A Case Study of Formative Assessment Processes in Preschool Special Education Settings

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THESIS

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TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF FIGURES

<u>FIGURE</u>   <u>PAGE</u>

Summary

Formative classroom assessment has been recognized in early childhood educational contexts as a best practice when working with and assessing young children. It involves ongoing daily cycles of systematic inquiry about student learning and thinking, otherwise known as the *Assessment Cycle* (Dichtelmiller, 2011). However, early childhood teachers report difficulty with interpreting and using data in the development of personalized instruction for students (Akers et al., 2014; Pyle & DeLuca, 2013; Wiliam, 2011b).

The purpose of this case study was to understand formative assessment processes through the perspective of preschool teachers in special education settings. Six preschool teachers across four classrooms (three general education teachers and three special education teachers) from one early childhood center in a large metropolitan city in the Midwest engaged in semi-structured and stimulated-recall interviews to describe their beliefs about learning and assessment, personal experiences with assessment, their classroom contexts, the challenges they faced when assessing students, and their formative assessment processes. Additionally, observations of their instructional and assessment practices, analysis of their assessment artifacts, responses to a self-assessment questionnaire, and descriptive information from a standardized observation measure (Classroom Assessment Scoring System-PreK™) provided further evidence.

Constant comparative analysis was employed to develop individual cases of four classrooms enacting formative assessment processes and to identify themes shared across teacher related to assessment processes and barriers. Results challenged and adjusted the *Assessment Cycle* by bridging the formative assessment literature with similar bodies of research, resulting in a revised model of formative assessment processes in preschool special education settings. Barriers to effective implementation of formative assessment processes included poor assessment

literacy, summative assessment mandates incongruent with the teachers' values, and summative assessment reports limiting communication with families. Implications for further research and application to practice are discussed.

I. INTRODUCTION

In the United States, there is widespread sentiment that public education programs should be tracked and evaluated to ensure effectiveness for the success of all students. In this sense, evaluation focuses heavily on quantifying learning in a top down approach through accountability measures requiring the implementation of data-driven decision-making systems. The data requirements of the federally funded No Child Left Behind Act of 2001 [NCLB, 2001] have trickled down to influence states, districts, and ultimately, schools. In response, schools have implemented standards-based curriculums and data-based decision making assessment systems, with data being students' scores on commercially available measures (Wager, Graue, & Harrigan, 2015). This is on top of already established reporting mandates for special education teachers as mandated by the Individuals with Disabilities Education Act [IDEA, 2004] on special education students' progress towards quarterly Individual Education Program goals (IEP). Wager and colleagues (2015) argued, this shift in assessment requirements in early childhood has negatively influenced instructional practices to the detriment of student learning.

> These two trends, national standards and development of data systems, have changed how early educators conceptualise their practice; their work dictated by later achievement goals rather than the needs of the child. The developmental approach that framed early childhood as a process has given way to a more assessment-driven, intervention-mediated, and content-oriented curriculum. (Wager et al., 2015, p. 160)

Ultimately, the focus is on the quantity of data over quality. The result is assessment practices driving curriculum, leading to a narrowing of the curriculum and reduction in meaningful experiences for young children. Additionally, preschool teachers report feeling overwhelmed by both the data requirements and the increasingly diverse student population (Akers et al., 2015;

Akers et al., 2014). They report uncertainty about how to develop a balanced assessment approach that meets district data reporting requirements that are congruent with their beliefs about developmentally appropriate learning environments and descriptive assessment data.

The Problem and Its Significance

The academic demands on preschool students have increased with the adoption of the more rigorous Common Core State Standards (CCSS) in K-12 grades (National Governors' Association, 2010) and high stakes accountability measures (No Child Left Behind [NCLB], 2002). Subsequently, states are placing greater importance on intervening early to prepare young children for greater academic demands by instating statewide universal preschool programs for all children (Camilli, Vargas, Ryan, & Barnett, 2010; Schultz, Kagan, & Shore, 2007). Hence, in the last decade, preschool enrollment rates have been on the rise. Between 1990 and 2013, the number of 3 to 5 year olds attending preschool programs increased from 59 to 64 percent (Kena et al., 2015).

Notably, students attending preschool programs are increasingly diverse with regard to race, linguistic competence, and ability. In 2015, preschools were racially diverse with 37 percent of Black children attending preschool, 41 percent of Asian children, 37 percent of Hispanic children, 44 percent of children identifying as two or more races, and 41 percent of White children (Kena et al., 2015). Furthermore, some of the modest increases in preschool enrollment of three-year-olds could be attributed to increased enrollment of students with special needs (Barnett, Carolan, Squires, & Clarke Brown, 2013). In addition to diverse backgrounds, young children learn at drastically different rates, enter preschool with different experiences, and typically do not independently produce work that can be examined (Ackerman & Coley, 2012).

As a result, preschool teachers are confronted with meeting the needs of an increasing number of students who come to the classroom with varied experiences, knowledge, abilities, and needs.

Targeting the Problem

High quality preschools have demonstrated an ability to meet the needs of diverse students. For example, the Chicago Longitudinal Study revealed that low-income children that attended preschool achieved more academically and had lower rates of delinquency by the time they were in third grade (Reynolds, Ou, & Topitzes, 2004). In other similar studies of high-quality preschools, children who were most at-risk realized the greatest benefits particularly in improved behavior, social skills, attention, math skills, and language, leading to a later reduction in observed problem behaviors and referrals to special education (Peisner‐Feinberg et al., 2001). Results of the meta-analysis by Camilli et al. (2010) were consistent regarding the positive impact of early childhood interventions on cognitive and social development. Moreover, it is important to note that while high-quality markers such as classroom structures and practices were strongly correlated with higher cognitive and language skills, it was the closeness of the preschool teachers' relationships with the children that was more predictive of children's later positive behaviors and social skills (Peisner–Feinberg et al., 2001).

Considering the range of preschoolers' development, the positive impact of preschool on academic and social development, and the importance of developing relationships to support student learning, a personalized education program is vital (Camilli et al., 2010). To do so, preschool teachers have historically grounded instruction in developmentally appropriate practices and established an assessment approach whereby they observed young students, interacted with them, and gained a sense of them as individuals (Reifel, 2011). At the core of preschool philosophical approaches is the importance of educating preschoolers within a play-

based curriculum that encourages and supports students' whole development across areas in academics and beyond, namely development of social and emotional skills, language and communication skills, physical skills, and cognitive skills (Bagnato, McLean, Macy, & Neisworth, 2011; DEC, 2014; NAEYC, 2009). Researchers vehemently argue for developmentally appropriate classrooms that support the whole child, promote play as natural contexts for learning, and consider a range of development in which children progress over time (Copple & Bredekamp, 2009; Dodge, Heroman, Charles, & Maiorca, 2004; Teale, 1988).

To support the whole child, teachers can integrate assessment with instruction across the learning process (Jones, 2004). Assessment is defined as the "process of collecting data for the purpose of (1) specifying and verifying problems, and (2) making decisions about students" (Salvia, Ysseldyke, & Bolt, 2012, p. 371). Assessments are typically categorized by their purpose as *summative* measures (e.g., norm-referenced and criterion-referenced) are used to evaluate student performance according to some developmental norm or criterion and *formative* measures (e.g., anecdotal records, student interviews, discussions) are used to describe student understanding to inform instruction and improve learning (Chappuis, Stiggins, Chappuis, & Arter, 2012; Graham-Day, Fishley, Konrad, Peters, & Ressa, 2014). Within developmentally appropriate instructional approaches (e.g., child-directed, authentic learning experiences), teachers can cultivate a whole understanding of each student's unique learning needs by utilizing connected ongoing assessment tools (Dodge et al., 2004; Helm & et al., 1997; McFarland, 2008). Given a deeper understanding of individual students, teachers then use the information to inform the creation of more personalized learning experiences for all students.

In support of teachers' development of personalized learning experiences, researchers from the National Early Childhood Accountability Task Force, in a report, recommended states

form a comprehensive system of early childhood assessment (Schultz et al., 2007). To be clear, a balanced assessment system would use a variety of summative and formative measures to serve the interests of policymakers, schools, teachers, families, and children by informing policies, program improvement, and individualized instruction (Schilder & Carolan, 2014). Historically, summative measures have been valued as providing objective, quantifiable information about students and programs but they provide a decontextualized understanding of the student that is not helpful for instructional planning (Neisworth & Bagnato, 2004). Currently, states are in the process of developing comprehensive early childhood assessment systems but no state has established a complete system to ensure program quality (Schilder & Carolan, 2014). In response, states and districts have adopted criterion-referenced measures for young children that require teachers to record observational information about student learning in various domains (serving formative purposes) to then be used to inform judgments about student performance levels on standardized reports (serving summative purposes) (Meisels, Harrington, McMahon, Dichtelmiller, & Jablon, 2001; Pretti-Frontczak, Kowalski, & Brown, 2002).

The promise of criterion-referenced measures is in their ability to serve both summative (evaluative information for reporting progress to families and schools) and formative (descriptive information about learning interests, strengths, and needs) purposes through ongoing assessment (Meisels, Harrington, et al., 2001). Ongoing assessment has consistently been identified as a best practice by national early childhood organizations including the National Association of the Education of Young Children (NAEYC, 2009) and the Division for Early Childhood of the Council for Exceptional Children (DEC, 2014). The organizations' respective statements describe ongoing assessment as teachers flexibly deciding how to collect information about

student learning within a standards-based curriculum, how to interpret results, and how to use the information to make immediate adjustments to instruction and supports.

While criterion-referenced measures are important for policy and program decision-making, they "do not necessarily provide the level of detail needed to use for planning instruction or for monitoring individual growth" (Schilder & Carolan, 2014, p. 2) that is necessary in a more personalized education system. To ensure criterion-referenced measures do provide detailed information about students for multiple purposes at the state, district, and classroom level, teachers can learn to implement an ongoing assessment system that meets the promise of such measures. Currently, research on the use of ongoing assessment in early childhood with limited insight for teachers on *how* to effectively use observation data to tailor instruction for a diverse population of students (Akers et al., 2015; Goertz, Oláh, & Riggan, 2009; Venn & McCollum, 2002). As a result, teachers report knowing how to collect data but not knowing how to interpret and use the data (Akers et al., 2014), thereby limiting its formative purpose.

Formative Assessment

Ongoing assessment, often used synonymously with formative assessment in early childhood literature, can be a powerful tool for ensuring preschool students progress by providing teachers with insight to understand individual differences. Using multiple, yet consistent tools for examining students within instruction is one way teachers develop a richer understanding of their students, leading to greater confidence in individualizing instruction within students' individual capacities (Akers et al., 2015; McAfee, Leong, & Bodrova, 2004). Providing students with pinpointed individualized instruction within their zone of proximal development allows for appropriate and effective scaffolding and feedback to students that drives

learning forward (Black & Wiliam, 1998; Shepard, 2005). In a seminal report, Black & Wiliam (1998) reviewed the previous nine years of research on formative assessment with students grades kindergarten to university and found that teacher developed assessment systems that gathered instruction-based descriptive information about student thinking, improved the achievement of all students. In particular, the lowest achieving students were impacted the most as their standardized test scores had the greatest gains. In this type of assessment, the teacher creatively plans for breaks in instruction for students to think, share ideas, and process the information. The teacher can peer into student thinking and misunderstandings to identify the presence of a gap and underlying cause (Wiliam, 2011a).

Similar bodies of research provide additional support for daily formative assessment as an ongoing assessment process; however, have yet to be linked to formative assessment research. Specifically, studies exploring teachers' abilities to *professionally notice* students' content-related understandings and misunderstandings view assessment as an ongoing process of collecting information, interpreting it, and acting upon it to challenge students further, reteach, and build on those understandings (Choppin, 2011; Jacobs, Lamb, & Philipp, 2010). This literature views teachers as professional decision-making experts and adaptive experts that use scaffolding techniques when teaching in the moment and responding to students (Parsons, 2012). In-the-moment questioning techniques have also provided insight into how teachers gather information about students to then make instructional adjustments and move student learning forward (Franke et al., 2007; Ruiz-Primo, 2011). Additionally, Choppin (2011) found discussions between co-teachers were pivotal in developing detailed understanding of students' thinking that in turn teachers used to challenge students further. He attributed this finding to the dynamic conversations between the co-teachers throughout the instructional day. Research on

decision-making processes, questioning approaches, and collaboration can deepen an understanding of the process of formatively assessing so that it can be seen as an ongoing process rather than a set of disconnected techniques (Marshall & Drummond, 2006); therefore, this relationship should be explored further to broaden and connect the research arenas.

Teachers' Assessment Literacy

Indeed, *how* teachers assess students can have a major impact on student learning. In an open-ended survey of preschool teachers, 13% reported using some form of teacher-created qualitative data collection method such as observation or photographs while 70% reported to still use a commercially available standardized instrument (Pretti-Frontczak et al., 2002). In large part, minimal attention is given to prepare teachers in the process of observing student learning to reveal students' understandings and misunderstandings, peer into student thinking, and gather information about previous experiences and knowledge. Moreover, teachers are often unclear how to strategically use those "data" to inform how best to scaffold and model, and provide feedback that is uniquely responsive to individual students' content learning needs, learning styles, and linguistic competence (Akers et al., 2014), otherwise known as formative assessment or the *Assessment Cycle* (Dichtelmiller, 2011; Jablon, Dombro, & Dichtelmiller, 2007). In this recent review of the literature on ongoing assessment in early childhood, teachers often described a familiarity with collecting informal data about students and using written or mental notes as they observed during lessons. But in the absence of a systematic approach to collecting, interpreting, and applying those data, the potential impact is often lost. Indeed, teachers may not be fully cognizant of the role of in-the-moment and daily types of assessment and it has been noted that "too often assessment results are seen as an end product rather than as knowledge that

opens the door to learning about each child and to planning meaningful curriculum" (Dodge et al., 2004, p. 21).

To fully realize the benefits of formative assessment processes in a standards-based education system, teachers must have a complete understanding of both summative and formative assessments so that measures can be chosen to efficiently and appropriately address a variety of classroom questions about student learning (Black, Harrison, Lee, Marshall, & Wiliam, 2004; Black & Wiliam, 1998; Stiggins, 2002). However, research has found teachers do not have a complete understanding of a range of assessments. Specifically, they are somewhat illiterate in assessment practices (e.g., choosing, developing, administering, and interpreting assessments and communicating results) and addressing assessment quality (Popham, 2009). Additionally, when collecting data on a daily basis during instruction, teachers struggle to develop effective ways of recording and managing that data, often favoring 'mental book keeping' (Stiggins & Bridgeford, 1985). Special education teachers, who tend to have greater training in assessment practices, even reported using standardized measures for instructional planning, progress monitoring and educational placement decisions (Lopez-Reyna, Bay, & Patrikakou, 1996). A systematic and strategic method would allow for increased objectivity and analysis and increase the ways they can individualize instruction for a diverse classroom of students. The authors attribute this over-use of summative measures to a focus on evaluating students for purposes of qualifying for special education and monitoring progress toward IEP goals.

Collaborating with Families

The DEC (2014) recommends "practitioners work as a team with the family and other professionals to gather assessment information" (p. 7). The DEC practice recommendations

reflect the emphasis in the federal law, The Individuals with Disabilities Education Act [IDEA, 2004], on involving families of children with disabilities throughout the assessment and learning process. To date, research on teacher–family partnerships, shed light on the challenging nature of such collaborations in the assessment process. Early childhood teachers and families have reported significant discrepancies between what they view as ideal involvement of families in assessment and decision-making and actual practices (Bailey, Buysse, Edmondson, & Smith, 1992; Bjorck-Akesson & Granlund, 1995). Ohi (2014) found early childhood teachers reported collaborative partnerships with families as challenging and draining due to difficulty developing relationships with families. Ohi commented the underlying issue could have been a lack of shared vision and shared responsibility in the education process. Recent research has revealed some positive shifts in how families are involved in the assessment processes of students with and without disabilities (Bourke, Mentis, & Todd, 2011; Markström, 2011). By changing the way teachers approach discussions with families about student progress and learning, teachers have increased the active involvement of families and drawn attention to the successes and learning dispositions of the students (Dunn, 2000; Markström, 2011). One approach, *learning stories*, has had a positive impact in New Zealand on leveling the playing field between professionals and families, leading to collaborative learning goals for students with disabilities (Dunn, 2004). However, Bourke et al. (2011) found early childhood teachers working with students with disabilities in New Zealand continue to rely on assessment tools (e.g., work samples, anecdotal records) that report on student learning rather than collaboratively discuss students through learning stories.

Purpose of the Study

Preschool teachers report an ability to collect data but struggle to effectively interpret and use it to improve instruction (Akers et al., 2015). They report an interest in knowing *how* to integrate all the demands of teaching and assessing (Pyle & DeLuca, 2013; Wiliam, 2011b) and involving families in the assessment process (Ohi, 2014). To date, specific cases of preschool special education teachers have not clearly illuminated the application of theory (*The Assessment Cycle*) into daily classroom assessment processes, making it difficult for teachers to bridge this gap between research and practice. The early childhood field needs more systematic examinations of formative assessment processes with a variety of teachers engaged throughout the assessment process (Akers et al., 2015). Research on teachers' formative assessment processes should also consider the barriers teachers face to successfully integrating ongoing assessment with instruction and engaging families in the assessment process.

The purpose of this study was to provide future and current educators with a view into the *Assessment Cycle* so that they could imagine how the process could be applied in their own teaching practices (Yin, 2009). Unique to special educators is their ability to serve as educational detectives (Keilty, LaRocco, & Casell, 2009; Smith & Nevin, 2006), trained to engage in detailed decision-making processes; therefore it was important to study these processes in special education settings through their perspective. It was also imperative to address the possibility that the cycle looks markedly different when working with students with varying levels of abilities as the focus of content may vary. Specifically, this research study examined six typical preschool teachers across four special education settings from multiple angles to gain a deeper sense of how formative assessment processes were enacted and the barriers and challenges faced by the teachers. Semi-structured and stimulated-recall interviews provided

information about the context and teachers' underlying epistemic beliefs about learning,

understanding of instruction-based formative assessment, implementation of formative

assessment processes, and perceived barriers. Analysis of the interview transcripts were

prioritized to remain close to the perspective of the teachers; the observation field notes,

assessment artifacts, self-assessment questionnaire, and descriptive information from the

CLASS-PreK™ were used to deepen the understanding of the teachers' perspective and

experiences.

This case study was guided by the following two research questions.

1) How are formative assessment processes enacted by preschool teachers in special education settings?

2) What challenges and/or barriers do preschool teachers in special education settings face when enacting formative assessment processes?

II. LITERATURE REVIEW

The purpose of this study was to describe current enactments of early childhood formative assessment processes across special education instructional settings as a way to connect research to practice. Additionally, telling the stories of current preschool teachers balancing assessment mandates and research-based assessment practices may lead to an improved contextual understanding of the challenges, concerns, and misconceptions facing preschool educators as they engaged in formative assessment processes. This study of formative assessment processes was situated at the intersection between three bodies of research: formative (ongoing) assessment, teacher decision-making and questioning, and teachers' assessment literacy. Additionally, two similar areas of related research will be reviewed: contextual influences on teachers' formative assessment processes and family involvement in the assessment process. This review of the literature will begin with operationalizing preschool formative assessment processes via the *Assessment Cycle* (Dichtelmiller, 2011; Jablon et al., 2007). Subsequently, the aforementioned areas of research will be reviewed. The aim of this research study was to examine connections across similar bodies of research and practice.

Defining Formative Assessment

The No Child Left Behind act of 2001 [NCLB] was originally conceived to expose the achievement gap in the United States. In the past five years, requirements to demonstrate student learning through test data have been on the rise as if collecting more evidence of student learning would subsequently lead to improved learning conditions. In fact, summative evaluations of student academic abilities, measured at only one point in time (i.e., high stakes tests, standardized measures) can narrow instruction, actually demotivate students experiencing school failure, and negatively influence teacher attrition (Amrein & Berliner, 2003; Sahlberg, 2007).

Summative measures were never designed to improve learning, rather to measure learning. In

contrast, qualitatively measuring student understanding within the midst of instruction and

learning, called formative assessment or the *Assessment Cycle* in early childhood, provides both

teachers and students with the valuable information or 'data' to generate ways to build on those

ideas and build learning experiences that match students' expectations for learning

(Dichtelmiller, 2011; Jablon et al., 2007). Additionally, positive learning experiences for all

students can be possible when classrooms shift from learning basic skills to deeper learning of

fewer concepts so that students engage in dialogue around authentic learning tasks (Morocco,

2001). In this sense, measures of the quality of learning and understanding can empower

teachers and students.

