observation and what they are to do.

During observation:

1. The mentee will circulate, observe, make notes, and formulate questions.
2. Mentor teach the lesson.
3. Mentor will collect student work to use during the debriefing for discussing your thinking and decision making for student learning.

After observation:

1. Continue following the outlined pages previously.

Mentee Notes:

1. Together, with the mentor, choose a set date and time to observe. Discuss ahead of time what you are listening and looking for during the observation-the focus for the observation is formative assessment practices of checks for understanding in the moment of teaching.
Plan what student work will be collected, as needed for further use.
Also, set the time for the debriefing.
2. Find a location within the classroom to be able to observe and not interrupt the mentee's environment for teaching. You may ask where the mentor would feel most comfortable for you to sit and observe.
3. Observe and make notes. Continue following the outlined pages previously.

Appendix B (continued)

Observer _____ Date: _____ Time Start _____ Time End _____ Grade/Teacher: _____ Class Size _____ Activity: _____

Formative Assessment: Checks for Understanding Observation Protocol

Definition (of the focus): Formative assessment is a planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of intended disciplinary learning outcomes and support students to become self-directed learners (CCSSO, 2018).

What (of the Focus): Formative Assessment Checks for Understanding are activities designed to be a part of the “rhythm” of the lesson as a way to elicit evidence and monitor student understanding and learning (Heritage, 2022). The purpose is to gather the data from these checks to strengthen your ability to adjust and differentiate within your lesson to move your students to the learning intentions (Fisher & Frey, 2014; Heritage, 2022). Checks for understanding are low stakes, not for grades, and are an efficient way for seeing the learners’ ways of thinking, gaining their ideas, and helping the teacher have evidence of learning (Chappuis, 2015; Heritage, 2022; Leenknecht et al., 2021).

Why (of the Focus): Teachers need living examples of formative assessment practices in action and suggest formative assessment is an advantageous practice for increasing learning and achievement (Black & Wiliam, 1998; Black & Wiliam, 2004).

How (of the Focus): Analyze the use of formative assessment by the teacher within a lesson.

Examples of Formative Assessment Checks for Understanding

Types of CFU and Associated Techniques, not exhaustive, adapted (Schools, 2020)		Additional Strategies to Check for Understanding (Hattie et al., 2017)	
Area of Focus	Technique	Technique	Description
Writing	<ul style="list-style-type: none"> Individualized response boards Response cards Interactive writing Read-write-pair-share Quick write Graphic organizers 	Numbered Heads Together	Students in each group get a number, for example, from 1 to 4. In turn, every table group is also numbered. Let students know that after they discuss a problem with their group, you will call on a number (for example, number 3). Then direct each group to make sure that all team members are adequately prepared to answer, should they be selected. Listen in at each table as they do so, since this will give you an idea of how much your students know. After they have worked collaboratively in their groups, select a table number and student number to answer (many teachers do this with a spinner). In the meantime, you've created an opportunity for every student to be engaged, not just the single child who provides the answer.
Technology	<ul style="list-style-type: none"> Kahoot Padlet Nearpod 	Response Cards	Every student can write on a dry-erase board and hold it up at the same time for the teacher to see. This allows you to rapidly assess who comprehends concepts in the lesson and who needs more help.
Oral Language	<ul style="list-style-type: none"> Pairs discuss Think-pair-share Retellings 	Purposeful Sampling	As students chat with each other, listen to what they're saying. This may give you a smaller sample size, since you won't be able to listen to every student at once. There are several reasons to select a student to share. Choosing a typically high-performing student, a typically low-performing student, and a typically mid-performing student can give you a comparative sample. Choosing a student who represented the solution in a unique way can foster dialogue. Selecting a student who can link his or her ideas to a previous student can facilitate dialogue. Inviting a student with low social status and with strong work can build that student's efficacy and change the way the class views him or her.
Kinetic	<ul style="list-style-type: none"> Fist to five Open/closed fist Thumbs-up/thumbs-down 1 finger/2 finger – true/false Emoji cards 	Exit Tickets	Have all students write answers to a question, or a handful of questions, before they leave at the end of class. Then, after the children leave, read through their answers to see who knows what. Seventh-grade prealgebra teacher Allie Robinson does this a lot. The day after she gives an exit ticket, she often meets with a small group of the students who didn't understand what she had taught, and she teaches it to them in a different way. She can do this because her exit tickets showed her who needs additional instruction. A principal that Will knows didn't ask her teachers to submit lesson plans, but rather had them hand in their exit tickets. This school realized big gains in both student achievement and teacher morale.

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Appendix B (continued)

As you observe the lesson, put a check in the box and give a few notes of what you saw or heard.

What did you see and/or hear to know "where the learning is going?"	When this happened, what did the teacher say or do to check the student's understanding?	Based on how the student responded, what did the teacher do next? (defer, reteach, move on) 3. What feedback was provided that moves the learners forward?
<input type="checkbox"/> Teacher: 1. Clarifying learning intentions and criteria for success <input type="checkbox"/> Peer: Understanding and sharing learning intentions and criteria for success <input type="checkbox"/> Learner: Understanding learning intentions and criteria for success		
What did the teacher do to know where the learner is right now while the lesson was in progress? <input type="checkbox"/> Teacher 2. Engineering effective classroom discussions and other learning tasks that elicit evidence of student understanding <input type="checkbox"/> Peer: 4. Activating students as instructional resources for one another <input type="checkbox"/> Learner: 5. Activating students as the owners of their own learning		

Were there any moments you didn't see or hear assessing in the moment where the opportunity was missed?