Preschool classrooms are increasing in diversity as the student population includes more

students with mild to moderate disabilities, cultural and linguistic diversity, and lower socio-

economic status (National Association for the Education of Young Children, 2009). These

diverse classrooms, therefore, must address a range of skills, experiences, abilities and values

within young children who typically develop skills at widely different times and in significantly

different ways (NAEYC, 2009); even more challenging for teachers is differentiating instruction

for young children whose learning is episodic and quick, along with young children with

disabilities whose learning is often characterized as slow and incremental (Jones, 2004). In

special education classrooms where early childhood special education teachers work with young

children with severe to profound disabilities, instruction is commonly guided by Individualized

Education Plans (IEP) that focus on developing students' communication, self-regulation and

self-directed movement (Horn & Kang, 2012). Play looks quite different with nonverbal and

sometimes nonambulatory students as the children require more support and direction to engage

with materials, adults, and peers.

In this review of the literature, formative assessment refers to the informal ongoing

measures of student learning that are integrated with instruction as originally described by Black

and Wiliam (1998). Using Wiliam's (2011a, 2011b) framework for conceptualizing formative

assessment, the teacher and students together continuously consider three guiding questions

throughout a learning sequence: (1) where is learning and development generally and specifically

headed along a continuum of understanding; (2) at what point in that continuum is each child

working at; and (3) what actions are necessary to move learning forward towards those goals.

In later research, (Wiliam, 2011b) identified five formative assessment strategies that support the

learning process:

　　　1) clearly shared goals and success criteria;

　　　2) planned opportunities to observe student learning using carefully crafted questions;

　　　3) specific instructional feedback to students on performance and ways to improve;

　　　4) guiding student autonomy and metacognitive skills; and

　　　5) supporting students as resources for one another.

To be effective, these strategies operate within a socio-cultural context whereby learning and

assessment take place within the dialogue between adults and peers (in combination with

scaffolding strategies that guide students within their Zone of Proximal Development) (Shepard,

2005; Vygotsky, 1978). Feedback to students, identified as the critical strategy moving student

learning forward, is effective when it is grounded in the teacher's understanding of the content,

students, and developmental learning progressions so that teachers are knowledgeable about next

steps in learning and the variety of ways students may develop that understanding (National

Research Council, 2001; Popham, 2011).

The definition of formative assessment that I present here has emerged from the overlap

between the three formative assessment questions ("where am I going", "where am I now", "how

do I close the gap?"), the five formative assessment strategies (Wiliam, 2011a, 2011b), and the

assessment decision-making cycle titled the *Assessment Cycle* (Dichtelmiller, 2011). Moving

forward, the term 'formative assessment processes' will refer to a formative classroom culture in

which the teacher engages in daily systematic decision-making that uses formative classroom

strategies to improve relationships, instruction, learning, and autonomy. Formative assessment

in this sense checks student understanding and learning within instructional moments, not

mastery of skills such as that measured by curriculum-based measures (Stecker, Fuchs, & Fuchs,

2005) or opportunities to respond (Partin, Robertson, Maggin, Oliver, & Wehby, 2009); both

approaches are grounded in distinctive theoretical understandings of student learning with the

former based on behaviorist principles and the latter in constructivist. Formative assessments are

further distinguished as instructional processes and tools blended with scaffolding techniques

rather than separate check-ins or measures (Shepard, 2005). Essentially, the teacher's mindset

and epistemological lens influences what is observed and how it is interpreted, leading to starkly

different goals for learning and instructional changes when beliefs about learning shift to a socio-

cultural perspective (Marshall & Drummond, 2006).

In the *Assessment Cycle*, the teacher engages in a four-stage iterative cycle of (1) asking

questions, (2) observing student responses, (3) interpreting the evidence and (4) responding to

students with feedback and instruction (Jablon et al., 2007; McAfee et al., 2004), a similar

process to data-based decision making (Hamilton et al., 2009) and professional noticing (Jacobs

et al., 2010). The *Assessment Cycle* is important as a method that supports teachers as they set a purpose for observing students, guiding them as they sort through the overwhelming information they are inundated with throughout the day (i.e., student behaviors, children's interactions with each other and the environment, conversations, and more). Throughout the process teachers keep in mind the curriculum, early learning standards (often incorporated in interim curriculum-based assessment systems), and child development. The challenge for teachers is bridging these knowledge bases along with district and school-wide demands, and guidelines for developmentally appropriate practices (NAEYC, 2009). The *Assessment Cycle* (previously called 'the Power of Observation Cycle' by Jablon et al., 2007) is meant to assist teachers in realizing how these classroom variables can be managed when making decisions on a small scale (daily and weekly basis) as they are connected to large scale decisions (at each 3 month benchmark period and the whole school year). When teachers practice intentional observation, the thinking process eventually becomes second nature and assessment can no longer be teased apart from instruction (Jablon et al., 2007).

Formative Assessment Research

Black and Wiliam (1998) added credibility to the formative assessment argument by bridging previous meta-analyses (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Crooks, 1988; Dempster, 1991; Elshout-Mohr, 1994; Fuchs & Fuchs, 1986; Kluger & DeNisi, 1996; Natriello, 1987) with additional studies that met criteria for a broader definition of formative assessment (as any classroom practice that sought to improve student learning through the use of feedback) (Wiliam, 2011a, 2011b). In fact, their review on the impact of processes that occurred in the teachers' and students' mental 'black box' had a tremendous effect on researchers arguing for an educational shift of responsibility to the classroom, away from government accountability

mandates. They found that central to student learning was the focus on student learning within the content being taught as well as the individualized attention students received that gave them specific information about what they were able to do, what they needed to work on, and strategies to improve. This specific information, absent grades or scores, motivated students to learn rather than protect their egos when comparing scores with others.

Interestingly, the meta-analysis conducted by Fuchs and Fuchs (1986) examined formative evaluation practices with students with learning disabilities and low achievers. In this analysis, Curriculum Based Measures (CBMs) were described as formative evaluation procedures that provided frequent judgment on the accuracy of the programs. While distinct from formative assessment that measures the nature of student thinking, the impact of frequent measures can provide important information about the learning needs of students with disabilities. Fuchs and Fuchs (1986) found that simply using formative evaluations was not enough; students with disabilities improved only when other supports were provided including behavior monitoring plans, graphic charting of students' progress, explicit connections between their work and progress, and weekly (or more frequent) meetings to explain and model goal setting, analysis of progress and the meaning of the feedback and how to work on it. This is critical to keep in mind when working in inclusion classrooms that require a variety of levels of support for students with and without disabilities. For both students with and without disabilities, engaging them in conversations about their thinking either with peers or the teacher by asking open-ended questions (i.e., "tell me why you think that" or "how did you get that answer") can help develop their reasoning skills and provide teachers with a window into the "why" of their answer (Morocco, 2001).

In conclusion, a multitude of literature reviews demonstrate the benefits of formative assessment on student academic achievement (Crooks, 1988; Dunn & Mulvenon, 2009; Frey & Schmitt, 2007; Kluger & DeNisi, 1996; Natriello, 1987), but descriptive studies are needed to shed light on the process by which teachers implement the principles within the realities of district mandates on curriculum and assessment. Policies will continue to focus on outcomes-based measures, while calling them formative, unless research begins to catch up with policy to align the spirit of assessment formative assessment with actual classroom practices (Heritage, 2010).

To date, studies of preschool teachers' formative assessment processes as a whole have not been examined, particularly not with students with disabilities, but related research can lend insight into these processes. It is important to note that validation studies have been conducted on criterion-referenced measures that are based on teachers' observation of students such as the Work Sampling System (Meisels, Dichtelmiller, Jablon, Dorfman, & Marsden, 2001) and Teaching Strategies GOLD (Kim, Lambert, & Burts, 2013; Lambert, Kim, & Burts, 2014), demonstrating the accuracy of such measures for diverse populations as well as the accuracy of teachers' judgments about student learning when compared to standardized measures (Cabell, Justice, Zucker, & Kilday, 2009; Farrington & Lonigan, 2013; Kilday, Kinzie, Mashburn, & Whittaker, 2011; Meisels, Bickel, Nicholson, Xue, & Atkins-Burnett, 2001); however, these are not reviewed here as they do not inform the literature about assessment practices. The following sections of research on formative assessment processes include studies related to the influence of teachers' views about how learning occurs (epistemological stance) on their instructional and assessment practices, the role of collaborative co-teaching teams in the formative assessment

process, surveys of teachers' formative assessment knowledge and practices, and studies on

decision-making and questioning processes.

      Exploring teachers' views about learning. Research has found formative assessment

processes are grounded in constructivist principles of student learning. James and McCormick

(2009) found that teachers implemented formative assessment processes with varying levels of

success; those with more constructivist beliefs about teaching and learning tended to have deeper

and more sustained instructional and assessment changes that reflected the "spirit" of formative

assessment in contrast to those with more positivist beliefs who utilized formative assessment

techniques that were more in line with the "letter" of formative assessment. The "spirit" of

formative assessment was found to be correlated with constructivist beliefs that involved

engaging students in dialogue, sharing decision-making, involving them in the learning process,

and an instructional focus on learning rather than mastery of material (Birenbaum, Kimron, &

Shilton, 2011; James & McCormick, 2009). In related research, Marshall and Drummond (2006)

argued that changes in classroom assessment practice must go hand-in-hand with changes in

teachers' beliefs about the potential for all students to learn, the importance of student autonomy,

and the impact of a non-evaluative mindset for observing learning. In their study, when teachers

were given isolated techniques to implement, the teachers typically missed the *spirit* of formative

assessment by continuing to evaluate student thinking according to right and wrong. In other

words, simply tacking on new assessment tools did not lead to changes in practice, particularly

when teachers strictly followed curriculums and did not see themselves as agents of change with

the ability to adapt the curriculum to meet the needs of students (Marshall & Drummond, 2006;

Nelson, Slavit, & Deuel, 2012).

Similarly, a case study of three kindergarten teachers was conducted by Pyle and DeLuca (2013) to provide an in-depth understanding of the connection between a teacher's curricular stance and assessment practices. The authors argued that the connection between curricular stance and assessment practices was particularly important given increased mandates for teaching to academic standards. Using interviews and observations of practice, the researchers narrowed the qualitative data into two categories, curricular stance or assessment practices, and then analyzed the three cases. They found that the three teachers, while all valuing learning standards, established varying types of curricular and assessment practices, implying years of experience was a mediating factor. One teacher, with 22 years of teaching experience, demonstrated a "Developmental Assessment Approach" characterized by an emphasis on teaching to developmental stages of cognitive and social learning and use of traditional diagnostic assessments that demonstrated learning on a developmental continuum using observations and checklists. The second teacher, with 19 years of teaching experience, represented a "Blended Assessment Approach" in which she focused both on teaching the curriculum as well as responding to individual students' learning needs, which was guided by a series of formative then summative measures. The third teacher, with 4 years of teaching experience, exhibited an "Assessment for Learning Approach" in which she focused on developing students' metacognitive abilities by allowing the students to guide instruction within curricular areas of instruction and using formative assessments as both assessment and learning tools through the use of peer- and self-assessments. Pyle and DeLuca (2013) concluded that all three teachers successfully aligned their teaching practices with their epistemic beliefs while also adhering to national learning standards with inherent benefits to each of their approaches, suggesting that a combined approach might be valuable.

The role of collaborative co-teaching teams in the formative assessment process.

Collaborative dialogue between teachers on formative assessment data reportedly deepens the

depth of interpretations teachers draw from formative data. Choppin (2011) examined the

thinking of five teachers with regard to student thinking, instructional tasks and 'task

adaptations'. In stimulated-recall interviews with mathematics teachers about student

understandings over the course of an inquiry-based math unit, Choppin discovered that the two

teachers that represented deeper understandings of students within a successful inquiry approach

were part of a co-teaching team. He found that when co-teachers discussed student thinking, they

challenged one another to focus on the details of student thinking and hypothesize about

misconceptions, which then equipped them with the knowledge and understanding about student

learning that went beyond just noticing if students were engaged in the lesson. Furthermore, the

teachers demonstrated expertise that helped students to move from informal superficial

understandings to formal deeper understandings of math concepts. This was possible as one

teacher made changes during lesson planning while the other during instruction.

Surveying teachers' assessment knowledge and practices. To examine teachers'

current understanding of assessments and their typical assessment practices, survey studies have

gained a wider sense of what is typical of classroom teachers. Although reforms emphasize the

importance of a classroom assessment approach that balances both summative and formative

measures (Black, 1998; Earl & Katz, 2006), formative assessment practices are implemented

minimally (Heritage, 2010). Surveys of teachers' practices indicate teachers continue to

emphasize summative over formative forms of assessment, particularly at the secondary level

(Zhang & Burry-Stock, 2003). In a survey of the frequency of implementing common evidence-

based practices in special education (Burns & Ysseldyke, 2009), only 36.8% of special educators

and school psychologists reported implementing formative assessment every day and 39.7% only

once a week. Following interviews with teachers and administrators on assessment practices,

(Volante, 2010) found this resistance rooted in students' and parents' over-reliance on numbers

to describe performance and academic gains. Heritage (2010) argued that this may in large part

be a result of formative assessment being seen as a measurement instrument rather than a

conceptual framework or process that is essential for both teaching and student learning.

A few key surveys of teachers' practices have been historically important. In 1985,

Stiggins & Bridgeford's seminal exploration of classroom assessment practices surveyed general

education teachers' use of different assessments, assessment concerns and use of performance

tasks. For the performance task, responders were requested to provide an example of the

assessment, which led to exclusion of surveys in which the example did not fit the parameters of

a performance task. They found that teachers used teacher-made tests most often and as the

grade level of the teacher increased, teachers grew more concerned about the quality of the

assessments and used more teacher-made tests. Eighty-eight percent of the teachers said they

used structured performance assessments while 95% reported using spontaneous performance

assessments; however, results showed performance assessments were not used accurately as they

did not provide students with objectives or identify scoring criteria and levels of performance

ahead of time. Finally, 40% of teachers typically used 'mental bookkeeping" instead of

recording student skills, progress, and performance.

In the first study to examine the assessment practices of special educators, Lopez-Reyna

et al. (1996) surveyed teachers of students with learning disabilities in a large urban district using

a three part questionnaire. With regard to three identified purposes for assessment (instructional

planning, progress monitoring and educational placement decisions), teachers were asked to first,

rate on a 5-point Likert Scale the usefulness of five assessment measures (interviews with the

general education teacher, observations, standardized testing, curriculum based measures

[CBM], and error analysis); second, identify the level of proficiency with each measure; and

third, identify the frequency with which those measures were used according to the three

purposes for assessment. For all three purposes, teachers reported using standardized measures

most frequently with teacher made tests or CBM equally employed for progress monitoring. The

authors attribute this over-use of summative measures for various purposes to a focus in special

education on evaluating students via special education.

Similar in format, Zhang and Burry-Stock (2003) created the *Assessment Practices*

Inventory (API), a 67-question measure about classroom assessment based on the *7 Standards for*

Teacher Competence in Educational Assessment of Students [created jointly by the American

Federation of Teachers (AFT), the National Council on Measurement in Education (NCME) and

the National Education Association of Students (NEA) (AFT, NCME, & NEA,1990)] . For each

assessment practice, teachers answered 2 questions: 1) their use of the practice and 2) self-

perceived skill with the practice. Results indicated that secondary teachers used more paper and

pencil tests and were more concerned about the quality of the assessments with regard to grading

while elementary teachers used performance assessments as an alternative more often.

One survey of assessment practices focused narrowly on the formative assessment

practices of teachers. Brookhart, Moss, and Long (2009) developed an assessment confidence

questionnaire, the Formative Assessment Questionnaire (FAQ) to match the five modules

teachers completed during a 3-year professional development. The training transformed teachers'

classroom assessment by focusing on assessment *of* and *for* learning. This questionnaire was

based on the Classroom Assessment Confidence Questionnaire developed by Chappuis et al.

(2012). Survey results pointed to three stages that teachers progressed through as they evolved in their formative assessment expertise: mindfulness, skill building, and deeper understanding. As a result of developing expertise in employing formative assessments, teachers demonstrated a more holistic view of the students and moved beyond focusing solely on student achievement to also incorporate examination of student motivation and self-regulation (key factors of assessment as learning).

Internationally, Lebeer et al. (2012) surveyed the assessment practices used with students with special needs by surveying special education teachers, speech and language pathologists, and school psychologists. The results were not surprising as there was an emphasis on static testing procedures for diagnostic purposes while special education teachers used formative assessment only 5% of the time. This was disconcerting for the researchers as the standardized testing focus represented a medical model of disability rather than a cultural model of disability. A cultural model of disability is recommended for inclusive practices by the UN Convention of the Rights of people with disability and the International Classification of Functioning (ICF) of the World Health Organization (WHO) & the Inclusive Education movement. Additionally, teachers reported not being happy with current assessment practices. Lebeer et al. (2011) refer to the '2008 Cyprus Recommendations on Inclusive Assessment', which recommends schools and teachers move away from deficit or diagnostic testing and move towards ongoing formative assessment. By incorporating this approach to assessment, they explain that all teachers are expected to be responsible for the assessment of all their students (even those with disabilities).

In the only known survey study in early childhood, Pretti-Frontczak et al. (2002) explored Ohio preschool teachers' assessment and curriculum practices. Participants included preschool teachers at three different types of preschool programs: Head Start, Preschool Special

Education, and Public School Preschool. It is important to note that in Ohio, all preschool teachers were mandated to use the *Galileo System* as a curriculum-based measure and in addition, Head Start teachers were required to use the *Brigance* and the *Child Observation Record* (both standardized measures). The survey asked two open-ended questions requiring teachers to list current (1) assessments used and (2) curricula used. Responders indicated using no more than 6 assessments and 3 curricula, indicating a variety of tools employed when teaching and assessing young children. The two most commonly used assessments were *The Galileo System* (34.6%) and the *Brigance (32.8%)*, not surprising given state mandates to use these measures. In addition, 23.4% of teachers reported employing a "self-developed or program-developed checklist" (Pretti-Frontczak et al., 2002, p. 112). The researchers argued that by asking open-ended questions, it was possible to gain insight into teachers' interpretations of what constituted assessment and curricula. After categorizing the types of assessments teachers reported using, they found that 70% of the assessments reported by teachers were commercially available measures such as *the Carolina Curriculum* and self or program developed checklists, 13% described methods of collecting data such as anecdotal or photographs, 10% of respondents reported assessing developmental domains such as social/emotional skills or cognition, and the remaining 6% reported purposes for assessing or resources such as standards that guide assessments. When considering teachers' variables, it was evident that the more years of experience teaching and education were correlated with more assessment responses. Additionally, teachers at special education schools listed more commercially available measures and self or program developed checklists. Pretti-Frontczak et al. (2002) argued that these results reveal a positive shift in assessment practices away from standardized norm-referenced measures

towards a more developmentally appropriate use of curriculum-based measures and that training teachers on assessment is important for increasing the use of multiple assessment measures.

Examining related research on decision-making and questioning processes during instruction. Formative assessment is considered a process of using assessment information to make decisions. Therefore, it is important to explore research examining teachers' decision-making processes and questioning techniques. Furtak and Ruiz‑Primo (2008) described formative assessment as occurring along a continuum from planned (formal prompts embedded in the curriculum) to unplanned (informal "on-the-fly" questioning). The spontaneous, unplanned formative assessments occurred flexibly and strategically during breaks in instruction when the teacher asked questions, prompted students, and explored student thinking informally. This body of literature has yet to be linked to the literature on formative assessment processes.

Decision-making processes can be traced back to Shulman's work exploring the knowledge of teachers (Shulman, 1987). Shulman's foundational argument was that in inquiry-based classrooms in which students construct their understanding, the teacher's reasoning skills are even more important than in traditional teacher-led classrooms. Teacher knowledge, according to Shulman, includes content knowledge, pedagogical knowledge and knowledge about the learner. Teachers must learn to reason and make decisions by focusing on the "features of pedagogical reasoning that lead to or can be invoked to explain pedagogical actions" (p. 13). Learning to attend to student knowledge is a type of expertise rather than one based solely on experience (Even & Tirosh, 1995; Jacobs et al., 2010). The expertise is evident in studies revealing more experienced and more educated teachers that critically attended to the details of student thinking provided more effective and meaningful instructional changes (Carpenter, Fennema, & Franke, 1996; Parsons, 2012).