Appendix C

Co-planning Protocol

Co-planning Educative Mentoring

Educative mentors provide growth-producing experiences and understand mentoring to be:

- Organized (planned, focused, not the kitchen sink)
- Continuous (built on prior focal areas, goals, etc.)
- Unique (adapted to each individual)
- Interactive (conversing, not just telling)

What is Co-planning?

Co-planning is an opportunity for the mentor teacher (and eventually the novice) to articulate instructional decisions based on knowledge of student learning and the content in the context of planning a lesson. It is also an opportunity for the novice (and the mentor teacher) to ask questions about instructional decisions. Unlike calendaring, which focuses on the *what*, co-planning focuses on the *how* and *why*.

Why Should I Co-plan? *As the mentor, what is the purpose of co-planning?*

- To prepare novices to teach and make sound instructional decisions independently
- To help the novice consider what is necessary to think about when planning
- To emphasize how student learning is central in the planning process

Traditional v. Educative Co-planning: *Telling v. Transparent Thinking*

- Traditional planning with a novice is often “sitting down with the calendar” and *telling* what will be done during the week.
- Educative co-planning requires *transparent thinking* when making decisions about the what, why, and how of instruction

Educative Co-planning Includes:

- Thinking beyond the lesson plan
- Exploring what students walk in with
- Focusing on what we want students to walk out with

How do I Co-plan in an Educative Way?

- Go into co-planning **thinking about possible teaching moments** related to your learning goal(s) for your mentee (e.g. planning for differentiated instruction, instruction alignment to objectives and standards, focusing on student learning instead of teacher performance).
- Explore **content** together. Explain confusing concepts, articulate different ways to understand/interpret content, together look at definitions, and pre-warn the novice about what may be confusing for students.
- Use transparent talk to explain the **instructional decisions** you make based on standards, objectives, student need, and/or curricula requirements. *Why do I teach this in this particular way? How do I approach this content? Where do I expect misconceptions to occur? Where might students need extra support? How will I assess the success of this lesson?*
- Maintain a focus on **student learning** through reference to student data and asking questions such as: *What do we know about our students? What do they already know? What do we want students to learn? How will we get them there? How will we know they got there?*
- Leave space for the novice to ask questions.

Appendix C (continued)

Co-planning Educative Mentoring Putting It Into Practice

Questions to consider as you plan for an educative co-planning session:

- What are my growth goals for my mentee? How are my goals for my mentee related to student learning?
- What do I want my mentee to learn from this co-planning experience? What are the teachable moments related to your growth goals for your mentee? How can I pre-plan for how I will weave these into the discussion?
- How will I know my mentee learned what I hoped they would learn from this co-planning experience?
- What does the mentee need to do prior to the session to make it successful (e.g. glance at the content of focus, identify any concepts that s/he would like to talk through together, or anticipate aspects of the content s/he anticipates student confusion)?

Co-planning Sentence Stems

When I teach this lesson, I... because...
 I think [student(s)] need... so I will...because...
 I chose this book/example... because...
 I think it is better to...instead of...because...
 One of the things I think about when teaching ...is...
 I know students sometimes get confused about.... So, I ...

Co-planning Question Starters

What are your thoughts about...? Can you think of something we should try/add?
 What instructional moves could we make to better support student learning related to the lesson objective?
 How do you think we could support this student's learning in this lesson?
 What do you think about the plan?
 How do you see this influencing student learning?
 Can you explain the instructional decision you made to...? What was your reason for...?

Appendix D

Collaborative Teach and Debrief: Protocols and Tools

Collaborative Teaching and Debriefing Educative Mentoring

Educative mentors provide growth-producing experiences and understand mentoring to be:

- Organized (planned, focused, not the kitchen sink)
- Continuous (built on prior focal areas, goals, etc.)
- Unique (adapted to each individual)
- Interactive (conversing, not just telling)

What is Collaborative Teaching?

Collaborative teaching is a model of mentoring where teachers work together to remain actively involved with students and their learning. Collaborative teaching is also an attitude of sharing the classroom and students. Unlike solo teaching, which focuses on trial and error, collaborative teaching focuses on *collaborating* with leadership in responsibility and *decision-making* shifting over time to the teacher resident.

Why should I Collaborative Teach and Debrief? *We are both teaching!*

- To provide a more rigorous student teaching experience than traditional student teaching since, from day one, novices engages students using specific strategies focused on student learning
- To help novices find connections between coursework and fieldwork and to support teacher residents throughout their student teaching experience
- To prepare novices to teach and make sound instructional decisions independently
- It helps novices recognize the impact of their instructional choices on student learning
- *Solo teaching* may have too many components of teaching in which to attend or too many decisions to make that can be overwhelming
- It provides a growth-producing experience for the novice where together you learn from the experience
- It provides intentional and focused feedback for novices so they can target *a few areas of growth* at a time. (Too many areas to fix can be overwhelming.)
- While attending to immediate needs is important, it is also important to keep working on long-term novice learning goals

Traditional v. Educative Collaborative Teaching:

Solo Trial and Error v. Shared Decision-making for Students to Benefit

- Traditional teaching and debriefing conversations usually attend to only immediate needs.
 - The mentor tries to give greater responsibility from passive observation to solo teaching which uses a model of learning to teach in isolation
 - Holds a “sink or swim” approach using trial and error for surviving for failing
 - Doesn’t account for increasing diversity of today’s schools and the prevalence of teacher accountability issues
- Educative collaborative teachings and debriefings have a specific focus and address both immediate and long-term novice learning goals
 - Collaborative teaching and debriefing allows teacher residents the time to develop instructional and management strategies with the support of their cooperating teacher, preparing them meet the challenges of the classroom on their own.

Appendix D (continued)

Educative Collaborative Teaching and Debriefs Include:

- Getting rid of the kitchen sink to focus on one aspect of effective teaching
- Opportunities to learn from teaching while teaching
- Opportunities to make connections between coursework and fieldwork
- Using evidence to target learning about teaching
- Asking questions to elicit novice teacher thinking

What does a collaborative teach look like? An collaborative teach involves:

- Students viewing the teacher resident as a collaborative teacher and introduced as such
- Utilizing a variety of collaborative teaching strategies
- Both teachers being on, working with students to best meet their needs
- Relationship building with trust and mutual respect: can make decisions together in the moment for meeting students' needs
- Providing a space for the novice to safely learn from teaching and to assume leadership and decision-making as lead teacher
- Providing ongoing modeling and coaching, making the invisible visible by explicitly sharing mentor rationale for instructional, curricular, and management decisions
- Explaining the reasoning behind mentor instructional moves verbally to the novice
- Purposefully utilizing mentoring in the moment (think of the cooperating teacher six Is)
- Selecting a specific *focus* prior to the collaborative teach and selecting the strategy for collaborative teaching
- Collecting *evidence* in a targeted manner on the focus area
- Taking novice learning needs into account
- Intentionally selecting teachable moments

What does an educative debrief look/sound like? An educative debriefing involves:

- Reinforcing the effective teaching practices observed
- Providing consistent feedback on progress toward novice learning goals
- A *focused* conversation that is guided by evidence to help a novice target improvement
- Providing *data* with examples to illustrate why it is a concern
- Discussing how this particular concern correlates with student learning
- Asking *questions* to *elicit novice thinking* rather than “telling”
- *Checking* to see in what way (or not) the novice shares your concern
- Giving advice *with reasons* why you might approach the issue in a particular way (your decision-making)
- Developing a shared action plan with a way to follow-up after implementation of new ideas

Appendix D (continued)

Collaborative Teaching and Debriefing Educative Mentoring Putting It Into Practice

Questions to consider as you plan for an educative collaborative teaching and debriefing session:

- What are my growth goals for my mentee?
- How are my goals for my mentee related to helping the novice focus on student learning?
- What do I want my mentee to learn from the collaborative teach/debrief experience?
- What evidence will support this goal?
- What long-term novice goal could I bring into this conversation? (differentiated instruction, instruction aligned to standards/objectives, focusing on student learning instead of teacher performance)

Mentor Note For Debriefing:

***Discuss the experience of engaging with checking student understanding to advance the student's learning.**

***Use student understanding and your ways to elicit that understanding, supported by student work, to engage in *transparent thinking* when making decisions about the what, why, and how of instruction.**

Debriefing Sentence Stems

I was impressed by ... because...

I focused on ...in this observation because...

In this observation, I noticed You can see from this data...

I might think about this like....

An idea in the future could be... because...

I see this to be important for student learning because...

Debriefing Question Starters

From the data collected, what do you notice?

What do you think makes sense as an action plan as we move forward?

What do you think about it? Do you agree?

How do you see this influencing student learning?

Can you explain the...instructional decision you made? What was your reason for...?

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Appendix D (continued)

Collaborative Teaching and Debriefing Tool Strategies for Collaborative Teaching

Table 1. Strategies of Coteaching in Student Teaching (Bacharach et al., 2010)

<i>Strategy</i>	<i>Definition</i>
One teach, one observe	One teacher has primary instructional responsibility while the other gathers specific observational information on students or the (instructing) teacher. The key to this strategy is to focus the observation on specific behaviors. Both the teacher candidate and the cooperating teacher are able to take on either role.
One teach, one assist	One teacher has primary instructional responsibility while the other assists students with their work, monitors behaviors, or corrects assignments, often lending a voice to students or groups who hesitate to participate or add comments.
Station teaching	Station teaching occurs when the coteaching pair divides the instructional content into parts. Each teacher instructs one of the groups. The groups then rotate or spend a designated amount of time at each station. Independent stations are often used along with the teacher-led stations.
Parallel teaching	Parallel teaching occurs when the class is divided, with each teacher instructing half the students. However, both teachers are addressing the same instructional material. Both teachers are using the same instructional strategies and materials. The greatest benefit to this method is the reduction of the student-to-teacher ratio.
Supplemental teaching	Supplemental teaching allows one teacher to work with students at their expected grade level while the other teacher works with those students who need the information or materials extended or remediated.
Alternative (differentiated) teaching	This teaching strategy provides two approaches to teaching the same information. The learning outcome is the same for all students; however, the avenue for getting there is different.
Team teaching	Team teaching incorporates an invisible flow of instruction with no prescribed division of authority. Using a team-teaching strategy, both teachers are actively involved in the lesson. From the students' perspective, there is no clearly defined leader both teachers share the instruction, are free to interject information, and are available to assist students and answer questions.

Appendix D (continued)

Mentor Notes:

Collaborative Teaching Protocol: Focus on Formative Assessment Checks for Understanding

A way to decompose teaching into the core practices (eliciting and interpreting individual students' thinking, attending to patterns of student thinking –anticipating student responses, checking student understanding) for novices to learn them (Grossman et. al, 2009; Teaching Works <https://www.teachingworks.org/high-leverage-practices/> .