When attending to the details of student thinking, teachers can take various approaches based on the goal of assessment and instruction. By collaboratively working with one middle school teacher over time, Davis (1997) realized the teacher developed three lenses through which to listen to student learning: evaluative, interpretive, and hermeneutic orientations (Davis, 1997). At the evaluative level of listening, she sought perceived right answers from students, thereby limiting her listening skills to right and wrong answers. In the interpretive orientation, she began to engage students in more open-ended reasoning as she noticed patterns of student thinking, however, still attended to specific correct answers. Finally, taking a hermeneutic listening stance, she engaged student in developing understandings and connections within deeper conversations so that she was then able to take the perspective of the student. For this teacher, progressing to the hermeneutic stage took time, reflection, and learning during the course of a year-long professional development.

In related research, the process of professional noticing establishes a structure by which teachers examine the details of classroom interactions by first, noticing key assessment moments, then detailing student responses, then developing hypotheses regarding student thinking and finally responding to that information (Sherin, 2007; Sherin, Russ, Sherin, & Colestock, 2008). Ross and Gibson (2010) compared the professional noticing skills of expert and novice teachers. Both novice (teachers in a reading graduate program) and experts (University faculty) were asked to watch a videotaped lesson and describe what they noticed about a student's response to the instruction. Findings indicated that experts provided more detailed observations, commented on a higher frequency of pivotal events (moments when the student's errors or thinking should trigger instructional changes), provided more hypotheses based on detailed evidence of student thinking, and based hypotheses on big ideas in literacy and metacognition. Additionally, experts

were more fluent and elaborate, which provided a clear link to instructional decisions. Novices, on the other hand, commented less, especially with regard to pivotal moments; commented on surface behaviors without interpreting behaviors; and utilized less academic terminology related to key literacy processes. Although novices sometimes noticed the same literacy or metacognitive process, these comments did not lead to interpretations that would typically support instructional decisions. Based on the results, Ross & Gibson (2010) developed a framework for the "Role of Expert Noticing in Instructional Decision Making" (p. 190); in this model, expert literacy noticing leads to guiding and responding to instructional moments. The model is limited in validity due to the inauthentic situations of commenting on another teacher's instruction and small sample size.

Providing further support for the development of the professional noticing construct, Jacobs and colleagues (2010), analyzed teachers' responses to two forms of student mathematical thinking: videotaped interactions during a class discussion and written solutions to a math word problem. The researchers looked at both the levels of expertise with professional noticing across four groups of K-3 teacher as well as decision-making processes in order to support the development of a professional noticing construct. The "artifacts of practice" examined by the teachers were students' written responses to two math problems. Both sets of artifacts were retrieved from inquiry-based classrooms that represented the mathematics reforms suggested by the National Council of Teachers of Mathematics in 2000, including student discussion, individual and group problem solving, deeper teacher questioning, and exploration of deep-level concepts. They found a clear expertise trajectory from novice to expert. Expert teachers with more teaching experience and professional development provided "robust evidence" characterized by: 1) detailed descriptions of students' strategies along with specific

examples of those strategies within students' answers; 2) analysis of what was missing from students' answers; and 3) connections between students' knowledge and mathematical concepts. In contrast, novice preservice teachers' analyses was overgeneralized, lacked sufficient evidence for judgments about students' performance, and listed instructional approaches. Jacobs and colleagues (2010) argued that when teachers saw individuals in a group as a whole entity, they were unable to then see the specific performances of individuals apart from the group.

Within the framework of professional noticing, Choppin (2011) examined the thinking of five teachers with regard to student thinking, instructional tasks and 'task adaptations'. Stimulated recall interviews asked the teachers to view and respond to a compilation of video clips from six videotaped lessons throughout a mathematics unit. This approach to stimulated recall interviews addressed previous research findings that the decisions teachers make are influenced by extensive knowledge of content-specific learning sequences (Popham, 2011) and effective instructional decision-making occurs within a constructivist (inquiry-based) approach to teaching and learning (Birenbaum et al., 2011; James & McCormick, 2009; Mason, 2002). Choppin (2011) explained that the results led to a significant realization that simply giving teachers inquiry-based mathematics curriculum did not guarantee teachers' success with interpreting student thinking and resultant instructional adaptations. More specifically, he reported that despite increasing demands on teachers within an inquiry curriculum to observe and understand student learning, some teachers remained tied to the prescribed instructional lessons, rather than adapting the instruction to the students in line with the epistemological foundations of the curriculum.

Additionally, in the field of science, questioning cycles (ESRU cycles: teacher elicits a response, the student responds, the teacher acknowledges that response and the teacher uses that

information to respond) have been explored as methods of mapping out the decision-making

process (Ruiz-Primo & Furtak, 2006). Ruiz-Primo and Furtak (2006) examined science

teachers' informal formative assessment practices during *assessment conversations* (Duschl &

Gitomer, 1997) between teachers and students. These cycles follow a similar process to

professional noticing. With the ESRU cycle as a basis, the authors examined the formative

assessment practices of four science teachers. The four teachers were part of the experimental

group that was trained in implementing the FAST curriculum in their middle school science

classrooms. The FAST curriculum provides science teachers with a series of investigations and

corresponding embedded performances (formal formative tasks) within an inquiry approach to

learning science. Teachers were expected to engage students in developing deeper

understandings of the concepts in response to student understandings and misunderstandings.

Ruiz-Primo and Furtak (2006) reported that the four teachers typically engaged in incomplete

formative assessment cycles (59% of interactions were identified as engagement in the first three

phases: ESR) while only 26% of the assessment conversations represented complete ESRU

cycles. Additionally, the teacher that engaged in the greatest number of completed ESRU cycles

only did so 32% of the time. Finally, they found that a complete ESRU cycle in which teachers

acted upon the assessment information (using the data) was typically preceded by multiple ESR

interactions with students; typically these ESR interactions were teachers engaging multiple

students before using the assessment data to respond. The authors further explored the types of

strategies used by teachers to elicit student responses (the first phase in the ESRU cycle) and

found the most common strategies were *recognizing strategies* (rephrasing student ideas) and

using strategies (questioning students for deeper responses using why or what questions).

Teachers, however, did not frequently use feedback, an aspect of the final phase of formative assessment.

Ruiz-Primo and Furtak (2007) conducted a similar study in order to determine if the quality of formative assessment could be determined by using the aforementioned ESRU cycle and if this was correlated with student performance. Results were similar to their previous study with the majority of assessment conversations involving incomplete cycles that did not involve responding to students; most cycles were ESR, "teacher elicits, student responds, and teacher recognizes" (p. 69) with Rob completing ESR cycles 95% of the time, Alex 65% of the time and Danielle 56% of the time. Ruiz-Primo & Furtak (2006b) further categorized most interactions as procedural (52% were Epistemic) rather than Conceptual (7%), indicating that teachers were not engaging students in inquiry-based instruction. In contrast to the previous study, strategies utilized by teachers to recognize student responses were examined according to these instructional categories. They found that most conceptual questions asked students to define concepts (44%) and check student understanding (32%) whereas the non-inquiry interactions asked closed-ended questions ranging from 37% to 52% of the time. Across categories, teachers employed two effective strategies: restating student responses and comparing and contrasting student ideas. The researchers acknowledged that responding to students' levels of understanding was uncommon, for example guiding student understanding or engaging students in discussions or providing feedback. Additionally, student performances on embedded performance assessments were examined for each of the classrooms; student scores progressively increased across teachers who provided increasing levels of complete ESRU cycles

Teachers' Assessment Literacy

According to the *inTasc Special Education Teacher Standards* (Council of Chief State School Officers, 2011, April), a special education teacher in Illinois is expected to be well versed in a variety of assessments that measure students' abilities both summatively and formatively. This knowledge and expertise has been termed assessment literacy (Popham, 2009). More specifically, it is the teacher's ability to effectively choose assessments for a specific purpose and evaluate the soundness of those measures according to aspects of reliability and validity. Surveys of teachers' assessment practices previously discussed lend insight into teachers' assessment literacy but a few studies explore the topic in detail.

The Assessment Literacy Inventory (ALI) (Mertler & Campbell, 2005), is an applied questionnaire that presents a set of 7 scenarios with 35 corresponding multiple choice questions that addresses seven teacher competency standards. The advantage of the ALI is its ability to explore teachers' knowledge of assessment concepts by requiring them to apply those skills in realistic situations. The development of the Assessment Literacy Inventory occurred over time, beginning with Plake's (1993) national survey, which utilized the Teacher Assessment Literacy Inventory. Based on conclusions that teachers' lack of preparation in the area of assessment was due to poor teacher education programs, Campbell and Evans (2000) and Campbell, Murphy, and Holt (2002) turned to measuring student teacher's knowledge with the adapted Assessment Literacy Inventory (ALI). Mertler then compared the assessment literacy knowledge of preservice and inservice teachers by revising the measure and renaming it the Classroom Assessment Literacy Inventory (CALI) (Mertler, 2003, 2004). He found that preservice teachers had low assessment literacy, which was attributed to lack of "on the job" training; therefore, he suggested that teacher education programs needed to create more meaningful and authentic

learning experiences that allow teachers to practice skills in realistic situations under the

guidance of experts. Due to poor reliability with in-service teachers, Mertler and Campbell

(2005) revised the measure a final time and named it the Assessment Literacy Inventory (ALI).

This study validated the ALI as a pre-post measure to show the positive effects of an assessment

literacy professional development program with in-service teachers. Mertler identified his

intention for school districts to use the ALI in order to explore areas in need of professional

development.

The assessment literacy of teachers (K-12 grades) and administrators was explored in

depth by interviewing educators about their assessment knowledge and practices (Volante,

2010). The semi-structured interview questions were developed using Earl's framework of

assessment approaches: assessment *of, for,* and *as* learning (Earl, 2012). The interviews revealed

teachers and administrators were found to be knowledgeable about assessment *of* and *for*

learning; however, lacked sufficient knowledge about assessment *as* learning. Additionally, their

use of assessments was not balanced across summative and formative measures as they over-

emphasized summative assessments. The teachers reported lacking training on assessment *for*

learning and wanted more attention on assessments *for* and *as* learning. One barrier that was

discussed regarding this shift towards formative assessment was the reported resistance from

parents and students away from numbers or scores as indicators of learning. Volante (2010)

suggested governments include more of a focus on assessment literacy in teacher education

programs as well as educating students and parents on adapting a new perspective on classroom

assessment.

Contextual Influences on Teachers' Instructional and Assessment Practices

Research has found the school context heavily influences the teaching practices of its

teachers (Birenbaum et al., 2011; Birenbaum, Kimron, Shilton, & Shahaf-Barzilay, 2009; James

& McCormick, 2009). In their study of school contexts, James and McCormick (2009)

discovered that teachers who were able to bring their formative assessment practices more in line

with their constructivist beliefs, were in schools that established a clear, shared vision for

learning and assessment. These teachers were committed to an inquiry approach to teaching,

took risks toward change, and established networks for sharing successes and experiences.

Underlying the success of teachers at these schools were collaborative discussions that led to

ingrained formative assessment practices representing substantial shifts in understanding and

implementation of formative assessment. Birenbaum et al. (2011) explored the larger context of

classrooms and schools within which formative assessment principles were implemented in order

to determine factors that led to or challenged successful implementation of assessments *for*

learning (AfL), otherwise known as formative assessments. The researchers hypothesized that

the classroom assessment context (CAC) and the school-based professional learning community

(SBPLC) were important factors to be studied along with teachers' assessment *for* learning

practices. The sequential mixed methods study began with administration of two questionnaires

(an AfL practices questionnaire and a SBLC questionnaire) that surveyed a large random sample

of teachers. The questionnaire then served to identify 6 elementary school teachers for deeper

case study analysis. As expected, the surveys found that half of the respondents were not

enacting AfL principles in their classrooms with only 18% reportedly using formative

assessment principles including feedback, assessments to target learning needs, and self/peer

assessments. With regard to school climate, the responses indicated that AfL principles were

positively associated with constructive professional learning environments, indicating that

inquiry school environments are more supportive of the enactment of formative assessments in

individual classrooms.

In the subsequent qualitative part of the study (Birenbaum et al., 2011), for each case the

teacher was interviewed, his/her assessment artifacts were reviewed, focus groups with his/her

students were conducted, and one of his/her colleagues was interviewed. Analysis of each case

revealed three clear constructs (AfL, SBPLC, and CAC) that were typically aligned along similar

epistemic beliefs and distributed along a continuum. On the one end of the continuum, low

quality formative assessments were associated with a positivist epistemology, performance

orientation to learning, and a school culture that emphasized external mandates and low teacher

input or motivation. On the other end of the continuum, high quality formative assessments were

connected with a constructivist epistemology, positive classroom and school climate, learning

focused orientation, and a school culture that supported strong professional learning and high

teacher control and motivation. Notably, teachers within a strong professional learning

community (SBPLC) worked together to create curriculum, reflect on their teaching and student

learning, and engage in inquiry processes with colleagues and students. Furthermore, teachers

that fell in the middle of the continuum often maintained constructivist beliefs in line with

formative assessment principles; however, their practices were guided by district testing and

accountability mandates, resulting in tension for some teachers between beliefs and practices.

Birenbaum et al. (2011) suggested this disconnect between teachers' beliefs and practices could

be attributed to teachers' lack of formal training on assessment *for* learning principles and

practices.

Family Involvement in the Assessment Process

Involving families in the assessment process is a recommend practice by national early childhood organizations (NAEYC, 2009; DEC, 2014) and the IDEA (2004). In 1992, Bailey and colleagues conducted a survey in four states to professionals working with infants and toddlers with disabilities. The survey asked preschool teachers questions related to ideal and actual involvement of families across four assessment domains: (1) *decisions about child assessment,* (2) *participation in child assessment*, (3) *team meetings and decision making*, and (4) *family goals and services*. Results across states revealed teachers ideally desired a high degree of family involvement across domains; however, families were involved across assessment domains at a moderate level. Challenges to family involvement included system and family barriers. Family barriers included limited knowledge about early intervention, opinions about their role in the process, and resources. Systems barriers included state or administrative policies and regulations, limited resources and time, and an inflexible system (Bailey et al., 1992).

In a mixed methods study, Bourke et al. (2011) administered a national 29-item questionnaire on assessment practices to elementary and secondary teachers in New Zealand working with students with special needs, which then served to identify cases to complement the quantitative data with descriptive information. The questionnaire asked teachers questions about why and when they assess as well as to rate their use of 24 different assessment tools. The teachers' responses revealed that teachers often assessed to improve student learning by identifying strengths and needs. Teachers used informal measures (e.g., observation, anecdotals, work samples) most often as they provided the most useful information about student learning. Even though teachers agreed that formative assessment tools such as observation and portfolios were important in supporting students as they developed deeper understandings of underlying

concepts, the application of a complete formative assessment approach in New Zealand, termed 'learning stories', was not implemented. Therefore, the six cases of teachers were purposively sampled to examine learning stories in-depth. Learning stories, a form of narrative assessment, were described as a collaborative assessment effort between the teacher and student to make learning visible in terms of what s/he can do and in what context (Bourke et al., 2011). During interviews, the teachers for the six cases, similarly valued learning stories in serving to motivate students, improve students' confidence in learning, communicate effectively with students and families about their learning needs, and authentically represent students' learning potential rather than just weaknesses. Bourke et al. (2011) concluded that learning stories had the potential for enhancing the learning of students with special needs. Although teachers utilized assessment tools used in learning stories, they required additional training to learn how to integrate those tools into an overall assessment approach that maximized student learning through the formative assessment principles.

One study conducted by Ntuli, Nyarambi, and Traore (2014) employed qualitative methods to examine the barriers faced by early childhood teachers when assessing immigrant children. Ten teachers were interviewed about the assessment measures they typically employed when working with immigrant children, how those measures helped improve student learning, and the barriers they faced. In this study, teachers reported using standardized measures (e.g., Battelle Developmental Inventory, Dynamic Indicators of Basic Early Literacy skills) to determine eligibility for special education, but shared hesitations with such measures based on poor cultural responsiveness. To record daily learning, all teachers reported using systematic observations such as anecdotals as the best approach for immigrant children. The top barriers teachers reported to documenting student learning included language, culturally and

linguistically unresponsive measures, poor participation of families in the assessment process, cultural differences, and parents' limited knowledge of child development. Teachers reported concerns regarding the difficulty with gaining a true sense of the child's ability when they did not speak the same language, as this sometimes led to inaccurate eligibility for special education or poor identification of the child's zone of proximal development. Additionally, communication with the children's families was challenging due to the language barrier as well as cultural differences. Assessment in early childhood often incorporates families' knowledge of the student but when families have limited knowledge of child development, answering such questionnaires was difficult. Ntuli and colleagues (2014) stressed the importance of developing culturally responsive measures and taking action to bring families into the assessment process through English language classes and workshops.

Summary

In review, a critical purpose for assessing in the early childhood classroom is to develop and sustain meaningful collaborative relationships with families and students. These relationships, built on trust, lead to a greater realization (and accuracy) of who the student is as a complete individual (Jablon et al., 2007; McFarland, 2008; Peisner-Feinberg et al., 2001; Rhodes & Nathenson-Mejia, 1992). When choosing an observation tool, it is important to keep in mind the reason for gathering information. Teachers, with an understanding of the purposes for assessing students, are more capable of documenting student learning, reaching accurate conclusions and acting upon the data (Jones, 2004). Additionally, assessment literate teachers have a greater awareness of sound design leading them to consider other variables including those within the assessment, environment, and instruction. The risks involved in inaccurate measurement of students, particularly seeing problems within the child rather than the

environment or instruction, is that students can be denied access to appropriate learning opportunities, positive learning experiences, and higher expectations for development (Neisworth & Bagnato, 2004). Fortunately, research has found that teachers' observations and conclusions can be trusted as long as they are systematic and follow an objective decision-making process (Meisels, Bickel, et al., 2001). Formative, ongoing assessment is important as it reveals the variety of student learning and thinking that can occur because "although all children may be engaged in the same task, they may be engaged in the task in different ways" (Meisels, Dichtelmiller, et al., 2001, p. 27).

Simply collecting data does not guarantee teachers are able to use the information to concurrently improve instruction and student learning (Akers et al., 2014). Research has begun to move beyond gaining a sense of teachers' assessment literacy and data collection practices to examine the deeper thinking processes involved in making decisions using student data; however, this research has minimally extended to preschool settings where instruction and learning environments are planned within play-based curriculums. For preschool settings, criterion-referenced data systems such as the Work Sampling System have been created to increase preschool teachers' observations of student learning (Meisels, Bickel, et al., 2001); however, without revealing how teachers can engage in the complete assessment process, collecting data will continue to remain another district mandated requirement rather than a meaningful *Assessment Cycle* intended to deepen student learning (Dodge et al., 2004). This educational incongruence is the driving force for the following descriptive case study.

III. METHODOLOGY

The purpose of this study was twofold. First, this study aimed to describe the formative assessment processes of preschool teachers across special education settings within the context of their school, classroom, and personal values. The second purpose was to understand the barriers impacting preschool teachers' ability to enact formative assessment processes in their daily instructional routines. To address these two research questions, this qualitative study utilized interviews (semi-structured and stimulated recall), observation field notes, artifact analysis, a self-assessment questionnaire, and descriptive information from the Classroom Assessment Scoring System (CLASS-PreK™). The interviews with teachers were prioritized to remain close to the perspectives and experiences of the teachers while the remaining data was used to breathe life into those findings. This chapter begins with an overview of the study design including qualitative research approach and case study design. This is followed by a description of the participants, setting, recruitment process, data collection tools, and analysis process. Finally, the chapter concludes with consideration of the methods to establish trustworthiness and the credibility of the study.

Design

This study used a collective case study design (Stake, 1995) to explore the formative assessment processes enacted by six preschool teachers across four special education settings. The experiences of the six teachers informed the development of four classroom descriptions and key overarching themes across teachers. The research questions required a descriptive approach to examine "how" and "why" questions within the qualitative tradition of research. Qualitative research is driven by the belief that individuals experience and interpret the world in different ways, realizing that multiple realities are present; however, similar constructions of reality can be

shared across groups of individuals (Guba & Lincoln, 1994). "Qualitative researchers study

things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of

the meanings people bring to them" (Denzin & Lincoln, 2005, p. 3). These descriptive research

methods are valued for their exploration of processes and experiences by prioritizing the emic

view in that the researcher reveals experiences of a phenomenon from the perspective of the

individuals (Creswell, 2013). In the field of special education, qualitative research is vital for

providing insight into processes that are complex and contextually bound with students who are

diverse and infinitely unique. Brantlinger, Jimenez, Klingner, Pugach, and Richardson (2005)

more specifically stated, "a *definition* that we believe is flexible enough to be inclusive is that

qualitative research *is a systematic approach to understanding qualities, or the essential nature,*

of a phenomenon within a particular context (p. 195). Essentially the role qualitative research

plays in the empirical arena is as descriptive exploration of the influence of context on

individuals and as an avenue to illuminating complex processes, effectively answering "how"

and "why" questions (Stake, 1995).