Before the lesson:

1. Choose a coteaching strategy that best suites the mentee and their learning and discuss with the mentee.
2. Explain to the mentee that when you navigate around to conference with students for learning, you will specifically utilize the parallel coteaching strategy.
3. Assign the students to whom the mentor and the mentee will be conferencing. The purpose is to both engage with checking student understanding to advance the student's learning so you can then debrief about the experience. You may not get to note each and every student, but a sample from each group is sufficient.
4. Mentor: Choose to highlight one particular student-their understanding-their written work to share with the mentee. Collecting their student work will take place. You may choose more than one, using your discretion.
*Do not choose the same student as the one your mentee chooses.
5. Ask the mentee to focus in on one particular student-their understanding-their written work to discuss with you during the Debriefing. Collecting their student work will take place.
6. Also discuss the process of the mentor and mentee coming together to make a decision in the moment of teaching as to the next move based on the student work.

During the lesson:

1. Coteach the lesson using the strategy you have chosen with your mentee.
2. As you navigate around to conference with students, engage in the parallel coteaching strategy.
3. Each of you take notes of your student-teacher exchanges of your assigned students for Debriefing. You may not get to note each and every student in your group, but a sample is sufficient.
4. Come together to make a decision in the moment of teaching as to the next move based on the student work. (transparent decision making)
5. Then, continue on to complete the lesson.
6. Each choose one student-their understanding-their written work to discuss during the Debriefing. Collecting their student work will take place.

After the lesson:

1. Collect the student's work you each decided to focus on for Debriefing.

For Debriefing:

*Discuss the experience of engaging with checking student understanding to advance the student's learning.

*Use student understanding and your ways to elicit that understanding, supported by student work, to engage in *transparent thinking* when making decisions about the what, why, and how of instruction.

Appendix D (continued)

Collaborative Teaching Tool: Focus on Formative Assessment Checks for Understanding in the Moment of Teaching
Parallel Collaborative Teaching Strategy Notes

Date: _____ Time: _____ Lesson: _____ Lesson Objective _____

Collect Student Work: describe and attach copy, as able

Time	Descriptive Notes of What You See and/or Hear In Student Understanding Include What You Did, As Well	Reflective Notes

Appendix E

Educative Mentor Study Group: Session 1

Agenda

Late-August:

Meet with Mentors:

Agenda Monday, August 28, 2023 3:45 PM

Bring: Computers

Any Lesson Plans for a Unit of Study

MCS Adopted Curriculum Access

Notebook and writing utensil

Questions

Part A

Explain Study (MSERA layout-15 min)

1. Problem Statement
2. Theoretical Grounding
3. Summary of the Methodology (strategically highlighting mentor role)
4. What Happens with Results
5. What Happens with Conclusions/Implications of the Study

Get Study Consent

Explain Consent, offer forms if willing

Part B

Form Educative Mentor Study Group: Session 1 (40 min)

-Create Norms (including “Be frank”)

-How do I define mentoring (be specific)? (write down on reflection page)

-What do I want to learn? (write down on reflection page)

- Brief Overview Educative Mentoring Premise

1. Mentoring is Important
 2. Educative Mentoring is and is not
 3. Goals of Mentoring
- Explain and Discuss Formative Assessment (Use ED Conference layout)
1. What is Formative Assessment?
 2. Assessment in the Moment: Checks for Understanding (tool)
 3. Context within Lesson Planning, teaching
 4. Reflection for common understanding and labeling and adding to existing practices
 5. Elicit ideas on how to explicitly teach and engage students in growth mindset and peer/self-assessment
 6. Give Educative Mentor Journal Folder

Part C

Reflection

Parking Lot

Discussion: (1) What are your current thoughts about our meeting and concepts discussed? (2) What do you want to learn?

Educative Mentor Study Group Reflection Journal page EMSG1:

How do I define my role as a teacher and using formative assessment in the moment of teaching?

How will this impact my mentoring of a teacher resident?

How do I currently define mentoring (be specific)?

Appendix F

Post-it Note Parking Lot

Post-it Note Parking Lot

Questions I have:

Ideas:

I need:

Ah-ha's or things I learned...

And/or

An experience I had using one of the six I's of mid-lesson responses for formative assessment...

Appendix G

Educative Mentor Study Group: Session 2

Agenda

September Week 2 (Sept. 11):

Educative Mentor Study Group Meeting: Session 2 (<= 1 hr)

Agenda Monday, September 11, 2023 3:45 PM

Bring: Computers

Notebook and writing utensil

Questions

Lesson plans for a unit of study

Part A

Review Norms (including “Be frank”)

Part B

Explain Educative Mentoring (Utilize Evert PP)

-establish a fundamental understanding and common language

-Briefly discuss the Six Is for mid-lesson responses, give article for reading

-Model for Debriefing Conversations

-Rehearsal of Debriefing (for mentee observing the mentor)

Part C

Reflection

Parking Lot

Discussion: (1) What might be tricky in sharing your thinking with the mentee? (2) What might you do to remediate that?

Appendix H

Educative Mentor Study Group: Session 3

Agenda

October 2-6: Fall Break

October Week 2 (Oct 9):

Educative Mentor Study Group Meeting: Session 3 (<= 1 hr)

Agenda Monday, October 9, 2023 3:45 PM

Bring: Computers

Lesson Plans for a Unit of Study

MCS Adopted Curriculum Access

Student Work Set

Notebook and writing utensil

Questions

Part A

Norms (including “Be frank”)

Part B

-Follow-up from Educative Mentoring Meeting

-Starting Out with clarity with your mentee

-Discuss the Six Is for mid-lesson responses from their reading

-Model for Analyzing Student Work Conversations

-Rehearsal for Analyzing Student Work (existing student work set)

Part C

Logistics of data collection, Meeting Notes, Educative Mentor Study Group Reflection Journals, Otterai, audio use in mentor meetings

Part D

Reflection

Parking Lot

Discussion: (1) What are your current thoughts about our meeting and concepts discussed? (2) What are you looking forward to when working with your mentee?

Appendix I

Educative Mentor Study Group: Session 4

Agenda

October Week 4 (Oct. 23):

Educative Mentor Study Group Meeting: Session 4 (<= 1 hr)

Agenda Monday, October 23, 2023 3:45 PM

Bring: Computers

Lesson Plans for a Unit of Study

MCS Adopted Curriculum Access

Student Work Set

Notebook and writing utensil

Questions

Part A

Norms (including “Be frank”)

Part B

-Follow-up Reflections and Conversations:

Data Collection

Enactment of Debriefing

Enactment of Analyzing Student Work

Part C

Rehearsal of Co-planning (student work set)

Discuss Effective Collaborative Teaching and Debriefing

Part D

Reflection

Parking Lot

Discussion: (1) How are your current understandings of mentoring and educative mentoring the same? (2) How might this shift your current understanding of mentoring? (3) How can you practice these principles before your mentee arrives?

Appendix J

Educative Mentor Study Group: Session 5

Agenda

November Week 1 (Nov.8):

Educative Mentor Study Group Meeting: Session 5 (<= 1 hr)

Agenda Wednesday, November 8, 2023 3:45 PM

Bring: audio recording clip of educative mentoring

Computers

Lesson Plans for a Unit of Study

MCS Adopted Curriculum Access

Student Work Set

Notebook and writing utensil

Questions

Part A

Norms (including “Be frank”)

Part B

-Follow-up Conversations: (audio recordings)

* Reflection Discussion each teacher mentor

Enactment of Collaborative Teaching

Enactment of Analyzing Student Work

Enactment of Co-planning

Part C

Debriefing

-Set time for Collaborative Teaching and Debriefing (around parallel teaching for student work formative assessment)

-Discuss Next Steps in Educative Mentoring

Part D

Reflection

Parking Lot

Discussion: How do you feel about adding the analyzing student work along with your co planning for your mentee to make connections?

Educative Mentor Study Group Reflection Journal page EMSG2

How do I define my role as a teacher and using formative assessment in the moment of teaching?

Thinking about my experiences, how has this impacted my mentoring of a teacher resident?

How do I currently define mentoring (be specific)?

Appendix K

Educative Mentor Study Group: Session 6

Agenda

December Week 1 & Week 2

(Dec. 4 and Dec. 11):

WED December 6: Last Day of Classes

TH December 7: Study Day

Agenda Friday, December 8, 2023 3:45 PM

Educative Mentor Study Group Meeting: Session 6

Focus Group Conversation

Focus Group Style

Parking Lot

Closing with thank yous

Appendix L

Educative Mentors in a Focus Group Conversation

Miga Dissertation	
Educative Mentor Focus Group Conversation Questions	
How do mentor teachers understand educative mentoring practices over time when working with teacher candidates during their teacher residency semester?	
1. Warm up questions: How long have you been at your current school? What is your position? How many years have you been a mentor?	Ice breaker
What specific skills or knowledge did you hope to gain from your experience being a mentor? How did that process go?	Self-selected goals and reflection
Tell me about your experiences with educative mentoring this semester.	In their words answering the research question
Tell me a time when you felt effective in mentoring educatively. How has that shaped your approach to mentoring?	Experience and impact, change in thinking based on experience
What challenges have you faced in your educative mentoring role? How did you address them?	Experience Learning and problem-solving
Tell me a time when you and your mentee solved a problem together.	Experience in educative mentoring process
What is an experience to share where you noticed changes in your teaching methods since working with your mentee?	Experience in mentoring Looking to see if refining practices based on reflection and discussing with mentee
Of the various learning, development and growth opportunities provided to you, which have been most beneficial? How does learning to be an educative mentor fit?	Experience Looking to see where educative mentoring falls in their thoughts of PD Looking to see if it gives ways to improve the mentor model
How did this process of the mentorship impact your professional development as an educator?	Experience Looking to see if the mentorship, the mentee helped the mentor learn
Some would say mentoring is just being an emotional support for a novice teacher and they just have to figure it out on their own. What would you tell them?	Purpose of educative mentoring defined by mentor
To you, what is the meaning of mentoring others?	In their words, defining mentoring
Is there anything I should have asked you and didn't or anything you would like to tell me that you didn't tell me yet?	feedback
Do you have any questions for me?	feedback

Appendix M

Mentor Teacher Screening Questions

- (1) Are you interested in professional development to help you share how you use formative assessment in your teaching?
- (2) Are you interested in professional development in specific mentoring practices that help your teacher resident learn from your teaching practices and decision-making?
- (3) Have you been a mentor teacher previously? If so, in what way? Have any of your mentees been residency II students?
- (4) Do you currently have a Residency II student working with you?

Appendix N

Semi-structured Cognitive Interview with Mentee: #1

Miga Dissertation Mentee Cognitive Interview #1	
<p>How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester?</p> <p>My name is Shae Miga and I am here with [Participant]. The purpose of this interview is to learn more about how you have built your assessment literacy practices. I hope to learn from your descriptions and stories about your experiences with your mentor during this placement of your teacher residency semester. Specifically, I'm looking to see how you built your formative assessment practices of checking for understanding.</p> <p>Your participation in this study is completely voluntary. During the interview, I encourage you to be open, honest, and frank. You can skip any question and you can stop the interview at any time.</p> <p>Can you confirm that you received a copy of the consent form? (Participant response).</p> <p>If you consent to participating in this study, please say "yes" and today's date (Participant Response).</p>	
Warm up questions: Tell me a little about being an MTSU student. Tell me why you are becoming a teacher?	Ice breakers
How do you currently define formative assessment?	FA definition
Did you have any previous experience with formative assessment before your placement here at (school)? follow up: If so, how has your use of formative assessment changed over time while in your placement?	Background / FA change over time
How do you currently use student understanding to inform your teaching? (What do you think it means to use student understanding to inform your teaching?)	FA
In your residency placement, what do you think will be most beneficial for you?	Probing their experience in learning to teach... seeing if FA or educative mentoring rises.
Anything you would like to tell me that you didn't tell me yet?	feedback
Do you have any questions for me?	feedback

Others:

How do you use your understanding of students' prior knowledge to inform your teaching?