Self as Instrument

Driving an individual's decisions throughout the research process from research design to

methods is the underlying philosophical beliefs about the source of reality and how knowledge is

constructed (Cresswell, 2013). One stance that aligns well with qualitative methodology,

constructivism, builds the reality of the problem through interpretation of the various data

collected, with the help of the participants. Inquiry in this sense is an active and dynamic process

that occurs between the researcher and participant such that the research "unfolds" through a

process of data collection, analysis and discussion that then continues to be cyclically revisited

until both examiner and participant agree upon the case description and analysis (Schwandt,

1994). As a constructivist, I believe gaining multiple perspectives of individuals and engaging in

a dialogue between the researcher and teachers can reveal the greatest information to address the

research questions. I believe that while individuals experience phenomenon in their own

intricate ways, there are commonalities across individuals in similar situations that can be

represented in common procedures or experiences for greater application to other teachers and

settings. My background as a preschool special education teacher and higher education

instructor on the topic of assessment is the driving force behind studying this topic.

The challenge as a qualitative researcher is to remain objective by acknowledging the

lens through which I understand the phenomenon. I maximized dialogue with the teachers by

sharing my background experiences and by developing trust with the classroom teachers and

students through immersion in natural classroom activities during observations. In this research,

the dialogue between the participants and myself was key to gaining insight into their

complicated thought processes and learning explored in formative assessment. Ethically, the

goal then was to lead to meaningful descriptions; therefore, working side-by-side with the

teachers was critical.

The goal of this research was to make understandable the teaching practices and lived

experiences of special education teachers; therefore it was not enough to know what specific

formative assessment measures were being used with students with and without disabilities. In

this research, it is important to go deeper beyond the practices of teachers to explore underlying

assumptions and values in how teachers taught and assessed (Marshall & Drummond, 2006). It

is my belief that in doing so, attention could be drawn to how change can be sustained. As

teachers improve assessment practices in conjunction with what is valued in the education of

young children, they can essentially arm against robotically meeting district mandates (Black &

Wiliam, 1998; Jones, 2004) that can sometimes lose sight of student learning.

Case Study Research

Case study design serves to answer these challenging "how" and "why" questions that are

not easily answered using empirical evidence (Yin, 2013). One purpose for using a case study

design is to "confirm, challenge, or extend the theory" (Yin, 2009, p. 47) by studying typical or

revealing cases within natural settings that can provide richer descriptions of contexts and

variables that cannot be so easily untangled. Furthermore, case studies allow researchers to

rigorously study genuine phenomenon in its natural contexts thereby giving voice to real people

and their lived experiences while also generalizing findings toward theory building. Such study

of real people through use of rigorous methods of research adds credence and validity to the use

of such a design. One major challenge in case study design is identifying the units of analysis.

Units of analysis refer to the *case* that is being studied, which can be individuals, an event,

decisions, programs, or processes. Operationally defining the units of analysis by bounding them

using time, space, and people is important so that data collection can appropriately examine all

units (Stake, 1995; Yin, 2009). Specifically, in a collective case study it is important for the

researcher to remain focused on the larger unit while examining smaller units that support and/or

challenge the overall case (Stake, 1995); "we are interested in them for both their uniqueness and

commonality" (Stake, 1995, p. 1). For this type of case, "the challenge is to identify the 'big

picture' while noting huge amounts of detail in multiple and complex actions" (Rossman &

Rallis, 2012, p. 193). In this collective case study, the larger unit of analysis was a case of

formative assessment processes in preschool special education program settings, presented as

findings in response to the two research questions. Smaller units of analysis, that supported and

challenged the overall case included teachers in four preschool special education classrooms.

Other variables of influence that were examined in context were the school, teacher, and child

variables.

While both quantitative and qualitative data were collected, the underlying assumption

was that no one reality exists but that individuals are influenced by many factors, interpreting

their experiences in different and unpredictable ways. Each data tool and source revealed a

different angle on the case that strategically provided a slice necessary to construct a whole

multi-faceted understanding. In this sense, both the qualitative and quantitative data were

collected in service of the overall case study. The goal was to integrate the variety of lived

experiences across preschool teachers into a single conglomerate understanding of the formative

assessment process in preschool, while preserving the integrity of the individual teachers and

their classrooms. The varied data further served to triangulate findings from the various

documents and perspectives and draw meaningful and accurate conclusions (Brantlinger et al.,

2005). By triangulating multiple sources of data, the lived experiences of the teachers remained

central, reducing the subjective interpretations of myself as the researcher.

Participants

This study included 6 preschool teachers across four special education program

classrooms at one early childhood center. The participants included two special education

teachers and their general education co-teachers in inclusion classrooms, one general education

teacher in an inclusion classroom, and one special education teacher in a self-contained

classroom. All teachers were white females with preschool teaching experience ranging from 4

to 23 years. They all held master's degrees in various fields and were endorsed to teach English

Language Learners (ELLs). Five of the six teachers had a special education approval,

endorsement, or certification. Table 1 provides demographic information about all participating

teachers.

Table 1

Teacher Demographics

Participant (Pseudonym)	Age	Ethnicity/ Race	Highest Degree Earned	Certification/ Endorsement	Years Teaching	Years Teaching Current Position
Stephie	60	White	Master's Plus	Special Education Elementary Education ESL Endorsement	23	10
Danielle	44	White	Master's Plus	Early Childhood Education Reading Masters SpEd Endorsement ESL Endorsement	21	1
Ellen	41	White	Master's Plus	Early Childhood Education ESL Endorsement	14	14
Ann	44	White	Master's Plus	Special Education Early Childhood SpEd Masters ESL Endorsement	19	18
Louisa	25	White/ Puerto Rican	Master's Plus	Early Childhood ESL Masters Early Childhood SpEd Approval	4	3
Josephine	44	White	Master's Plus	Special Education General Education Early Childhood SpEd Masters ESL Endorsement	23	18

Recruitment

Institutional Review Board (IRB) approval was obtained through the University for this

study (see Appendix H). Teachers were recruited from one early childhood public preschool

center in an urban school district in the Midwest. The availability of this convenience sample

was the result of conversations between the principal and the researcher regarding the challenges

faced by the teachers at the early childhood center with integrating formative assessment

practices into the preschool classroom, which led the principal to request the support of the

researcher. In the first round of recruitment, I placed recruitment flyers in the teachers'

mailboxes at the school (see Appendix G). This was followed up with a brief presentation about

the research study at the teachers' weekly morning meeting. Originally the study focused on

teachers teams but given individual teachers' expressed interest in participating without their co-

teachers, the study accepted both individual teachers and teams of co-teachers.

Setting

      The school. The early childhood center was a leader in this urban school district, serving students with and without disabilities ranging in age from 3 to 6 years-old. The classrooms in the school previously received high scores on the districts' evaluation system and as a team, the staff were in the process of submitting applications for various recognition awards in the district for inclusion and instructional approaches. The school was diverse according to ability (45% of students enrolled had an identified disability), culture (28% of students were minorities), linguistic competence (6% were English Language Learners), and socioeconomic status (18% were low income). Two types of classroom models were available at the center: inclusion and self-contained. One classroom model was an inclusion preschool program whereby students with and without disabilities were taught together using the general education curriculum and assessments. A second model was a self-contained preschool special education program that taught only students with significant disabilities using a modified curriculum and modified assessments. In both classroom models, teams of teachers worked with teaching assistants and special service personnel (e.g., nurse, speech and language pathologist, physical therapist, occupational therapist) to provide an integrated curriculum for all students. The inclusion classroom team was comprised of one early childhood teacher and one early childhood special education teacher while the self-contained classroom team was made up of two early childhood special education teachers. The majority of children were identified with developmental delays, which included suspected Autism, Learning Disability, Language Impairment, and Behavior Disorder. This range of disabilities underscored the need for teachers to be versed in differentiating assessment and instruction.

In response to standards-based reforms in the state, the principal had spent the previous

two years working with teachers from both programs in her school to adapt the state's early

learning standards (Illinois State Board of Education (ISBE), September, 2013) and the

Understanding by Design unit-planning approach (Wiggins & McTighe, 2005) to meet the

unique needs of the young children whom they served, while also maintaining developmentally

appropriate practices (NAEYC, 2009). To measure students' progress toward those standards,

student portfolios were streamlined and standardized across programs. The student portfolio was

organized into a 3-ring binder with a section for each of four developmental areas

(social/emotional, literacy, math, and science). Teachers were required to include one record of

a student's performance for each unit of study, including a sample of the child's performance on

the summative performance task at the end of each project or unit. In addition, teachers were

required to record daily observation notes to then inform three types of interim data, three times

throughout the school year: summaries of individual performance in key developmental areas on

criterion-referenced measures (e.g., Teaching Strategies GOLD, TSG, 2010 or Assessment

Evaluation and Programming System, AEPS, Bricker, 2002), demonstrations of progress (e.g.,

portfolios), and special education students' Individualized Education Program (IEP) benchmark

goals. Classrooms also visually communicated classroom learning by posting student work over

the course of the unit on a bulletin board or wall in the school hallway.

The classrooms. The two types of classroom programs are described in broad terms here.

Refer to Table 2 for demographic information about each classroom that participated in the

study.

Table 2

Classroom Demographics

Participant (Pseudonym)	Classroom	Setting/Model	Caseload/ Class Size	Position	Curricular Approach	Assessment Tools
Stephie	1	Cluster/ Self-Contained	6/12	Special Education Teacher	School created units The Carolina Curriculum[2] E-LAP[4] Every Move Counts[5] Standards-based	District Performance Task-modified[1] AEPS[3] E-LAP The Carolina Curriculum HELP[6]
Danielle	2	Blended/ Inclusion	14/20	General Education Teacher	The Creative Curriculum[7] The Project Approach[8] Hands-on Experiential Multi-Sensory	District Performance Task ESI-R[9] ASQ-SE[10] TSG[11] Observational notes Checklists Portfolio binders
Ellen	3	Blended/ Inclusion	14/20	General Education Teacher	The Creative Curriculum Thematic Standards-based	District Performance Task ESI-R TSG
Ann	3	Blended/ Inclusion	6/20	Special Education Teacher	The Creative Curriculum Thematic Standards-based	District Performance Task AEPS TSG
Louisa	4	Blended/ Inclusion	14/20	General Education Teacher	The Creative Curriculum The Project Approach Phonemic Awareness Curriculum[12] Standards-based Unit-based	District Performance Task TSG Observation-based
Josephine	4	Blended/ Inclusion	6/20	Special Education Teacher	The Creative Curriculum Phonemic Awareness Curriculum Erikson Math[13] Play-based Reggio inspired	District Performance Task ESI-R TSG

Notes:

[1] District-created Performance Task: Teacher Performance Evaluation (*the name of the test was changed to protect the identity of the school district*)
[2] The Carolina Curriculum for Infants and Toddlers with Special Needs and the Carolina Curriculum (Jackson, 2007)
[3] Assessment, Evaluation, and Programming System for Infants and Children (AEPS, Bricker, Pretti-Frontczak, Johnson, & Straka, 2002)
[4] Early Learning Accomplishment Profile (E-LAP, Hardin & Peisner-Feinberg, 2001)
[5] Every Move Counts, Clicks and Chats: Sensory-based strategies for communication and assistive technology (emc3, Korsten, Foss, & Berry, 2007)
[6] Hawaii Early Learning Profile (HELP, Parks, 1992)
[7] The Creative Curriculum for Preschool (Heroman, Burts, Berke, & Bickart, 2010)
[8] The Project Approach (Helm & Katz, 2011)
[9] Early Screening Inventory-Revised (ESI-R, Meisels, Marsden, Wiske, & Henderson, 1997)
[10] Ages and Stages Questionnaire-Social/Emotional (ASQ-SE, Squires, Bricker, Twombly, & Yockselson, 2009)
[11] Teaching Strategies GOLD: Child Assessment Portfolio (TSG, Teaching Strategies, LLC, 2010)
[12] Phonemic Awareness: The Skills That They Need to Help Them Succeed, Pre-Kindergarten Version (Heggerty, 2010)
[13] The Early Math Collaborative, Erikson Institute (2013)

The inclusion preschool classrooms consisted of two half-day sessions with a total of 20 students in each session: 14 students without disabilities or with Individualized Education Programs (IEPs) for speech services only and 6 students with special needs as indicated on IEPs requiring at minimum special education services. The staff in the inclusion classroom was composed of one general education teacher and one special education teacher sharing teaching responsibilities as team teachers, with two teaching assistants. Special service personnel, such as

the occupational therapist, speech and language pathologist, nurse, physical therapist and social

worker, provide direct services to the students with IEP specific goals. The classroom furniture

and materials were arranged according to the recommendations for Developmentally Appropriate

Practices put forth by the National Association for the Education of Young Children (NAEYC,

2009); this included learning centers (i.e., dramatic play, literacy, science, math, blocks, sensory,

and library) with child appropriate furniture that clearly delineated areas of the classroom. These

classrooms addressed learning standards through units that employed both the Project Approach

(Helm & Katz, 2011) and shorter project-based learning units. To measure progress of all

students, those with and without disabilities, the district required teachers to use the Teaching

Strategies GOLD (TSG) Child Assessment Portfolio (Teaching Strategies, LLC, 2010). TSG is

an online criterion and curriculum-based system that requires teachers to record ongoing

observations of student performance to then inform summative judgments of student progress

three times per year in social, social-communication, and cognitive developmental areas. Each

quarter, the district required teachers to record a minimum of one observation for each of the 38

objectives for development and learning, which then informed the score students received along

each continuum.

The self-contained preschool classrooms consisted of a maximum 16 students for a half-

day session, all of which had IEPs that required special education services. Staff in these

classrooms included two special education teachers in a team teaching model with two full-time

teaching assistants. Students required a myriad of supports physically, medically and cognitively;

therefore the classroom was arranged with fewer centers and more space to accommodate

adaptive equipment including standers, wheelchairs, assistive technology, etc. The curriculum

was based on thematic units developed by the teachers to address a combination of the state early

learning and development standards and IEP goals. To measure student progress, special

education teachers in the self-contained programs recorded observational data with regard to

progress, accommodations and the type and frequency of physical, visual and verbal supports

that then informed students' quarterly IEP benchmark goal progress and annual scores on the

AEPS for birth to 3-years and 3 to 6-years (Bricker, 2002), a criterion and curriculum-based

measure.

Data Collection

The study employed a collective case study design so that a deeper understanding of the

data could more fully and deeply explore the formative assessment processes enacted by each of

the preschool teacher teams (Stake, 1995) (by elucidating both the emic and etic perspective

throughout the study) (Yin, 2013). In this sense, the goal was to develop an understanding of the

formative assessment processes shared across classrooms, attending to divergent experiences.

Data collection began with a holistic exploration of the teachers and their context, and then

gradually focused on specific practices and processes. Data sources addressed the research

questions across the collection of both qualitative and quantitative data. The qualitative data

sources included interviews, observations (field notes), and artifact analysis. The quantitative

data tools included the Focused Assessments to Capture Student Learning (FACS)- Self-

Assessment Questionnaire, and descriptive information from the Classroom Assessment and

Scoring System (CLASS PreK™). See Table 3 for the data collection sequence across cases

elaborating the purpose, associated tools, and main interview questions for each field site visit.

Table 3

Data Collection Sequence for each case (classroom)

Field Site Visit & Location	Purpose	Tools	Main Interview Questions

Visit #1: On-site	To gain a deeper sense of the context including school, classroom, teachers, and students.	1. *Demographic Survey* completed individually by each teacher and brought to the interview 2. *Participant Observation* (field notes) of a full 2.5-hour class session with (1) descriptive field notes focused on the classroom activities, teacher interactions with students and colleagues, and teacher behaviors including instruction and assessment and (2) reflective field notes on initial experiences and reactions. 3. *Team Semi-structured Interview* (or single teacher for cases with one teacher participating from the team) asking about the school and district context related to assessment and instruction and classroom context including approaches to co-teaching, instruction, and assessment.	School Context 1. Describe to me the message you receive from your principal about your school's goals and expectations for teaching students. 2. Describe goals and expectations for assessing students. 3. When you interact with your colleagues on the topic of assessment, describe the nature of those conversations. Classroom Context: Instruction 4. Based on your responses on the demographic survey, it seems like you use the _____ (curriculums/approaches from survey). Can you tell me more about your approach to deciding the content you teach and how you approach teaching that content? 5. Describe to me your classroom approach to teaching your students. 6. Does this approach look different when you're considering and working with students who are diverse such as from different ethnicities, cultures, or language experiences? Classroom Context: Assessment 7. It looks like you are required to use _____ (standardized assessments listed on survey). Describe to me what your assessment approach looks like at different moments like across the school year and on a daily basis.
Visit #2: On-site	To develop a deeper understanding of the individual teacher and the formative assessment process as a whole.	1. *Semi-structured Teacher Interview* exploring the teacher's personal experiences, values, and perspective on teaching and assessing students (for cases with two teachers participating in the study, an additional visit was arranged to interview teachers independently).	1. Tell me about you and what led you to the teaching profession. Go back as far as you like. 2. If someone were to walk into your room to observe, what would they see? 3. Can you walk me through what a day might look like for you, focusing on teaching and assessing. 4. Describe how you might consider different types of students throughout this process such as different levels of ability, cultural background, or language. 5. Describe to me what part the families play in this assessment process. 6. Describe your training in assessment beginning with your teacher preparation program through now such as courses in your teacher preparation program, additional coursework after the program, professional development, books you've read, or other ways you have learned about how to assess students. 7. Have you had any professional development on teaching and assessing students who may be from different cultures or languages? Please describe.
Visit #3: On-site	Similar to Visit #2, depending on the classroom. For classrooms with two participating teachers, to interview the second teacher. For classrooms with one participating	Same as Visit #2: *Semi-structured Teacher Interview.*	Same as Visit #2

		teacher, to review the previous interview and explore topics further.	
Visit #4: On-site	To use a standardized classroom observation tool to gain insight into the level of emotional support, classroom organization, and instructional support.	*Classroom Assessment Scoring System-PreK (CLASS PreK ™)* was administered during a 2 – 2.5 hour continuous classroom session, with only descriptive information recorded across seven dimensions within three domains: *(1) Emotional Support (Positive Climate, Negative Climate, Teacher Sensitivity, Regard for Student Perspectives); (2) Classroom Organization (Behavior Management, Productivity, Instructional Learning Format); and (3) Instructional Support (Concept Development, Quality of Feedback, Language Modeling)* (Pianta et al., 2008).	No interview conducted.
Visit #5: On-site	To gain further information on the specific steps in the formative assessment process as it is experienced within a single session.	1. *Pre-observation mini interview* asking the teachers to describe their lesson and assessment plans and anticipated student misunderstandings. 2. *Nonparticipant Observation* (field notes) of the entire 2.5-hour class session with (1) descriptive field notes describing the activities, data recorded by the teacher(s), and interactions with students and (2) reflective field notes drawing attention to interpretations and experiences. 3. *Stimulated-Recall Interview* asking questions prior to the class session and immediately following the session (in one case, the interview was conducted 24 hours later), drawing attention to the assessment data recorded by the teacher(s) in that session observed. 4. *Assessment Artifacts* collected during the observed session and discussed during the stimulated-recall interview. 5. *Self-assessment Questionnaire* handed to teachers at the conclusion of the interview. Teachers were instructed to complete and the researcher picked them up individually at a later time.	Pre-Observation 1. For today, describe your lesson, what you hope students will learn and how you plan to collect information about that learning. 2. Is there anything you're anticipating with certain students that you're planning for in case your lesson goes in a different direction? Post-Observation (Stimulated-Recall Interview) 3. Thinking back to the lesson that you taught during <u>whole group</u> instruction, walk me through what you were thinking. 4. Thinking back to <u>small groups</u>, walk me through what you were thinking. 5. Thinking back to <u>centers time</u>, walk me through what you were thinking. 6. Now focus on _____ (children that represent the three types: *doing well, disability, CLD)*. Tell me about him/her during one of these lessons. 7. Describe any specific or general adjustments to your instruction or lesson plan that you plan on making after today.
Visit #6 (and #7 in cases with both teachers participat	To share and discuss the findings including the patterns across cases and the	1. *Structured Second Level Member-Check Interview* with each individual teacher, 1-2 months following Visit #3, asking for clarification and elaboration on (1) three key findings and (2) the teacher's individual case description.	Three Identified Patterns 1. You all emphasized the importance of play and developmentally appropriate practices for preschool children, which often is best measured through descriptive data. However, this contrasted with your

ing from the team): at a nearby café of the teacher's choice	individual case description with each teacher. For classrooms with two participating teachers, the teachers were interviewed independently.	district and school's requirements for a variety of quantifiable sources of data such as TSG, portfolios, and Special Education IEP progress monitoring. This mismatch between district and school mandates with your values seems to be important as you all shared some level of uncertainty with HOW best to capture student learning. So, can you just talk to me a bit more about this topic?
		2. You all discussed some level of difficulty working with families and involving them in the assessment process. What I noticed is that you all were concerned with what message was being sent to families about what's important in preschool. In other words, some families seemed to value rote skills such as counting and letter identification but also, many of you expressed concerned that by reporting on skill development in TSG and portfolios your school was actually reinforcing it. Would you agree with this?
		3. You all described a natural or innate sort of ability to assess and respond to students in the moment, based on what many researchers refer to as scaffolding or differentiated instruction. So, I'm trying to gain a deeper sense of what that looks like for you and how it connects to the assessment process. So how does that ability to make adjustments in the moment and address the students' needs connect with all that assessment data that you record and are required to report?
		Individual Cases (4 total)
		1. Finally, I want to share with you your case. All of you had many strengths, particularly a strong foundational understanding of the assessment process. However, what set you all apart were your unique expertise and where the breakdown occurs for you in the process. So I will describe to you what I grasped you were experiencing and want to ensure it's from your perspective. So please elaborate, adjust, and clarify your case for me to be sure I got it right.

Observation Field Notes. Two observations (Visits #1 and #5) were completed in each classroom, for a total of eight observations across cases, and lasted the length of a full class session (2.5 hours). Each classroom was asked to identify a focus session (morning or afternoon session) that would be consistently observed and discussed for the duration of the study. Both observations were followed by interviews with the classroom teacher or team. Observation field notes were recorded using a paper-based recording device by Livescribe called the Echo

Smartpen, which recorded audio at the same time notes were written in the specialized notebook. Written notes followed a similar format across observations divided into descriptive notes about what was observed and reflective notes (recorded in brackets) written about initial reactions and interpretations of events observed. These notes were then uploaded to a computer and used as a guide when typing field notes of each observation. The purpose of the observation field notes was to confirm and challenge findings identified in analysis of the interviews with the teachers. Out of respect for the participants, the analysis of the field notes were weaved into the case studies and discussion.

In line with case study approaches, the purpose of the first meeting with the team was to develop rapport and establish trust with the classroom staff and students (Rossman & Rallis, 2012). The first observation (Visit #1) began with an informal participatory observation of the entire class session by which the researcher engaged with the students and teachers throughout the session during typical class activities, while recording procedures and teachers' behaviors. The second observation (Visit #5) was completed using a structured protocol and was immediately followed by a stimulated-recall interview: 1) ten minutes prior to the start of the period, teachers were asked to describe their goals for the day's lessons, how they would keep track of data, and anticipated roadblocks (audiotaped) (adopted procedure from the work of Lopez-Reyna & Collado, unpublished manuscript); 2) during the observation, field notes recorded the instruction and corresponding assessments observed; 3) following the observation, artifacts of the assessments employed by the teachers during that session were scanned and used as reference points during the stimulated-recall interview (audiotaped).

Interviews. A minimum of five interviews were conducted with each classroom teacher or team, with one classroom engaging in six interviews and one classroom engaging in seven

interviews. For classrooms with both teachers participating, the first interview was conducted as

a team while the second interview was conducted individually (hence five interviews for two

classrooms with only one participating teacher and six interviews for one classroom with two

participating teachers). One teacher in a classroom with both teachers participating was called

away from her individual interview; therefore the interview with that person was continued at

another time (hence seven interviews for this classroom team). The interview protocols were

similar for classrooms with both teachers participating and classrooms with only one teacher

participating. The on-site interviews were conducted in the room of the teacher's choice; some

of the interviews were conducted in the teachers' classrooms while others were conducted in the

center's computer lab or the gym. In all, 23 interviews were conducted totaling 1,248 minutes

(20 hours and 48 minutes). The length of the interviews ranged from 21 minutes to 111 minutes,

with an average length of time of 54 minutes across all interviews. The focus of the interviews

was to develop an overall understanding of the formative assessment processes, potential

barriers, and the context. This understanding then allowed for a close examination of the links

between instructional content, teachers' epistemological stances, decision-making theories, and

school/classroom/student factors that impacted how formative assessment processes are used in

preschool special education classrooms.

The first interview (Visit #1) with the team or individual teacher followed the first

observation, and gathered background information on the classroom and individual teachers.

Prior to the meeting, teachers completed a demographic survey, which was then reviewed and

discussed during the interview. The Preschool Teacher Information Questionnaire, created by the

researcher, collected information on the teacher (e.g., demographics, years teaching,

certifications and endorsements), curriculum requirements and approach, and assessment

requirements and approach; see Appendix A. The interview asked teachers to describe the school

context, their team approach to instruction and assessment, and their approach to the variety of

students in the classroom; see Appendix B for Visit #1 interview protocol.

The teachers in each team were then interviewed independently (Visits #2 and #3) in

order to gather detailed information about their experiences in the teaching profession, their

perspective on classroom assessment, and the individual steps in the formative assessment

process. The semi-structured interview began by asking the teacher to describe a personal history

with entering into the teaching profession. Then subsequent questions narrowed in on classroom

assessment and instruction at the school and district level, then the classroom level, and finally

the individual teacher level. This process of moving from a broad to narrow picture of the

teacher's understanding and experiences provided information about the broader context in

which the teacher operated and multiple factors influencing her assessment decisions. See

Appendix C for Visits #2/#3 interview protocol.

A stimulated-recall interview followed the second structured observation (Visit #5). The

interview asked teachers to bring their assessment data recorded during that session as a basis for

answering interview questions as well as reflect on their pre-observation mini-interview. The

interview asked teachers to walk the researcher through their thinking when planning the lesson

and data sheets, and subsequently recording information during the class session. When

describing their thinking, the teacher(s) were asked to focus on a child with a disability and a

child who was culturally and/or linguistically diverse. Finally, the teacher(s) was asked to

describe any adjustments to the lesson, mode of instruction, or assessments that were planned as

a result of that day's class session. See Appendix D for Visit #5 interview protocol.

A final interview (Visit #6) was conducted with each participating teacher one to two months following the stimulated-recall interview. Teachers were contacted by the researcher individually to schedule an off-site visit at a location of the teacher's choice, typically a café in their neighborhood. The interview protocol (see Appendix E for Visit #6/#7 interview protocol) was created based on the analysis of all interview transcripts, field notes, assessment artifacts, Preschool Teacher Information Questionnaires, CLASS-PreK™ descriptive information, and Self-Assessment Questionnaires. Three patterns were identified during analysis and a narrative description was created for each classroom that described the classroom's particular expertise, values, instructional approach, formative assessment process, and challenges. For the classroom description, an idea was presented with a quote from the interview transcripts that best captured that interpretation. The interviews served as a second-level member check whereby the teacher was presented with the three overarching patterns evident across cases, and requested clarification and elaboration (first-level member check direct participants to review raw data such as transcripts). Then the descriptive case for that teacher was read aloud while the teacher was free to interject with clarification, confirmation, or disagreement. While the case was read, the researcher stopped after each idea with representative quote to ensure agreement with the teacher. These interviews lasted on average 60 minutes. At the conclusion of the interview, each teacher stated her impressions regarding the accuracy of the findings and classroom descriptions and provided permission to proceed with the classroom description as it was presented. For one teacher, a revised model of the *Assessment Cycle* developed from the study was presented; she agreed with the revised model's ability to reflect her thinking and assessment approach.

Artifact Assessment. Artifacts of teachers' assessment tools were collected during the stimulated-recall interview (Visit #5). During the interview, the teacher referred to specific data

including students' work samples, checklists, data tables, and lesson plans. Following the

stimulated-recall interview, the artifacts were scanned. The assessment artifacts were later

analyzed simultaneously with transcripts of the teacher's corresponding stimulated-recall

interview via visual analysis. The purpose of analyzing the assessment artifacts was to gain a

fuller sense of what the teachers described in their interviews.

Self-Assessment questionnaire. Teachers participating in this study were provided the

self-assessment questionnaire at the conclusion of the interviews (following Visit #5) and asked

to respond to each item based on their current assessment practices; then the researcher picked

up the completed questionnaire in person. The researcher created and piloted the *Focused*

Assessments to Capture Student Learning: Self-Assessment Questionnaire (*FACS Self-*

Assessment) over the course of a year with multiple iterations in collaboration with expert

preschool teachers and researchers. The continuum was modeled on The Framework For

Learning to Notice Student Mathematical Thinking developed by van Es (2011) to examine

teachers' ability to notice student thinking. Using this continuum format, the researcher revised

the concepts into first person language and integrated it with three bodies of literature: (1) the

four stages of the *Assessment Cycle* (Dichtelmiller, 2011; Jablon et al., 2007; McAfee et al.,

2004; Meisels, Harrington, et al., 2001), (2) the four stages of Professional Noticing (Jacobs et

al., 2010), and (3) the five strategies to support formative assessment practices (Wiliam, 2011b).

Four categories of items reflect the four phases of the early childhood formative assessment

process: *Ask questions about student learning to guide instruction and assessment*; *Observe,*

listen and record assessment information; *Compile assessment data and reflect*; and *Use*

assessment data and reflections to respond to students and communicate with others. The self-

assessment tool is a 3-column descriptive scale whereby teachers indicated their level of

performance for each item according to beginning, developing, and advanced levels

(representing scores of 0, 1, and 2 respectively). To protect the identity of the teachers, the

results of the questionnaires were used to inform the individual descriptive cases and not

reported as individual scores. See Appendix F.

Classroom Assessment Scoring System- Pre-kindergarten (CLASS-Prek™). The

CLASS-PreK was conducted as a separate observation from those previously described as the

researcher wrote notes in the CLASS-PreK protocol for each classroom and focused only on

completing the measure. The Classroom Assessment Scoring System™ (CLASS) (Pianta, La

Paro, & Hamre, 2008) is a valid and reliable standardized observation tool that measures

preschool teachers' instructional processes that impact children's social and academic

development. The three areas of classroom interactions systematically observed and scored are:

Emotional Support, *Classroom Management*, and *Instructional Support*. For each area, three to

four observable dimensions of interactions are recorded on a 7-point Likert scale with 7

representing more constructivist approaches and 1 representing more didactic traditional

approaches. The observer observes the classroom across four to five (10-20 minute periods),

taking time to score each dimension between observations. Then a final average of scores across

observations is recorded, and an overall average across dimensions is calculated. Inter-rater

reliability was established by the authors using video footage of early childhood classrooms with

80% inter-observer agreement (La Paro, Pianta, & Stuhlman, 2004). The tool has been used in

both research and professional development as a method of improving teachers' instructional

skills and beliefs.

The researcher completing the observations was a certified CLASS-PreK™ Observer.

The data was collected during a 2.5-hour classroom session (Visit #4). The school district's

research review board approved use of only descriptive information from the CLASS for each

classroom for data collection and analysis, not summative scores. Therefore, the descriptive

information recorded for each classroom informed the individual descriptive cases.

Data Analysis

Interviews, Observation Field Notes, and Artifacts. Interpretation of the case study

data was an iterative process following the Miles and Huberman constant comparative analysis

approach (Miles, Huberman, & Saldaña, 2013) based on the grounded theory methodology by

Strauss and Corbin (1994). According to Strauss and Corbin (1994), qualitative analysis via

grounded theory is "a way of thinking about and conceptualizing data" (p. 275); the researcher

begins with initial impressions and conclusions through systematic analysis of transcripts, notes,

and artifacts that are repeatedly and systematically checked and clarified as more data is

collected and analyzed in the construction and clarification of theoretical frameworks. Miles and

colleagues (2014) agree with this constant comparative analysis process and place greater

emphasis on transforming descriptive data into various representations to set the stage for

repeated and systematic visual analysis of patterns. The following statement best represents the

value of re-representation of data and relationships within the data:

> The ultimate power of field research lies in the researcher's emerging map of what is
>
> happening and why. So any method that will force more differentiation and integration
>
> of that map, while remaining flexible, is a good idea. Coding, working through iterative
>
> cycles of induction and deduction to power the analysis, can accomplish these goals.
>
> (Miles et al., 2014, p. 93)

This study placed similar emphasis on transforming the data in new ways to see patterns so that

the resultant findings remained true to the teachers' experiences. See Table 4 for an overview of

the data analysis process utilized in this descriptive case study.

Table 4

Data Analysis Sequence Using Constant Comparative Analysis Through Continuous Re-representation of the Data (Miles, Huberman, & Saldaña, 2014)

Analysis Cycle: Strategy	Data Analyzed	Methods Used
First Cycle Coding: "Data Condensation"	Interview transcripts and observation field notes uploaded to Atlas-ti	Ongoing record and review of jottings following visits, memos, and debriefings 1. Round 1 codes: identify initial categories of topics (e.g., assessment process, instructional approach, school context, district context, classroom context, families, challenges, personal experiences, values) 2. Round 2 codes: deductive coding approach assigning sections of narrative within categories *Descriptive codes* (a descriptive word aligned closely with the words used by the teachers), *Provisional codes* (a set of codes developed from the research on formative assessment processes that represented previously identified stages including data planning, collecting, interpreting, using), and *inVivo codes* (captured quotes that represent key or novel experiences).
Second Cycle Coding: "Data Display"	Codes generated through Atlas-ti,	Ongoing record and review of jottings following visits, memos, and debriefings 1. Transferred codes to color-coded post-its (each classroom assigned a color) that included code name, key quote, and initial interpretation. 2. Created a *Matrix display* using post-its on a wall: grouped post-its within and across cases via initial categories.
Second Cycle Coding: "Drawing and Verifying Conclusions"	Code Displays	Ongoing record and review of jottings following visits, memos, and debriefings 1. *Case-ordered Matrix display*: grouped post-its according to patterns on a trifold board with rows for cases and columns for categories. Labeled categories (e.g., *planning* in the formative assessment process) and subcategories (e.g., *team approach*, *aligning standards with assessment*, *examples of assessment techniques*). Then transferred information to an excel spreadsheet according to the case-ordered matrix display. 2. *Concept maps* generated in Atlas-ti created by linking codes, quotes, and memos to explore specific concepts deeper (e.g., scaffolding) 3. Revising the *Assessment Cycle* (Dichtelmiller, 2011) to draw direct comparison to previous theoretical models.
Triangulation: confirming and challenging findings	Self-Assessment questionnaire and CLASS-Prek™ descriptive information	1. Compared results of questionnaire and CLASS-PreK™ to findings within and across cases, which then informed classroom case descriptions and discussion.

Analysis of the data began from the moment the first observation was completed and

continued throughout data collection using *jottings* following interviews and observations,

memos during the coding process, debriefings with a colleague, and multiple re-representations of the data at various stages of analysis (Miles et al., 2014). A graduate student in the special education department was paid to transcribe each interview; the audio recordings were shared with the graduate student immediately following each interview and they were transcribed verbatim using the transcription software, Express Scribe. I then reviewed every transcribed interview to check for accuracy, correct errors, and redact identifying information. All transcribed interviews, scanned artifacts, and field notes were uploaded to a Computer Assisted/Aided Qualitative Data Analysis Software (CAQDAS) program, Atlas-Ti, and organized by classroom. According to Miles and colleagues (2014), analysis of qualitative data should systematically examine data, looking for patterns across different displays of the data. This process follows two cycles of analysis consisting of three key strategies: First Cycle analysis identifies categories of similar information (*data condensation)* that is then analyzed in greater detail in Second Cycle analysis (*data display*), whereby the researcher identifies patterns through visual analysis to explain and describe the phenomenon (*drawing and verifying conclusions*). Miles and colleagues (2014) describe the analytic process as follows.

> First cycle coding is a way to initially summarize segments of data. Pattern coding, as a second cycle method, is a way of grouping those summaries into a smaller number of categories, themes, or constructs (p. 86).

> During the First Cycle of analysis, I read each interview transcript within Atlas-ti and

categorized topics discussed using general codes including personal experiences, values, assessment process, instructional approach, challenges, school context, district context, classroom context, and families. Miles and colleagues (2014) describe this step as *data*

condensation as the researcher's decisions to reduce the data naturally focuses analysis on what is important.

During further First Cycle analysis, I examined closely each category in the interview transcripts in Atlas-ti, adding detailed codes using a deductive coding approach. In this approach I used a combination of three types of codes to guide my analysis while remaining open to the experiences of the teachers: (1) provisional codes (a set of codes developed from the research on formative assessment processes that represented previously identified stages for data systems including data planning, collecting, interpreting, using); (2) descriptive codes (a descriptive word that aligned closely with the words used by the teachers); and (3) In Vivo codes to capture quotes that represent key or novel experiences shared by the teachers. The observation field notes recorded during the two observations of each classroom focused heavily on teachers' assessment processes and instructional approaches; therefore analysis of the observation field notes began at this stage with provisional codes and descriptive codes. These were then compared to the interview transcript codes and used to inform the subsequent re-representation of the data.

Then during Second Cycle coding the next step in re-representing the data was what Miles and colleagues (2014) describe as *data display*. In this step, I created a matrix display to allow for within-case and across-case comparisons of categories and codes within those categories so that analysis of patterns could lead to succinct conclusions. To do so, I transferred those codes from the interview transcripts and observation field notes to color-assigned post-its for each classroom, adding key quotes and my interpretations. The data were then displayed in a matrix format on a large poster board with the cases listed in rows and categories with subcategories in columns. These were then transferred to an excel spreadsheet where the categories and subcategories were combined or moved around then given labels. The categories

included teachers (subcategories: learning values, student goals); formative assessment system

(subcategories: general data system, knowing students, factors affecting learning, the nature of

learning in preschool, evolving data system, ideal assessment approach); formative assessment

process (planning: team approach, aligning standards with assessments, planning, examples;

collecting data: recoding information, observing and wait time, scaffolding; interpreting data:

reviewing information, comparing students to self and others, student progress; using data:

differentiating instruction, shifting perspective on students, adjustments to lessons, using peers as

models, communicating with others); context (district, school, families); and challenges.

Throughout the stages of analysis, *memos* were recorded in Atlas-ti as well as in a paper

journal as a method of *drawing and verifying conclusions*, the third step in data analysis

described by Miles and colleagues (2014). These typed and hand-written *memos* were reviewed

consistently to continuously re-evaluate initial broadly identified patterns and conclusions so that

further rounds of analysis and re-representation of data served to continuously revise, clarify,

challenge, and refine those conclusions leading to an increasingly explicit and clear final set of

findings. To address the research questions, the patterns of experiences identified across

teachers were examined in successively more visually elaborate ways: (a) in a *Case-Ordered*

Matrix display, (b) in direct comparison to previous theoretical models, and (c) in concept maps

of relationships across codes. Given the diversity of the classrooms, the matrix display

previously used to analyze patterns within- and across-cases was further refined. Miles and

colleagues (2014) suggest ordering cases in a *Case-Ordered Matrix* to allow for deeper

comparisons and complex conclusions. Initially, the cases were ordered based on my initial

impressions from advanced to beginner data systems. However, after repeated examination of

the patterns within each case and comparisons across cases through re-representations of the data

in the matrices and review of post-field site *jottings*, reflective *field no*tes, and *memos*, cases

were reordered in the matrix. This shift in layout reflected greater complexity in understanding

the classroom teachers' expertise with data and roadblocks to effective systems. As a result, four

representative classroom cases were created to represent the unique applications of formative

assessment processes and key themes shared across cases were identified.

Expertise in the formative assessment cycle is marked by clear links and reasoning

between evidence, hypotheses and responses (Choppin, 2011). To analyze these sequential

steps, the logic model of analysis (Yin, 2009) provided a theoretical basis for examining the data

and emerging categories as inter-related stages in the process with changes over time. At the

individual-level, the logic model allowed a framework for analyzing formative assessment

procedures that were repeated, sequential cause-effect relationships, as it related to current theory

so that a clear procedural model could be developed that represented the experiences of each

teacher. It also revealed the relationship between formative assessment practices and certain

factors such as teaching approach, teaching beliefs, student learning experiences, and interaction

with families. Finally, a modified conceptual framework was used on classroom-wide formative

assessment cycle decisions to re-examine the data and confirm the validity of the process and

how it evolves over time.