How do you support students who felt overwhelmed or anxious about the feedback they received?

What insights do you hope to gain during your mentee-mentor interactions?

Prompts

- What was that like for you?
- How would you describe...?
- How do you feel about...?
- Describe to me what I would have seen if...
- Tell me what you would say if....
- What is the meaning of....
- Could you share more about...?
- Share a story that exemplifies...

Appendix N (continued)

Semi-structured Cognitive Interview with Mentee: #2

Miga Dissertation Mentee Cognitive Interview #2	
<p>How do teacher candidates build their formative assessment practices when engaged in the intentional implementation of educative mentoring during their teacher residency semester?</p> <p>My name is Shae Miga and I am here with [Participant]. The purpose of this interview is to learn more about how you have built your assessment literacy practices. I hope to learn from your descriptions and stories about your experiences with your mentor during this placement of your teacher residency semester. Specifically, I'm looking to see how you built your formative assessment practices of checking for understanding.</p> <p>Your participation in this study is completely voluntary. During the interview, I encourage you to be open, honest, and frank. You can skip any question and you can stop the interview at any time.</p> <p>Can you confirm that you received a copy of the consent form? (Participant response).</p> <p>If you consent to participating in this study, please say "yes" and today's date (Participant Response).</p>	
<p>1. Warm up questions: Tell me a little about being an MTSU student. Tell me what you are looking forward to after graduation. Tell me why you want to become a teacher?</p>	Ice breakers
How do you currently define formative assessment?	FA definition
<p>Did you have any previous experience with formative assessment before your placement here at (school)?</p> <p>Follow-up: If so, how has your use of formative assessment changed over time while in your placement?</p>	FA change over time in their opinion
During this placement of your teacher residency, tell me how you built your assessment literacy practices.	In their words answering the research question
Tell me a story about a time when you would say you had an 'ah-ha' moment in learning to teach.	Probing their experience in learning to teach... seeing if FA or educative mentoring rises.
What challenges have you faced when implementing formative assessment? How did you address them?	FA challenges Problem-solving Seeing if educative mentoring rises.
How has using formative assessment impacted your teaching practice?	Building practices
What role, if any, has using formative assessment had in your learning process of teaching?	Same as previous question...
How can you leverage your strengths in formative assessment to achieve your goals after this placement?	Building practices Do they see them a part of their teaching, value
What is one thing from your mentoring experience you know that will always remember?	Their learning seeing if FA or educative mentoring rises.
<p>How did the mentorship impact your professional development in learning how to teach? or</p> <p>How has the mentorship impacted your use of formative assessment?</p>	Their learning Mentorship Educative mentoring
In your residency placement, what has been the most influential?	Their learning seeing if FA or educative mentoring rises. "What to keep" or consider adding to the mentorship
In your residency placement, what is something you would change if you could?	Their learning seeing if FA or educative mentoring rises.

	“What to delete” or consider tweaking to the mentorship
Is there anything I should have asked you and didn't? Anything you would like to tell me that you didn't tell me yet?	feedback
Do you have any questions for me?	feedback

Appendix O

Mentee Reflection Journal Pages

Reflecting on Practices in Reflective Journaling

Teacher Practice

"Reflection-in-action is the process by which professionals make sense of what they are doing while they are doing it."

- Donald A. Schon, *The Reflective Practitioner* - Schön, 1983

Through reflective practices, teachers can develop a culture of self-reflection, self-awareness, and improvement, leading to a better classroom experience for all involved. Educators should implement a structured approach to reflective practices and strive to overcome any barriers, to maximize the benefits of this proven approach.

What is Reflective Journaling?

Structured Way for Critical Thinking: Reflective practices are a deliberate and persistent way to think about one's actions, represent strategies that respond to the need to find ways to improve teachers' classroom practices.

Why Should I Use Reflective Journaling?

- Journaling helps teachers learn from their experiences
- Journaling helps teachers identify important insights about their teaching
- Journaling helps teachers assess effectiveness
- Journaling helps teachers identify how to improve their classroom practices

Appendix O (continued)**Reflecting on Practices****Teacher Practice**

Putting It Into Practice

Use the journal prompts to reflect on your learning. You may include more than what is asked. This can also be used to have later conversations with your mentor. It can also be used to track your learning over time.

Mentee Reflection Journal: TC1

What are two or three things I thought about in analyzing student work with my mentor?

What are two or three things I connected in co-planning with my mentor?

In light of these experiences, what might still be confusing about formative assessment that I need to seek clarity?

Mentee Reflection Journal: TC2

What are two or three things made clearer for me in my co-planning with my mentor?

What are two or three things I experienced in my collaborative teaching and debriefing with my mentor?

In light of these experiences, what am I still thinking about with formative assessment?

Appendix P

Educative Mentor Study Group Reflection Journal Pages

Reflecting on Practices in Reflective Journaling

Teacher Practice

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Appendix P (continued)**Reflecting on Practices****Teacher Practice**

Putting It Into Practice

Use the journal prompts to reflect on your learning. You may include more than what is asked. This can also be used to have later conversations with your mentor group. It can also be used to track your learning over time.