Another analytic approach, *concept maps*, was utilized using the Atlas-ti program to

explore further relationships within a category. For example, scaffolding within the subcategory

of collecting data was initially five separate subcategories (wait time, scaffolding, dynamic

assessment, tacit knowledge, and addressing students' needs) that seemed related but I was

uncertain about the precise relationship. Within Atlas-ti, I went through these codes again and as

I found instances where sections of transcripts were coded for 'collecting data' I added

connections between these codes, wrote *memos* about my thoughts about the relationships, and

conducted *In Vivo* coding to remain close to the teachers' experiences. Then, using network

displays in Atlas-ti, I created a concept web with scaffolding as central and all the identified

connections to codes, quotes, and *memos*. This *concept map* produced a visual display with lines

drawn to scaffolding and lines drawn between those codes, *memos*, and In Vivo quotes. While

examining the visual layout, I wrote additional *memos* about what I was noticing about the

relationships and conclusions. Finally, this led to condensing the codes to a single code,

scaffolding, and identification of two layers of formative assessment: planned and unplanned and

the refinement of the *Assessment Cycle* (Dichtelmiller, 2011).

Self-Assessment Questionnaire and CLASS-PreK™. Finally, data from the Self-

Assessment Questionnaire and descriptive information from the CLASS-PreK™ were analyzed.

The Self-Assessment Questionnaire results were inputted into an excel spreadsheet that totaled

the scores from each teacher and were then displayed in a bar graph to allow for visual analysis.

Statistics including central tendency were computed for individual cases as well as across cases.

The results of each teacher's questionnaire were compared to the findings from the interviews

and observation field notes and each classroom case as a way to ensure accuracy in representing

the experience of the teachers. In instances of scores that disagreed with the case description, the

teacher's response was used to challenge that description, clarify it, and resolve contradictions.

This process deepened the understanding of the teachers' experiences and I believe strengthened

the emic perspective. The descriptive information recorded in the CLASS-PreK™ protocols was

reviewed in a similar manner. Although scores were not recorded, the associated descriptions

representing those scores were compared to the case descriptions. The following dimensions

from the CLASS-PreK™ aligned well with the literature on formative assessment processes:

Teacher Sensitivity, *Regard for Student Perspectives, Instructional Learning Formats, Concept Development, Quality of Feedback,* and *Language Modeling* (Pianta et al., 2008). For example, for the *Scaffolding* indicator in the *Quality of Feedback* dimension, one classroom fit the "high" level described as *The teacher often scaffolds for students who are having a hard time understanding a concept, answering a questions, or completing an activity* (Pianta et al., 2008). For this classroom, the high level achieved during the CLASS-PreK™ observation was compared to the classroom case description and confirmed the high level of scaffolding described by the team and recorded in observation field notes.   Across data sources, connections were explored and clarified between the identified themes and patterns in individual cases and across cases. The goal was to determine if the data from multiple sources and perspectives told a similar story.

Trustworthiness and Credibility

To ensure a deep understanding of teachers' formative assessments processes, it is important to provide evidence through triangulation using a variety of methods that support the data from multiple perspectives and data sources (Odom et al., 2005). Following analysis of the interview transcripts, field notes, and artifacts, a final round of interviews was conducted with each team or individual teacher to share the initial findings for confirmation and clarity on the stories that were constructed (See Appendix E). These interviews served as second-level member checks and confirmed and refined the findings and case descriptions. The participants strongly agreed with the three patterns that were identified across-cases. On multiple occasions, their clarifying statements about the patterns across cases were repeated almost verbatim when reviewing their individual cases and representative quotes. A final analysis reviewed the transcribed member-check interviews in comparison to the themes and patterns that were

identified, thereby establishing a stronger understanding of and confidence in the findings. This process strengthened the validity of the findings and empowered the participants. Following the review of their cases, most participants described a sense of pride in their work. To deepen the analysis and resultant interpretations, alternative explanations were applied to the data and discussed. On one occasion, the teacher from the self-contained program disagreed with the initial finding regarding the importance of developmentally appropriate practices for her students, explaining that while she agreed that play was valuable in preschool, it 'looked' different for her students with significant disabilities. This clarification is reflected in the results.

Reliability in qualitative studies is established by ensuring the credibility of the researcher, the data, and the conclusions gleaned from the data (Brantlinger et al., 2005). The researcher in this study had prior experience in analyzing and interpreting qualitative data using grounded theory (Charmaz, 2014; Strauss & Corbin, 1994) and case study methodology (Yin, 2009). With regard to content knowledge, the researcher taught as an early childhood special education teacher for four years in inclusion preschool classrooms and was an instructor for 9 years at an urban university with a social justice lens, teaching pre-service special education teachers about balancing summative and formative assessment in the classroom.

In an effort to ensure the credibility of the data and conclusions, throughout the study the researcher met with two experts in the field of assessment. The researcher met with her faculty advisor during the stages of designing the study, collecting data, analyzing data, and writing the results. The faculty advisor was associate professor of special education specializing in assessment, literacy instruction for students with disabilities, and qualitative inquiry. Debriefings on the progress of the study and emerging findings sought to clarify thought processes, elaborate key findings, and check the researcher's biases. Once the researcher used

first cycle and second cycle methods to code all interview transcripts, a meeting was held with

the faculty advisor and an early childhood special education teacher with expertise in assessment.

The early childhood special education teacher had experience teaching young children with

disabilities in an urban metropolitan school district and experience teaching assessment

approaches to preservice special education teachers at the university. The faculty advisor and

early childhood special education teacher were provided with three interview transcripts and

directed to independently code the three teachers' answers to the following two main questions:

if someone were to walk into your classroom to observe, what would they see and *can you walk*

me through what a day might look like for you, focusing on teaching and assessing. During this

meeting, the researcher and two assessment experts discussed their independent codes, resolving

any conflicting interpretations, and agreed on the link between the codes and resulting themes

and refinements to the *Assessment Cycle* (Dichtelmiller, 2011). Then, I returned to the coded

transcripts to continue comparative analysis to check and revise these conclusions until I reached

saturation (i.e., no new patterns or findings were identified).

To increase the validity of the case study, multiple sources of data examined the overall

unit and individual units over time moving from holistic examinations of teachers and

classrooms toward more structured and focused investigations. This chain of evidence, moving

from holistic to focused data collection procedures, served to add deeper context to theoretical

generalizations (Klingner & Boardman, 2011) and allowed me to develop rapport with the

teachers that led to deeper enquiries with teachers in later interviews (Rossman & Rallis, 2012).

Other methods of ensuring rigorous data collection, included using detailed interview and

observation protocols and developing an organized database. Finally, to increase the validity of

the findings and ensure objectivity, the cases were reviewed with the teachers to confirm

accurate representation of the cases.

The internal validity of the case study was established through qualitative research

techniques that established the trustworthiness of the data and inferences, including: triangulation

of data, theory, and methods; disconfirming evidence; second level member checks with teachers

about the initial findings; audit trails; prolonged field engagement; thick descriptions of data; and

attention to particularizability of each case (Brantlinger et al., 2005). The validity is further

established through in-depth descriptions of the contextual variables of each case, including a

detailed description of the school, teachers and classrooms, and individual factors that could

impact the study such as personal experiences and epistemological approaches to teaching

(Trainor & Graue, 2013).

The cases are presented in a cross case analysis format in which descriptive vignettes

from each case provide a framework for understanding the teachers (Stake, 1995), which is

followed by an elaborate description of each step in the assessment cycle as evident in the data

(Yin, 2009), concluding with presentation of cross-case trends. In this sense, data remained

central to the flexible enhancement of current theories of classroom-wide formative assessment

cycle decisions, thereby realizing the link between research and practice.

IV. RESULTS

This study focused on two research questions: How are formative assessment processes

enacted by preschool teachers in special education settings? and What challenges and/or barriers

do preschool teachers face in enacting formative assessment processes? In this descriptive case

study of formative assessment processes, the teachers' perspectives and experiences were

foregrounded to ensure close attention to the emic perspective. It was important to understand

what the teachers' actual assessment practices were and how these practices made sense to them.

This chapter presents the findings in two sections. First, four rich cases will be described. The

classroom cases will establish a shared understanding of the teachers' experiences and practices.

Second, overarching patterns across the cases are presented with attention to the two research

questions. In each section, representative quotes from the teachers are presented to more fully

illustrate conclusions drawn within and across cases.

Section One. Formative Assessment Processes: Four Case Studies

Each classroom provided a perspective on the unique implementation of formative

assessment systems across preschool classrooms. While there were many similarities, the case

studies highlight salient features of each case to illustrate the variety of ways the teachers

engaged in formative assessment processes and their perceived challenges. Although each

classroom included either a single teacher (general education or special education) or a pair of

teachers, I will present each as if it were a team in order to protect the identity of the teachers.

Additionally, only one classroom setting was a self-contained classroom; therefore, all cases will

be presented similarly without attending to the type of classroom setting in order to protect the

teacher's identity. The classrooms are not in any particular order. Each classroom is described

in terms of what they highlighted as important to their ability to assess, their assessment process,

and their greatest challenges. It is important to keep in mind that all teachers felt they could improve their assessment practices and expressed interest in further professional development in this area.

Classroom 1: Knowing and embracing students through scaffolding and adapting assessments. This classroom had a strong assessment system and approach to supporting students during instruction. The team described a deep understanding of each student's interests, likes, dislikes, unique behaviors, response style, and response time. This was important to the team because they described students' outward behaviors as deceiving to an outsider who may then underestimate the students' abilities. With regard to someone just walking into the room, the team said, "they instantly eyeball the kid and think, 'they can't do that' but oh you know that they can." It was important to this team that they knew the students so that individuals working with each child could make necessary adjustments to lesson formats, prompting, and interactions to maximize student engagement and learning.

The classroom team believed that seminal to the learning process was supporting students during instruction and deeply understanding students so that they were able to give students feedback and challenge them at their individual ability levels. They said, "that's a huge part of how the kids learn and the nice part about that you can actually see them going from full hand over hand prompts to maybe just the wrist." They described a natural ability to prompt their students to support learning. This tacit knowledge seemed to be so ingrained in their approach to working with students that it was hard to explain why or how they worked with students individually, it just seemed to them a naturally flexible approach in which they followed the child's cues. As they scaffolded, they described using language as their 'tool' to guide them. By talking aloud as they walked the students

through what was happening during a task, the teachers were also able to informally

measure the student's readiness to engage in the task according to the students' physical

and emotional comfort level. For example, the team described transitions as difficult for

some of the students; in these moments when they saw or felt a student's body tensing up,

they understood the student required more time and assurance to adjust to the new task.

The teachers' decisions to provide more or less support were reportedly guided by

the Least-to-Most Prompting Hierarchy (MacDuff, Krantz, & McClannahan, 2001). This

classroom team cited the literature and provided a handout on Least-to-Most prompts to

the researcher during the interviews. In this approach, they supported student learning by

typically beginning with a lower level prompt such as a verbal cue, then waited and

observed the student's response. Then, based on the student's response, the teacher moved

up or down with various prompts along the hierarchy until the child was able to respond.

They explained, "it's just a gut feeling you go with and you make the move, sometimes it's

not always the right move, but sometimes like, oh maybe I should have held her for a few

more minutes or talked about it." In a sense they were testing out the level at which they

thought the student might be successful, and adjusted in the moment. They seemed to do

this because they aimed for as much independence as possible; so they were constantly

challenging students just above their ability level and guided them toward increasingly

difficult skills through repetition and prompting at each child's personal pace.   In this

process they also used their knowledge of child development paired with their deep

understanding of each student to know where to begin and where to challenge.

What drives your instruction are your assessments… you sometimes have that

innate capability of just like, 'okay I gotta stop this, it's just not working' and you

know you go down another road to see what else is out there… and then through

the course of the year you already know then what the child can do; however, you

still have to step back every now and then because you never know when they have

learned to go from full assistance to partial prompting.

When asked about how they developed this approach to supporting students during instruction,

they described,

I can't explain it except maybe just experience… and sometimes common sense

comes into it. You know if you're working on something and oh like it's not

working out at all, I better give him more support or less support.

Also, they had a strong belief that a lot of what students were able to do and what was important

for preschoolers was something that could not be tested. They described socializing students to

the school environment by teaching them to wait, be flexible, communicate, work with different

adults, and share. That describing these skills in anecdotal notes and descriptive reports to the

families was more important than checking off IEP goals because it showed progress and

allowed them to be more reflective about the students' learning and abilities. They described

how the portfolios were a way to "capture" progress and to celebrate students' learning: "that's a

huge accomplishment. If you can capture that in a picture…it's a form of celebrating what the

child has done throughout the year." They felt like they have developed a good assessment

system in that they spent a great deal of time creating techniques to capture student learning in

ways that matched their assessment goals. For example, they took pictures of students engaged

in tasks that were 'untestable' and wrote descriptions of how individual students performed, or

created a checklist to "see" with greater ease a student's level of independence. These different

ways to organize how they collected data then permitted them to record different and targeted

information about students' learning. Then both while they wrote these notes and then as they

transferred notes from the checklists and charts to the IEP goals chart, they began thinking about

what they noticed and what that meant about children's progress and needs. Reflecting using a

quick free-write at the end of the day also seemed to help the team think objectively about the

lesson, sometimes realizing more learning occurred as their emotional reaction to the lesson was

set aside.

Then the team used that information gleaned about the students in three ways: 1) to

develop deeper understandings of the students; 2) to make adjustments to their lessons and

accommodations for students, challenging students when they were considered ready (for

example, making sign-in sheets more challenging or adding more choices); and 3) to provide

effective supports for students during instruction. They also valued peers as models so that their

students were motivated to engage and communicate with peers socially. Collaboration with

staff and the students' families was important. They gathered information from them, which

were integrated into how they approached each student every day. There was also an element of

coaching parents about what was important for young children with special needs; for example,

encouraging parents to include their child in school events because "teaching goes on every

place, not only in the classroom."

With regard to challenges throughout the assessment process, they mostly described

difficulty with recording information about students while simultaneously teaching. On the one

hand, they reported if they did not write the information right away about the student's

performance then they would not be able to remember it later. On the other hand, taking time to

record information distracted them from teaching and maintaining the flow as they scaffolded

and provided feedback to students.

There's a lot of times that I may not capture that in written form but I know and it's in my

head. I wish there was a way that I could do that.. just sometimes you got to, when you

stop the flow of things, it's gone you know to write something down, it's like that

moment is gone.

This tension was challenging but they also described noting students' performances and

behaviors mentally and using this information to shift their approach to students.

They also shared some concerns regarding the narrowing focus of families, the school,

and the district on rote skills that were typically easier to assess and show progress such as

cutting paper. They explained that parents wanted to see these skills reflected in the portfolio so

they added them even though they did not always believe they were educationally appropriate for

particular students. And they were concerned that summative assessments were shaping what

was important for child development. For example, providing data to families and the district on

narrow skills for teacher evaluation, could add unnecessary pressure and shape what society

believes students 'should' be doing or are 'expected' to be doing. Ultimately, a focus on narrow

skills could send the wrong message that those were more important than 'doing what's best for

the child'.

Classroom 2: Providing a great deal of evidence and proof of student learning. The

team in this classroom had a structured and in-depth data collection system. Specifically, the

team collected copious amounts of data across different skills, developmental areas, IEP goals,

and behaviors. It seemed maximizing their team approach was critical to their ability to collect

different types of data. For example, the paraeducators in their classroom recorded information

about students, the team's lesson plans described who would capture students' learning and how,

the team utilized different types of data tools such as checklists, pictures, forms, and mailing

labels for specific purposes, and one teacher typically collected data during group lessons while the other teacher led instruction. Collecting information about students was important to the team because they felt it helped develop a deeper understanding of the students and to know them as individuals. The team said data was important so they could "compile a better picture on the child…who they are and what's the best way they learn… what do they understand, where their holes and pockets are."

This team's intricate planning process seemed to be critical for allowing them to collect detailed information about students. Namely, they had a schedule for when to collect specific types of data, for what purpose, and on whom. They also planned ahead scenarios to engage students so they could observe certain skills such as during transitions or small group work. During the planning stage, they also kept in mind guiding questions for their data collection plan, which ranged from broad (such as looking at patterning skills) to specific (watching the child's play choices). The team said, "We set up scenarios where we're writing, scribbling things down, or taking pictures of them as they do it." An important part of their assessment approach was unplanned. The team described a 'wait' and 'observe' approach to understanding the students. They waited and observed students, withheld support at times, because in that wait time they were able to *see* where the student needed the support socially, emotionally, communicatively, or cognitively. By observing first, they were able to see where the student was at developmentally and where the break down occurred so that the support provided was more targeted and effective. Then the team described naturally knowing how to intervene through prompting and questioning to encourage learning, with the increase or decrease in levels of prompts guided by both an understanding of child development and what was described as a prompting hierarchy. Given the complexity of supporting students within mediated learning experiences and the spontaneous

nature of it, they did not believe that type of information needed to be written down and planned

out. The pressure they felt to write everything down as proof of their professional decisions

frustrated the team.

> I know when I'm sitting at circle I'm going to offer you 2 choices but before I do
>
> that, I'm going to ask you the question to see if you are going to surprise me and
>
> answer it. Oh you didn't, so here's 2 verbal choices. Oh you didn't, so here's 3
>
> visual choices. 'Why isn't that in your plan that you are going to do that with your
>
> kid?' Cause I don't have the time and energy to write every single kid's thing
>
> down. So that's hard… we know what we're doing, but its being able to prove that
>
> we know what we're doing and using that data to show if somebody came in here
>
> and asked us, 'why did you do that with that kid', 'because this is why.'

By taking a great deal of data on students, they knew their students better and their spontaneous

ability to differentiate support for students improved.

> While they were good at collecting a lot of data, they actually were overwhelmed by how

much data they had at hand. The breakdown for this team in the assessment process was in how

to review and use the data. They expended so much energy planning how to collect data using

intricately designed charts that by the time they wanted to review and act on the data, they did not

have time. The team often said that it was "too much."

> There's just stickies everywhere and tallies everywhere, and forms, and sheets that
>
> I've developed or sheets that somebody else developed, or use this sheet or use that
>
> sheet. Everywhere! … I have a hard time synthesizing it to make sense for me. It's
>
> too much… you need to learn "what to do with that data because I tend to find I'm
>
> sitting with my [criterion-referenced measure] and I'm like, I know my kids

because I'm with them all the time, but then you have to find proof… if a doctor

says you have a cold, you're like, 'oh you're the professional, you have a cold'. But

we have to prove everything.

The frustration with constantly providing evidence for professional decisions about students'

performances was overwhelming for the team. They often repeated the phrases, "prove it" and

"too much" when describing summative assessment data that was meant to be used formatively.

It was difficult for the team to subsequently find the time to review data and they often

spent a great deal of time at home addressing required summative assessments such as creating

portfolio pages and checking off skills in the tri-annual criterion-referenced measure. When

they unexpectedly took the time to review notes about students such as glancing at the mailing

labels as they added anecdotal notes to a journal or added checklist sheets to a binder, the team

found the process reflective and revealing about students' progress. They also realized the

benefits inherent in another individual reviewing their notes as they noticed interesting points

about the students' learning that was not initially in their meta-awareness. Regardless, the

process of writing information down seemed to be a way of reflecting on student learning as

they purposely drew attention to some novel and notable behavior or performance. The

reflective process allowed them to understand students in a deeper way rather than focus

narrowly on skills or challenging behaviors, resulting in a shift in their perspective and

consideration of alternative ways to support each child. Ultimately, the team wished there was

more time for this step in the daily classroom assessment process.

Two factors reportedly hindered the team's ability to collect data: 1) student engagement,

which included challenging behaviors; and 2) child development as a developmental continuum

and not simply black and white skills to check off when met. These factors created a certain

level of tension in that they wanted to utilize a checklist of skills but also desired to collect more

descriptive information about those skills; for example, descriptive information could provide

insight into what 'counting' was like qualitatively for each child. Additionally, children's

development varied and they believed standardized measures were unable to accurately capture

that nonlinear development across students.

> Their development is all over the place. It's like I can do this but I can't do this...
>
> That's appropriate development… I'm like, 'look at how well they're doing' but I
>
> can't move them forward [on the criterion-referenced measure] cause they can't do
>
> that and that's not fair.

 So while the team valued play and developmentally appropriate skills within a "controlled

chaos" learning atmosphere, the requirements to report skills in the portfolios and check skills in

the summative measure led them for the most part to focus on skills in small groups and to set

aside additional large group time for direct instruction on literacy and math skills (leaving only

15 minutes to play on most days; they reported typically children play uninterrupted for 45 – 90

minutes). The team described a preference to push instruction into play activities but felt

pressured by the summative assessments to target individual skills, which they found were

easiest to target in large and small group activities. Essentially, assessments drove their

instruction rather than instruction driven by their beliefs about what was important for young

children's development.

The team was concerned about the diminished engagement in valuable play due to an

increased focus on direct instruction on skills, which led to an increase in behavior problems in

the classroom and pressure on students to perform before they were developmentally ready.

So we're creating behavior problems in kids who don't have social skills. I mean

what are we doing? This is bad for us. I do feel like I wish that's what we could be

more focused on, in terms of scaling back and giving them more free time and

more project time and exploration time, and art.

Mostly, the team wanted more time to process all the information they had collected. They tried

to collect all the data that was required for the district and their school but collecting that data

had become mechanical and meaningless. As a result of the requirements to collect increasingly

specific data, the daily informative information about students became standardized and lost its

impact on them as teachers. With regard to the criterion-referenced summative measure

completed three times a year, the teachers described its monotony.

Honestly, the clicking. You've one kid, 34 objectives that you have to go through

and click. I mean it takes, I try to usually give myself 2 weeks and 5 kids a night

and even that's hard… to be honest it gets really boring… you just end up being

click, click, click. I'm not even reading sometimes. It's very monotonous… I don't

think it reflects what they're doing at this stage. I think something that is more

appropriate would be an anecdotal on each kid.

While the team agreed that some skills were easier to capture in a checklist, they valued the

descriptive information about student learning captured in anecdotal formats. The team

described an ideal assessment system as one that prioritized descriptions of students' learning

and development as a fuller picture of the student, valuing them as individuals.

Classroom 3: Strong belief in developmentally appropriate practices and open-ended questioning. In this classroom, the team communicated a strong understanding of

developmentally appropriate practices and felt passionate about staying true to what learning

experiences were appropriate for preschool children. They believed that at the core of an

appropriate instructional approach in preschool was a focus on play and child-directed learning.

In this sense, it was important to follow the lead and interests of the children in the classroom,

then build units of instruction around those ideas and effectively integrate learning standards into

those engaging activities. They defined developmentally appropriate practice as:

> things that are in their world, things they have some kind of experience with, things they
>
> can touch and feel and experience… and then take that stuff that they can touch and feel
>
> and do and create activities around it. And pull, and that becomes the literacy activity.

The importance of play was critical to the team's underlying values in preschool. This was

a reoccurring theme as they emphasized the power of play to engage students, to teach

skills contextually, to target multiple skills in a single activity, and to practice skills in a

meaningful way leading to greater ease when applying those skills and knowledge outside

of the classroom. As children engaged in play and meaningful learning opportunities in

the preschool classroom, the team argued learning goals should focus on a repertoire of

dynamic skills that serve as foundations for future learning and success including

language, problem solving, negotiation, socializing, independence, and appreciation of

differences. The team saw their role as the teacher as providing students with experiences

that helped students develop a love for learning and *how* to learn and explore.

Given the team's passionate belief in play and goals for deeper learning, they argued

assessments should capture intangible student learning during quality learning experiences rather

than skill-based work. They explained, qualitative data was more important but harder to capture

because students were still shaping their ideas and understanding so it was difficult to truly grasp

what they knew. The frustration for them was in the values placed on different types of data,

namely quantitative data was more valued as evidence of student learning.

>   If you look in different rooms there'll be a teacher in the back with two kids doing small
>
>   group, skill-based work, and I don't know that that's appropriate. But they have copious
>
>   amounts of data. And I think that looks impressive as opposed to the good quality
>
>   experiences that are more qualitative that's… not as tangible. And you can't explain the
>
>   relevance as easily but you just know it's better.

Additionally, they explained preschool students did not typically 'produce' work that was easily

analyzed (e.g., written assignments); therefore the preschool teacher was tasked with recording

and capturing learning for the student. The team said students show learning by doing, moving,

engaging, and working. The team argued learning happened cooperatively within interactions

with peers and adults; however, in these experiences, it was difficult to pinpoint understanding of

individual students as separate from the group. While the team valued whole language and

exploratory experiences, for example students acting out stories or engaging in a sensory walk,

they struggled to determine an optimal way to capture understanding in those moments.

According to this classroom team, capturing student progress on a deeper level was best

executed through open-ended questioning. They described employing deeper level questioning

similar to that used in the Project Approach (Helm & Katz, 2011) in daily interactions with

students as a way to trigger student thinking and reasoning. Additionally, by questioning students

the teachers modeled a way of thinking that was eventually internalized in the students. They

noticed students began asking questions in a similar manner and provided further modeling for

one another, ultimately multiplying opportunities to learn higher levels of reasoning.

We use it daily… like little parts of the questioning, 'why do you think' and 'what'.

And you see them thinking more from the beginning of the year, as the year goes

on, which is really neat. I find that's huge.

The questioning was described as a natural part of their daily interactions with students but not

recorded, therefore often pushed aside as they were increasingly required to record skill-based

data. This frustrated them as they valued shifts in students' thinking over the course of the year.

Their team approach was instrumental to how they worked with students, effectively

assessed student learning, and met students' individual needs. For example, it was beneficial for

one teacher to lead because it provided the second teacher with the opportunity to observe and

jump in during instruction to individualize as necessary as well as the time to reflect on student

learning and potential next steps to support them. This was important because when leading a

whole group lesson, it was hard for the lead teacher to see where individual students required

support to grasp the content in that moment and ways to engage them with greater success.

So when I'm not leading I kind of, especially during large group, will take just

anecdotal records and their IEP goals will be in that. And those are the days that I

do the IEPs. But as I'm writing things down it's just things that help me generate

like where they're at and where I want them to go for their IEPs.

Furthermore, the co-teaching model provided spontaneous opportunities to verbally discuss and

reflect on student progress. They described the daily conversations with one another as well as

with therapists as helpful. For example, the general education teacher described a situation in

which after speaking with the occupational therapist about a student's difficulty attending during

whole group activities, she learned about the impact of the child's sensory processing issues; this

new insight led her to a greater understanding of the student, the impact of the disability, and

ways to offer support. While they valued the team approach, they felt in the last few years it

became increasingly difficult to collaborate given less time available to meet as a team with the

therapists. One cause of this limited time was identified as the increased caseloads for

therapists. As a result, the team felt they missed a complete understanding of each child that was

once possible given time to collaborate and reflect about students.

> People are pulled in different directions and you don't get the cohesiveness. I feel
>
> like you're not as informed. I feel like you kind of have your own dispositions and
>
> you know kind of where you're coming from but when you have the benefit of
>
> other people's perspectives, from their perspective, I think it opens your eyes! And
>
> when you're not listening to that, you might be missing a piece.

A repeated theme for this classroom team was the frustration with the diminished

collaboration as a result of increased requirements to collect data, increased caseloads at

the same time that they had less time available to meet these increased demands.

Notably, careful attention was paid to the requirements for collecting and reporting data.

As the focus was placed on skills, the teachers felt forced to engage students in skill-based

activities that took away from play opportunities they reported as valuable. Subsequently, the

team felt frustrated about the limited time available to engage in developmentally appropriate

practices. At the same time, they noticed students' challenging behaviors escalated during this

shift toward skill-based instruction and heavy data collection. To their dismay, the team focused

more on skill development and controlling student behaviors. Additionally, they described

narrowly determining if students' answers were right or wrong. With this narrow focus, when

conducting assessments their questioning focused on leading students to the correct answer

instead of gathering information about their conceptual thinking.

One challenge that was articulated was the discrepancy among colleagues on the importance of play. Within their classroom, there was a sense of frustration that the teachers, paraeducators and therapists did not share similar views about developmentally appropriate approaches. The team clarified that the paraeducators in the classroom struggled to grasp how to support students during child-directed play. They argued that given paraeducators' limited training on the meaningfulness of play in preschool combined with limited training in how to scaffold students, they could not rely on the paraeducators to support students while the teachers addressed skills during small group activities. Additionally, the paraeducators often observed outside of play, waiting to address problems between students instead of proactively engaging students and mediating challenging interactions within play.

> What you wanted them to do was facilitate the play so you could do a small group but they don't want to facilitate the play because 'that's babysitting' so they'll find a little niche for themselves to do their own small group… And they don't have the background of what play is. And a lot of them come from the PH [physically handicapped] where everything is hand over hand… Play means different things to different people. I don't know that everybody is really on the same page.

Ultimately, the team argued the underlying disparity was the paraeducators' belief that teachers were simply 'babysitting' preschool students when engaging them in play, as opposed to the teachers' belief that teachers strategically facilitated play interactions while playing with students. Additionally, the team believed the paraeducators strived for a sense of ownership of student learning so led adult-directed activities such as art projects that produced student work.

Another challenge impacting the team's ability to engage students effectively in play-based activities was the increased focus on requirements to report on discrete learning skills. As

a result, they pulled students out of free choice time to engage them in small groups. This was

troublesome to the team as they felt the interruptions to the students' play interactions both

limited their ability to support learning and limited students' progress in foundational skills.

> So kids will get plucked out of really nice quality play to get their stuff done, to get
>
> their project done. And a friend of mine… said, 'if it's supposed to be play-based
>
> why do you keep ripping them out of play.' I said, you know what, I know.

The team felt strongly that the district and school requirements for data focused too heavily on

products rather than the learning process. That, in a sense, the requirements for data narrowed

their instruction, creating a great deal of pressure for teachers. They wanted to hold tight to the

values that they believed were important in early childhood, leading them to want to know

"how" children learn and the students' learning progress. But this focus on skills led to some

level of competition in the school in which teachers were increasingly isolated and collaborated

less. Consequently, they felt pressure to show student learning through academic rote skills.

> And then with the portfolio's it's like, 'what is the product?' And we're supposed
>
> to be process people. And it's the product and does it look like they can do 2nd
>
> grade work because of how you package it and there's no substance. They can't
>
> explain it. We're doing it. It's not the product; it's how they got there.

It seemed they felt constrained by the top-down focus on quantifiable data and narrow focus on

skills in the required criterion-referenced measures. That for this team, the breakdown, referred

to as their "speed bump," in the assessment process was in deciding how best to capture the

learning they valued. That to their dismay, the deeper learning experiences they believed to be

critical for students' language and social development were replaced by simple literacy and math

skills in order to meet the portfolio requirements because those were easier ways to record

individual student's skills. Also, that as the team's instruction was reduced to a focus on skills

due to district and school data mandates, it was difficult to see how instruction could be changed

to meet the needs of individual students, how to find the time to scaffold student learning during

more valuable experiences such as play, how to provide deeper and more meaningful learning

experiences, or how families could be involved in the assessment and teaching process. For

example, the team said that taking pictures did not effectively capture student learning or

understanding so they subsequently planned rote activities like ordering events in a story as

easier methods to demonstrate learning.

> You're kind of split because your mind is on, 'okay let's plan some stuff that's going
>
> to be fun'... And then you get speed bumped with collecting it. Because how do
>
> you collect it… are we gonna write it down, are we gonna take a picture, is it gonna
>
> be a hard copy? How are we going to do this? So a lot of work goes into that. It's a
>
> speed bump because you have… a great activity: comprehension of the story,
>
> taking on a role, using the language, it's just so many good things coming out of it.
>
> And it's kinesthetic… And so we're talking about it and I'm like 'well how can you
>
> capture that for the portfolios?'. So we tried doing it with a photo. It bombed so
>
> bad. … It didn't capture… So then you end up collecting things that are rote skills,
>
> cause they're easy to collect. But the qualitative stuff, which is way more important,
>
> that's hard to capture.

In sum, this team explained that over the last couple of years simple rote activities were

more common. They focused heavily on the simpler ways to collect data on learning such

as through adult-directed matching or call-and-response activities. Subsequently, they ran

out of time for activities that allowed students to explore and engage with content in

collaborative learning experiences. Ultimately, they felt constrained by the limited ways preschoolers were able to produce work independently to the extent possible for a teacher to simply check the work for understanding and progress.

Classroom 4: Establishing a classroom community and exploring students' social-emotional learning. This classroom team had a strong sense of community in the classroom. They felt it was important to establish a community of learners that included the students, families, teachers, paraeducators, therapists, and the principal. The team believed it was critical for the students to take ownership of the classroom and subsequently of their own learning. Equally as important, the teachers worked together with the families to effectively create a supportive and challenging learning environment that honored each child's individuality and experiences. They believed learning in preschool was not 'stereotypical,' that it was best described as "chaos;" in other words, it was messy, loud, collaborative, and fun. However, learning could be 'peaceful' during whole group lessons when the children were listening and engaged in learning as a group. They felt it was important for the teachers to be *present*, to have conversations with the children and to honor those moments with them when they felt connected. They believed learning took place within those strong and comfortable relationships.

> We're just a very busy society and I know that kids are thrown in a car and given a
> granola bar and taken to soccer practice after soccer practice, and pick up their big
> brother from baseball practice… and then by the time they get home, its almost
> time for bed and they've eaten their dinner in the car. So that table time, that home
> family time, I know it's dwindling. I mean research has even shown it. So I feel
> like in preschool for sure it's just so important to have those moments, those real

life moments where you just sit, and it's all of five minutes and have a

conversation.

Ultimately they believed it was important for preschoolers to develop relationships and be

grounded socially and emotionally before they could be expected to focus on academics.

Hands down, social emotional skills are the most important thing in preschool…

and to have grown-ups in their life that are patient enough to deal with it… It's

finding that balance. A lot of times teachers get frustrated because you have kids

that can't emotionally cope with the stress that is being put on them. So hopefully

through good preschool programs the kids do have good exposure to that and they

do have that little bit of freedom so they can explore safely and like a lot of stories

and dramatization and acting stuff out and really role-playing, that stuff is so

important for them.

They explained that by supporting children in establishing a strong foundation, the children

could be more successful later on and could function better in society. They argued that if

students did not have that in place, they struggled to learn; therefore preschoolers needed

to work on coping, dealing with frustration, anger, and interacting socially. They said, "we

have to teach him that and let's put the academics to the side for a second because now is

the time to give them all the support we can for social emotional." To this classroom team,

academics were secondary to guiding students in developing independence, self-regulation,

and social skills.

In line with their value on community, the classroom team valued using peers as role

models. This was an important tool used to differentiate learning so that the younger students

were exposed to a variety of learning experiences while the older students were engaged on a

deeper level, developing those academic skills necessary for Kindergarten while also serving as role models for the younger ones.

> I'm creating learning centers, like numbers and literacy, and mathematical kind of
>
> things. And then I do know that there are kids that are at different levels. So being
>
> in a multi-age classroom it's very obvious to me… I think some parents would
>
> walk in and not know the difference. They just think it's a classroom full of kids;
>
> they should all be doing the same thing. But knowing that we have cycle 3's and
>
> cycle 4's, and some cycle 2's in the classroom… that's the joy of having [an
>
> inclusion] classroom, that's the joy of having a multi-age classroom, is that they
>
> learn from each other and there's good role models for every learner.

Using peers as models also provided the team with opportunities to observe students and determine those that would then require individualized scaffolding to support the student in developing targeted skills and abilities.

The team described the importance of observational information collected within the first few weeks of school as they began to develop a deeper understanding of each child. This understanding of each student was then considered, adjusted, and updated throughout the school year. The team observed and developed relationships with students, thereby developing an understanding of who they were, especially in relation to developmental continuums. Essentially, they mentally mapped students onto childhood developmental continuums as a way to organize how they approached students, provided supports, and mediated learning.

> I know in the back of my head, through just knowing who they are and what age
>
> they are what's expected of them… this comes within the first couple weeks of
>
> school when you're sitting there and you're really watching… I'm observing so

much during those first few weeks of school. Really watching the kids, really

seeing what their interests are, seeing what their strengths and their weaknesses are,

recognizing who's moving on… and then from there knowing where I need to

push.

And then when they began instruction, they considered a broad progression of skills to get all

students to the predetermined end goal while also flexibly adjusting it depending on the level of

the students in each session. For example, the team wanted students to compare two similar

books. For their morning session with the majority of the students moving onto Kindergarten,

they decided it was best to read each book separately and chart the elements of them separately,

then compare across stories using a Venn Diagram; however, for the afternoon session with

younger children, they decided it was important to chart each individually and then expose them

to comparing across stories without the use of the Venn Diagram. This level of forethought set

the stage for how they would differentiate for the class as a whole as well as for individual

students as they considered ahead of time possible misunderstandings, difficulties, and

developmental readiness.

The team viewed the teacher's role as facilitator of language, friendships ("getting that

going"), play, conversation, and social interactions. One critical way they guided individual

student's learning was through joining them as they engaged in play and then integrating

instruction within those learning moments, referred to in the literature as child-directed learning.

For example, they described playing Candyland with children and strategically using that

opportunity to talk about colors and numbers. Before they entered into play with a child, they

had a sense of that child's areas of need and flexibly capitalized on that child's interest by

naturally integrating learning into the activity of the child's choice. In another example, they

planned on pulling a child aside to work on letter recognition; however, applied those goals to a

shaving cream activity the child was engaged in and enjoyed. This flexibility was possible based

on a broader focus on learning skills across experiences.

The team also valued observing and watching students as they developed understandings

of what the students were like and how they typically behaved, providing them with the

information necessary to then challenge students. This information led to more strategic and

purposeful scaffolding. When describing how they worked with individual students during

assessment tasks, they described a flexible assessment process that used scaffolding in way of

prompting student responses to capture the students' learning potential. First, they planned

strategically for when to pull students aside to assess (ensuring certain students had time to play

first) so they could gain a true sense of the student's ability. Second, during the assessment

activity, they prompted students further based on the presenting difficulties. For example, for

one English Language Learner (ELL) they asked her to write the word *cat* next to the animal she

drew. The student asked how to spell it and one teacher prompted, "what do you think you

hear?" then the student wrote the sounds in the word. Upon reflection, the team said, "so it must

have been just in her." They believed students possessed greater abilities or skills than were

demonstrated on a simple task. So their assessment approach aimed to draw the knowledge out

of students by providing each child with optimal prompting to encourage demonstration of what

they were capable of and what they knew. They found this process joyful because they were

happily surprised by the student's performance. Essentially, they held high expectations for

students and aimed to see what they could do with just the right amount of adult support.

I really have to walk him through it because he's got great ideas, he's got a great

imagination, so getting him to show ownership in that… that's what I'm working

on with him.

Furthermore, the individualized scaffolding served to guide students towards independence and development of key learning habits valued for success in school.

With regard to data collection, the classroom team described collecting a large quantity of pictures of children and work samples but felt challenged, with the portfolios in particular, to collect the right type of data and enough information. With "too much" data collected, it was difficult to sift through it to find meaningful information about both whole-class learning as well as individual student skill development. They felt the time spent on sifting through the data was too much and overwhelming. They described a similar feeling when reporting on the summative measure, where they felt they were just clicking benchmarks, leading them to feel like the process lost meaning and became just another task to complete to meet requirements for data.

> Just if we have enough of the information. We keep portfolios too and so I know
>
> just for my team… you know constantly taking the photos and trying to organize
>
> them, creating collages where it shows the whole story and then pulling out photos
>
> of students so that its just a picture of a student throughout the year working
>
> socially, exhibiting math skills and exhibiting literacy skills, its very time-
>
> consuming, its very, very overwhelming. And I know it's wonderful and I know as
>
> a parent it's awesome to look through that and to see all that. As a classroom
>
> teacher, I couldn't do it without the assistants that I have; there is no way. We take
>
> pictures, hundreds of them during the week, I mean it's unbelievable, so a lot is
>
> documented and then it's just the time to sift through and to sort, it's mind
>
> boggling.

They described the breakdown in their assessment process as an inefficient system that connected the data collected with a way to review and use the information to inform their instruction. They described successfully creating effective checklists to record student thinking and performance whereby they were able to collect a lot of information but they wondered, "is it the right information". They also described difficulty in tracking the information collected as well as creating the most effective form or method for recording the desired information. They wanted the data collection forms to be easily accessible and to serve multiple purposes, namely: to ensure data was collected evenly across all students, on a variety of developmental areas, to allow comparisons across students, and to allow comparisons over time. In the past year, they tried different ways to record the information (e.g., a checklist or post-its) with the goal of making it visually understandable but they found it hard to find the right balance. They explained it could be hard to find what they were looking for when data collection forms did not efficiently display data, which made it difficult to reflect on student learning.

> I think I collect enough information, I just don't know if it's the right information. I
> feel that it's helping me, but there is something's missing, there's a connection, like
> of all these checklists, and then, 'what do I do with these checklists.'

They felt that if they had a good assessment system, it could give them more reliable information about the consistency of students' behaviors and skills whereas a memory (not written down) could only provide a check of if the child did something or not. Therefore, recording the information systematically could provide the level of detail to recollect the moment and interpret the students' understanding or ability when required to make judgments in the criterion-referenced measure.