Educative Mentor Study Group Reflection Journal: EMSG1

How do I define my role as a teacher and using formative assessment in the moment of teaching?

How will this impact my mentoring of a teacher resident?

How do I currently define mentoring (be specific)?

Educative Mentor Study Group Reflection Journal: EMSG2

How do I define my role as a teacher and using formative assessment in the moment of teaching?

Thinking about my experiences, how has this impacted my mentoring of a teacher resident?

How do I currently define mentoring (be specific)?

Appendix R (continued)

		Date/Time	Descriptive Notes Stamp
Reflective Notes	<p align="center">Codes</p> <p>Saldana, 2013 refers to Liamputtong and Ezzy (2005, pp. 270–3</p>		

Appendix S

RQ#1 Coding Process Time 1 and Time 2

RQ #1 Coding Process Time 1 (adapted from Saldana, 2013)

Initial Codes	Categories	Themes/Concepts	Definition/Theory
<p>Needs assessment Test Check for understanding How students are responding to the teaching Checking lesson comprehension</p> <p>Collect Data collect information about student knowledge</p>	<p>Define FA as assessing what students know</p> <p>Collecting information</p>	<p>Formative Assessment as a Check for Understanding</p>	<p>Teacher candidates understand formative assessment as a check point or one event to see what students know.</p>
<p>Adaptive/responsive -to target student learning and their instruction -to change teaching to meet those different students' needs</p> <p>Planning Planning lessons Planning the next lesson</p>	<p>Tool for instructional decision making</p>	<p>Formative Assessment as a Tool for Making Instructional Decisions</p>	<p>Teacher candidates understand formative assessment can be used as a tool for making instructional decisions.</p>

Appendix S (continued)

RQ #1 Coding Process Time 2 (adapted from Saldana, 2013)

Initial Codes	Categories	Themes/Concepts	Definition/Theory
Checking for understanding Quick check Use on the spot	Define FA as a quick check	Formative Assessment as a Quick Check	Teacher candidates understand formative assessment as a process of finding out student needs and making use of what is found.
Checks throughout the lesson Collects information/data	Collecting & interpreting		
Use results quickly Inform teaching Next class session (same lesson) Teaching to change ITM	Use to Inform Instruction	Formative Assessment as a Tool for Making in the Moment Instructional Decisions	Teacher candidates make strategic use of FA, to influence and modify instruction decisions. It is not only the process of finding out student needs but also making use of what is found to ensure that teaching strategies, content delivery and even assessment planning is made more refined especially in the moment of instruction.
Plan next lesson Plan next day lesson Next planning period	Planning decision making		
Inform student assessment	Inform assessment		
Written feedback Feedback as effective	Written feedback		

Appendix S (continued)

Activities That Prompted Changes in Understanding of Formative Assessment

Initial Codes	Categories	Themes / Concepts	Definition / Theory
Observing mentor teacher FA ITM	MT FA ITM	Observations	When teacher candidates intentionally observe their mentor teacher's implementation of FA, they begin to internalize effective assessment strategies.
Observing FA tool use (MT)	MT FA tool use		
Observing students' attitudes /success with MT using FA ITM	Student Attitude MT FA		
M/M Debrief on Collaborative teaching (1-2? For FA ITM) (J) M/M Debrief on Collaborative teaching (change for next block-same lesson) (J) Collaborative Teaching Debriefing to use FA ITM M/M Debrief on Collaborative teaching (saw benefit of FA and doing it ITM to change quickly) (J)	Debriefing	Direct Conversations with Mentor Teacher As a part of the program Outside of the program	Teacher candidates build their FA practices through structured, collaborative interactions with their mentors during residency. Key mentoring practices of direct conversations serve as intentional learning spaces where candidates observe, discuss, and co-construct assessment knowledge.
MT Think alouds supported FA learning	Think Alouds		
M/M Co-planning SWA taught create groups M/M Co-planning SWA taught to analyze student work	Co-planning SWA		
M/M SWA taught how to analyze assessments MT guided/taught to create assessments	Assessments		
MT taught a lot of kinds of FA	Kinds FA		
Co-planning helped learning FA Co-planning building ideas together FA Co-planning chopping learning into small segments w FA ITM Co-planning using FA data (J) Co-planning FA assessment (J) Co-planning realize importance of FA	Planning (as a part of the program – Co-planning)		
Preparing can adapt w FA ITM Planning and flexible in FA ITM use	Planning (outside of the program)		
Student work analysis-exit tickets Analyzing student work-ITM change, misconceptions (J)	SWA	Practicing FA Analyzing Student Work	Teacher candidates build FA practices through intentional mentoring Co-planning, independent planning, and SWA help candidates apply and refine FA-informed instructional moves. Mentor support, FA successful use, and observing positive student responses deepen their

Collaborative Teaching helped learning FA Collaborative Teaching how and when change instruction using FA ITM (J)	Mentor support FA ITM	Practicing FA Scaffolded practice of enacting embedded FA	understanding of effective assessment.
Using / Enacting FA strategies ITM checks/adapting Using/enacting FA	Using FA ITM	Practicing FA Enacting embedded FA	
Positive experience as teacher and student because of using FA ITM Experience positive effects on instruction and continue use	Positive Experience FA ITM		
Working with student and FA ITM	Student FA ITM		
“failed” lesson not adapting sooner Lack of seeing student responses to feedback	Challenges	Learning from Challenges / Failures	Teacher candidates develop formative assessment practices not only through success but by critically reflecting on challenges and failures during their residency. Educative mentoring creates a supportive space where mistakes are seen as learning opportunities, allowing candidates to adjust their understanding, revise their instructional moves, and deepen their capacity for using FA effectively.
FA not graded and motivating students (J) Clarify in FA types (J) Benefit of using FA ITM vs not using (J) Reflecting	Reflecting	Reflections	Reflection plays a central role in how teacher candidates develop formative assessment practices during educative mentoring. With reflection, candidates make sense of their experiences, recognize the impact of FA, and refine their instructional decisions over time.

Appendix T

RQ#1 Codes Overview

Activities That Prompted Changes in Understanding of Formative Assessment

	Teacher Candidate 1 Heidi	Teacher Candidate 2 Olivia
Observations	Observing mentor teacher FA ITM Observing FA tool use (MT) Observing students' attitudes /success with MT using FA ITM	Observing FA tool use (MT)
Direct Conversations with Mentor Teacher - As a part of the program - Outside of the program	M/M Debrief on Collaborative teaching (1-2? For FA ITM) (J) M/M Debrief on Collaborative teaching (change for next block-same lesson) (J) M/M Debrief on Collaborative teaching (saw benefit of FA and doing it ITM to change quickly) (J) Collaborative Teaching Debriefing to use FA ITM MT Think alouds supported FA learning	M/M Co-planning SWA taught create groups M/M Co-planning SWA taught to analyze student work M/M SWA taught how to analyze assessments MT taught a lot of kinds of FA MT guided/taught to create assessments Collaborative Teaching Debriefing to use FA ITM MT Think alouds supported FA learning
Practicing FA - Planning (both as a part of the program – Co-planning – and outside of the program) - Analyzing Student Work - Scaffolded practice of enacting embedded FA - Enacting embedded FA	Co-planning helped learning FA Co-planning building ideas together FA Co-planning chopping learning into small segments w FA ITM Preparing can adapt w FA ITM Planning and flexible in FA ITM use Collaborative Teaching helped learning FA Positive experience as teacher and student because of using FA ITM Using / Enacting FA strategies ITM checks/adapting Working with student and FA ITM	Co-planning using FA data (J) Co-planning FA assessment (J) Co-planning realize importance of FA Student work analysis-exit tickets Analyzing student work-ITM change, misconceptions (J) Collaborative Teaching how and when change instruction using FA ITM (J) Experience positive effects on instruction and continue use Using/enacting FA Experiencing / using FA -Co-planning -assessing -assessing assessments
Learning From Challenges / Failures	“failed” lesson not adapting sooner	Lack of seeing student responses to feedback
Reflections	FA not graded and motivating students (J)	Clarify in FA types (J) Benefit of using FA ITM vs not using (J)

Appendix U

RQ #2 Coding Process

RQ #2 Coding Process (Adapted from Saldana, 2013)

Initial Codes	Categories	Themes/Concepts	Definition/Theory
Model / demonstrate Directive through guide / lead	Mentoring as directive	Mentorship is mentor-focused	Mentor-focused mentorship is a relationship where the mentor is in control over the direction, structure for learning, and has the expertise.
Guide/support Build up area of need	Mentoring as guided		
Coaching (gradual release) Reciprocal vs direct	Mentoring as reciprocal	Mentorship is balanced	Balanced mentorship reflects relational mentoring in which both members share responsibility and both benefit from each contributing to the direction and learning outcomes.
EM collaborative Ed mentoring is thinking seen Scaffold work to fit mentee needs Give and Take Mentee needs at center Collaboration	Mentoring as collaborative		
Focus what to learn on own vs need help to learn Partnership Mentee first place Relinquishing control EM was space to let mentee solve problem with support Coach not judge See mentee needs to grow Mutual trust in learning Balance scaffold/support with struggle ITM response what do we need to address for mentee	Mentoring as mentee development	Mentorship is mentee-focused	Mentee-focused mentorship is mentoring that intentionally empowers the mentee. It prioritizes the growth, agency, and evolving needs of the mentee and emphasizes the mentor facilitates learning.
Failure as moment to collaborate Both take risks	Mentoring as purposeful risk taking		

Appendix V

RQ#2 Codes Overview

Activities That Were Meaningful in Changing Conceptions of Mentoring

Initial Codes	Categories	Themes/Concepts	Definition/Theory
Successful learning	Successful Learning	Collaborative Conversations	Mentor teachers deepen their understanding of educative mentoring over time by engaging in collaborative relationships with teacher candidates. Through ongoing collaboration, mentors co-construct learning experiences and reflect on practice, which leads to a clearer recognition of what supports successful candidate learning. This process helps mentors refine their own mentoring strategies and develop a more intentional, responsive approach.
EM is collaborative Collaboration built rapport Collaboration using mentee words to connect/make meaning	Collaboration		
Tailored next steps	Tailored Next Steps	One Focus on a Specific Area	Mentor teachers build their understanding of educative mentoring by learning to focus their guidance on one key area at a time. Over time, they recognize the value of narrowing support—focusing on one skill or goal—which allows for clearer modeling, deeper candidate understanding, and more effective growth. This leads to tailored next steps that respond directly to the candidate’s needs, reinforcing the benefit of focused contextualized support in educative mentoring.
Build confidence Collaborative not critique	Benefit One Focus		
Focus on FA (J) Focus on one specific area Growth with 1 focus	Focus On One		

Appendix V (continued)

Activities That Were Meaningful in Changing Conceptions of Mentoring

	Collaborative Conversations	One Focus on a Specific Area
Mentor 1 Anna	Successful learning EM is collaborative	Build confidence Tailored next steps Focus on FA (J) Collaborative not critique
Mentor 2 Cindi	Collaboration built rapport Collaboration using mentee words to connect/make meaning	Tailored next steps Focus on one specific area Growth with 1 focus