Section Two. Preschool Teachers' Formative Assessment Processes and Barriers

The following section of this chapter will answer each question by presenting key patterns, representative quotes, and competing explanations.

Research Question One: How are formative assessment processes enacted by preschool teachers in special education settings? To answer this question, teachers progressed through a series of interviews to encourage reflection on their educational values, instructional approach, and assessment approach. In support of the teachers' explanations, corresponding analysis was conducted on the teachers' assessment artifacts, descriptive information on the Classroom Assessment and Scoring System (CLASS PreK™), responses to the self-assessment questionnaire, and observation field notes. In the process of understanding the preschool teachers' formative assessment processes, two patterns were identified, namely: (a) the value of developmentally appropriate practices in early childhood, and (b) an understanding of the process of planning, collecting, interpreting, and using daily information about students to provide individualized learning via immediate scaffolding and planned adjustments to lessons.

Grounding assessment in Developmentally Appropriate Practices (DAP). The importance of play and developmentally appropriate practices for preschool children was an underlying theme for the preschool teachers, seemingly inseparable from assessment. Therefore, it is critical to attend to these underlying values about learning to set the stage for how they approached formative assessments and the challenges they faced. One teacher's definition of developmentally appropriate practices represented well the sentiment of all the teachers. She described DAP as teaching at the level of the students, through their interests, using natural learning opportunities, engaging in hands-on exploration, and addressing multiple skills in one activity. One teacher in an inclusion classroom used an example of a playdough activity to

describe developmentally appropriate practice as play-based and child-centered whereby they

planned multi-faceted learning activities to incorporate a wide variety of skills in an engaging

manner.

> You're not just playing playdough. There's a lot going on. You could be doing math,
>
> making different things… The fine motor. The language in between. The imagination.
>
> The social back and forth the kids have. I mean that's just in that.

Another teacher described it as "oblivious learning;" that students were unaware learning was

occurring because it was infused into play-based activities. The teachers saw their role as

providing students with experiences that taught them higher-order thinking skills such as

questioning and reasoning, which were then applied in repeated authentic learning experiences

that ensured the students, especially those with disabilities, effectively generalized skills across

settings and interactions. Ultimately, they valued teaching students *how* to learn and explore in

their natural environment. When doing so, they argued skills and learning habits could be

practiced naturally in their daily activities, effectively multiplying its impact.

One teacher in the self-contained program explained *play* as looking slightly different for

students with significant disabilities. She explained it was important for the students to play with

different toys and materials but it was often highly structured in comparison to typically

developing students due to the impact of their physical and communicative abilities. To support

students' play in her classroom, the teachers typically secured a toy to the student's personal

table via a bungee cord, provided hand-over-hand assistance to engage with materials, or

manipulated materials for the students such as blowing bubbles for them. While she valued the

exploratory nature of the play-based activities, she argued that it was more structured and adult-

directed for students with significant physical and communicative delays.

The teachers described the nature of learning in preschool as occurring on a

developmental continuum that was often nonlinear and inconsistent. They explained children

learn by doing, engaging, exploring, and discussing. Furthermore, students progressed in their

cognitive, social, and emotional abilities within the process of engaging in subsequently deeper

levels of reasoning and thinking with a wide variety of materials and content. It was important to

the teachers that they were not looking for right or wrong answers but for students to develop

increasingly sophisticated ways of thinking and engaging in the classroom, essentially

developing into life-long learners. They described how students typically learn in preschool:

they learn a skill, then test it out, adjust, face challenges, adjust again, and expand that skill. The

following example typifies the sentiments of all the teachers' belief that students learn when they

are developmentally ready.

> *Special Education teacher (SE)*: they're still learning themselves, they're 3, 4, 5 years
>
> old, like they don't know and all of a sudden a light bulb goes off and they can do a lot
>
> more but their development is all over the place.
>
> *General Education teacher (GE)*: But it's not linear.
>
> *SE*: Their development its like so all over the place, its like I can do this, but I can't do
>
> this, I can do this, but I can't do this, its everywhere.
>
> *GE*: Well and sometimes I can count to 20 and then I started one-to-one counting to ten
>
> and now my counting to 20 rote is a little off…
>
> *SE*: Because now I am doing this, yeah but that's development…that's appropriate
>
> development…
>
> *GE*: But that's not captured in the, I mean I captured it right here. [both laugh]… but
>
> even social/emotional development, sometimes in [TSG] GOLD, you have them here

making friends in November and then they're really struggling with their friendships in

February, but that's appropriate, they go up and I am constantly telling parents, this is

their development, which is why we shouldn't standardize kids until 3rd grade.

All teachers described student learning as not easily categorized or "not black and white", which

made it difficult to easily assess their learning. In other words, student learning in preschool was

not easily judged as correct or incorrect; that there was a gray area of learning and understanding

when students could not easily verbalize what they know or understand. They were concerned

about the inability of standardized measures to capture that gray area of understanding,

especially with students with disabilities or culturally and linguistically different students who

they believed were more capable than standardized measures revealed. One teacher's

description exemplified this shared belief that society misunderstood the impact of standardized

measures on students, and the challenge with measuring what students truly know.

> The pressure on teachers right now… they've had to teach to the test so that these kids
>
> could pass the test. For what? Why is that? Why is that important? As people in it we
>
> don't understand, so trying to explain it to somebody else is almost impossible. Cause
>
> they're like "Yeah! Test! Why don't they test?" You should of course test. Shouldn't
>
> they take more standardized tests? ... I'm like, no because it's stressful, and kids burnout.
>
> And I mean I had this one boy today just trying to do the [district-created performance
>
> task for teacher evaluation] assessment. And all it is was just count these numbers, and
>
> he knew that he didn't know them, and started screaming and throwing the things across
>
> the floor. "I don't want to do, I no want to, I don't know" And this is just a 5-year-old
>
> preschool boy, me trying to get...and he's special needs. And so I'm trying to ask him,
>
> "Do you know this number? Or which one is the two?" So I switched, I changed the test.

And I said, "Which one is the two?" Rather than, "which one is this?" And he was like

"Oh!" And you could see the relief coming over his face because now I'm giving him an

option and he doesn't have to come with it on his own. That's terrible, and we're doing

this across the board to all our kids. It's just overkill.

One challenge, discussed later in this chapter, was the lack of shared understanding in society

about the value of play in supporting young children's appropriate development. This was a

reoccurring theme that all the teachers believed increasingly impacted their instruction and

assessment. They believe this difference led to increasingly narrow conceptions of what was

important in preschool. The teachers described attempting to hold true to their early childhood

training and research on developmentally appropriate practices.

Building foundational social and emotional skills in students were valued as utmost

important across teachers, regardless of special education setting. The teachers, particularly in

the inclusion classrooms focused heavily on social and emotional skills because they argued that

without these in place, students struggled to learn. They also believed that preschool instruction

should be focused on establishing foundational self-regulatory and social skills in students to set

the stage for positive learning experiences. This was important as they believed assessments

should focus on social and emotional development, rather than narrowly on academic skills. One

teacher explained that students first needed to work on coping skills when dealing with

frustration and anger. Similar to other teachers, she focused on supporting the student

emotionally while putting aside academic instruction for the time being. She said, "we have to

teach him that and let's put the academics to the side for a second because now is the time to give

them all the support we can for social emotional." The majority of teachers valued building

relationships with individual students as a way to understand and address social and emotional

skills related to empathy, initiating interactions, problem solving, having conversations, and

negotiation. However, one teacher in particular believed strongly that student success in her

classroom was largely due to a team approach that included parents and teachers working

together to build positive interactions and a seamless support system through continuous

assessment to understand students and their behaviors.

> Maybe that's why most of the kids are successful even if they are lower here because
>
> there is that joy. It's like a marriage; it's their parent and the teacher working together to
>
> meet the needs of the child and every kid is different and every child learns differently.

For this teacher, it was important for the teachers and paraeducators to be *present* for the kids

through consistent conversations and to "have those moments" with preschoolers. Similar to

other teachers, she described these social emotional skills as a critical target for learning in

preschool while academic skills were in a sense secondary.

Additionally, ensuring students were engaged in the learning task was critical to set the

stage for learning and development. Some teachers used engagement and student interest as

measures of the effectiveness of a large group lesson. While all teachers described these

classroom skills as remaining attentive, waiting turns, remaining engaged, making choices,

communicating, and being on-task, one teacher spoke at length about the factors that impact

learning. She described these skills as not easily tested and typically not included in district

assessment measures but that she finds they prime students for learning. Hence without

established foundational skills, she found it difficult to teach the students and subsequently

assess what they really know. To develop these skills in students, all the teachers described

establishing a routine that was based on repetition and consistency so that students knew what to

expect and then could relax and learn.

  Revised formative assessment cycle. Across classrooms, the teachers articulated the

importance of collecting data as a means to inform educational decisions for students as a whole

and individually. Generally, the process was very similar to theoretical decision-making models,

namely The *Assessment Cycle* (Dichtelmiller, 2011). Based on findings from this study, a

revised version of formative assessment processes was created (see Figure 1). Teachers all

described an assessment system that followed the sequence of planning data collection,

collecting data, reviewing and interpreting data, and using data in various ways leading back

through the cycle again. While they articulated the process with ease, the teachers implemented

the practices to varying degrees. The teachers' daily formative assessment processes deviated

from the *Assessment Cycle* when describing assessment processes that were both planned and

unplanned. Planned assessment processes followed the *Assessment Cycle* as they were: (a)

typically written into the lesson plans and indicated a set schedule for what to collect and how,

(b) recorded using a tool such as a checklist or taking a picture, (c) reviewed in some manner,

and (d) used to inform future lessons and/or communicate with others about student progress.

Unplanned processes deviated from the *Assessment Cycle* and were often difficult to articulate,

representing a tacit knowledge shared across teachers. Unplanned formative assessment

processes often described as "scaffolding" procedures were used as a flexible assessment process

within spontaneous moments of instruction whereby teachers interacted with students (in a group

or individually) using questioning and prompting to gain a sense of their true understanding and

abilities.

  These two assessment processes, planned and unplanned, operated on two distinct tracks

with planned assessments on a continuous main circular track at the whole classroom-level on a

daily to weekly basis spanning the course of a unit. Within this track, teachers engaged in

repeated mini-cycles at the classroom-level including collecting, interpreting, and using

information gathered about the class as a whole during instruction before ultimately using the

information for subsequent lessons and units. In contrast, the unplanned assessment processes

broke away to an alternate track at the stage of data collection as the teacher worked with

individual students in mini-conferences, occurring within seconds and minutes on repeated

cycles of interactions with the student before ultimately connecting with the main track again at

the whole classroom interpretation stage (see Figure 1). This flexible assessment track was

highly valued by the teachers as a method of individually grasping students' learning potential

through repeated cycles of observing, questioning, prompting, modeling, and feedback.

Throughout the decision-making process, the teachers described being seamlessly guided by two

sources of knowledge: child development and prompting procedures.
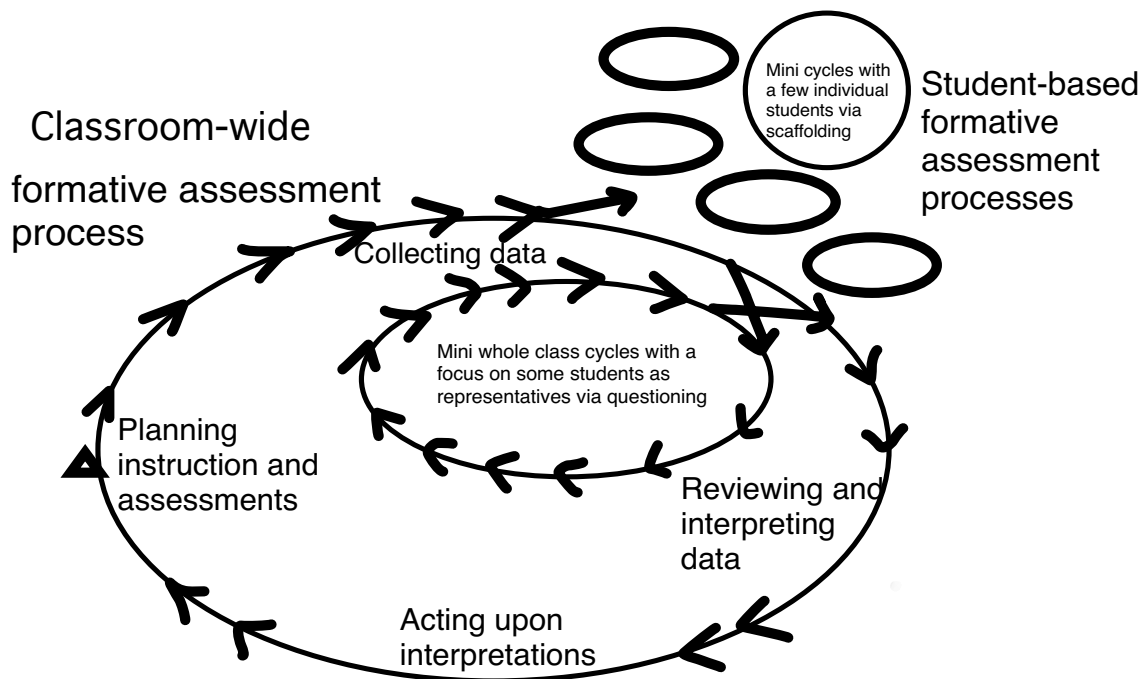
Figure 1. Revised model for Formative Assessment Processes of Preschool Teachers in Special Education Settings

Instructional and Assessment Practices Guided by Child Development and Prompting Systems. As the teachers spoke about the process of collecting and interpreting data, they were guided by underlying structures that allowed them to engage in planned and unplanned interactions with students. The two guiding structures were (1) child developmental progressions of learning based on expectations for certain ages in various domains including literacy, math, and social skills (Heritage, 2008), and (2) prompting systems (MacDuff, Krantz, & McClannahan, 2001). The teachers with greater attention to developmental progressions demonstrated and reported more intricate and responsive prompting systems to support individual students.

Most teachers had a sense of the level of each student's expected performance based on knowledge of developmental progressions, particularly what was typically expected of 2-year-olds, 3-year-olds, and 4-year-olds across social, literacy, and math domains. Teachers described this knowledge as providing a framework for understanding students, especially when students exhibited varied levels of ability across domains. For example, one teacher described how she shifted her understanding of a student who had above average academic skills and appropriate age-level social skills. This descriptions captures explanations by all of the teachers.

> I mainly take into consideration age, more than anything and what I expect like from 3-
> year-olds and what I expect from my 4-year-olds. And something that's been difficult
> for me like this year and with my assistants too, we have one particular boy in the
> afternoon, who is the youngest of the Gen Ed kids, but he acts like a 5- or 6-year-old.
> His language and his cognitive ability is so high that we all often tend to forget that he's
> still a very young 3… so academically he's very high, but social/emotional he's at that
> of a 3-year-old… so when it comes to differentiating he's in the high group for small

groups. But sometimes he'll act out and I have to remind myself he's in this small group

because he can one-to-one count past 20. So is he going to be able to work in a group

and do this game together? Probably not, but that's okay cause I can sit and help him

with it. But I needed to remove that expectation of 'because you're cognitively and

academically at a 5-year-old doesn't mean you are social/emotionally at a 5-year-old' …

So I think age is probably the first thing I take into consideration in determining ability

level. You tend to assume when kids come in the first day of school, 3-year-olds are

doing this, four-year-olds are doing that and then from there is when you figure out.

Similarly, one teacher described the usefulness of using those developmental progressions as

guidelines to determining the next level to challenge the student.

I guess maybe it's just my upbringing and my school… well that's what you had,

developmental levels. Not that it defines a child but it certainly, when you say somebody

is functioning at the one-year level then you can instantly figure out what they're doing.

You can instantly know, the 3- to 4-month level you kind of know what that is.

All teachers reported using age-level expectations for students as a basis for understanding what

individual students were able to do and the next developmental steps to challenge the student.

Two teachers described the usefulness of the criterion-referenced measure for supporting an

understanding of developmental progressions in various domains.

Additionally, teachers considered the type of students in each class session, noting that

groups of students as a whole performed differently. One teacher described her morning session

as younger so she planned to start instruction at a lower literacy level, while her afternoon

session had older students who she planned on challenging at a higher-level of thinking and

complexity. Essentially, this teacher was guided by expectations for 2, 3 and 4 year olds while

also keeping in mind a learning progression of skills in specific domains that allowed her to

make adjustments (scaffold students) in the moment and prior to each day's lesson. Her

description of how she approached a whole-classroom lesson on comparing two similar stories is

a good example of how four of the six teachers described flexibly making adjustments for

students using age-based expectations.

> I do a web and I write down all the ideas and I kind of know where times come in
>
> sometimes I'll write in my lesson plans. Today's the day I was going to do the Venn
>
> diagram or something like compare. And then I realize that's not going to cut it, why
>
> don't you do it one at a time. My original plan today was going to do a Venn diagram and
>
> talk about both books and I realized I need to do one book, then do the next book and
>
> then do the compare and contrast… This morning when I came in and I thought, I started
>
> to draw the Venn diagram and I'm like, "ah, geez, they're not going to…" I think that I
>
> follow the students. I know a couple of the kids that would, 'there's a pig in the story
>
> there's a pig in the story'. And I really need to talk about the parts of the story first,
>
> what's in this one, the parts of the story and what's in this one and then we'll be able to
>
> compare and contrast… and again what I did this morning with this group will be
>
> different than the afternoon group too …So what made me change, I just think it's
>
> flexibility, I think it's just in your gut. I realized this is going to be way too hard right
>
> now, cause I had images of both pictures already, but I knew it for some reason.

The teachers described being guided by a broad question about student learning as instruction

progressed. While one teacher articulated this process, it was not representative of all teachers.

The other teachers expressed feeling overwhelmed by the large quantity of standards and

assessment mandates, ultimately leading to units that were driven by skills that were required to

be addressed within each unit.

> So really Teaching Strategies [TSG] is what we're bound to obviously, every place in the
>
> state of Illinois. And you're supposed to have artifacts and you know stuff plugged in but
>
> it's not super individual to be honest… We take data and stuff on the small group work
>
> that we're doing but you're kind of a split person because you're looking for stuff that you
>
> can collect to go into the portfolio to kind of meet the criteria of literacy, math, and then a
>
> culminating activity. So you're kind of split because your mind is on, 'okay let's plan
>
> some stuff that's going to be fun and good'. And then you get speed bumped with
>
> collecting it. Because how do you collect it. You know like, are we taking, are we gonna
>
> write it down, are we gonna take a picture, is it gonna be a hard copy? Like how are we
>
> going to do this? So a lot of work goes into that.

Essentially, for some teachers that focused on the skills required for reporting evidence of

learning, the units narrowly focused on skills rather than on the development of deeper reasoning

and thinking represented in broader and deeper guiding questions.

> With regard to prompting systems, the special education teachers referred to levels of

prompting and gradual release procedures when supporting students in-the-moment during

whole-class instruction and individual interactions. These included visual, verbal, and physical

prompts provided and removed as independence increased. Interestingly, the general education

teachers described this approach in a general sense and described learning this approach to

support students during instruction by observing their special education co-teachers whereas all

the special education teachers labeled it specifically as "gradual release" or "hierarchy of

prompts." This ability to support students during instruction was described in a variety of terms

including: "differentiating instruction", "gradual release", "hierarchy of prompts", and "choices".

Planning classroom-wide formative assessment processes and capitalizing on the co-

teaching model. The teachers reported using a variety of pre-planned tools to gather information

about students on a daily basis to inform instruction and quarterly judgments on report card

anecdotals and criterion-referenced measures. Tools included checklists and charts of students

aligned with either state standards, skills on the mandated criterion-referenced measure, or IEP

goals for students with special needs. Typically, these teacher-created tools evolved over time

and described *how* the data were displayed as playing a critical role in how easy it was for the

teacher to interpret student performance levels when assigning scores on summative measures.

For three of the four classrooms, the teachers realized over time that it was helpful to create a

chart with columns for different skills being addressed in assessment activities or play that

checked off skills with space to write anecdotal information about *how* the student performed the

skill. Unstructured formats for collecting information about students varied by teacher but

served a similar purpose, to record descriptive information about student learning preferences,

processes, novel learning experiences, and needs. One teacher recorded anecdotal information

on a sheet of blank mailing labels, focusing on writing targeted and individualized information

about a few students each day. Other teachers recorded anecdotal information about students on

blank index cards, blank sheets of paper, or blank charts with students names listed. Taking

pictures and collecting work samples were also important for providing a descriptive

understanding of the student's learning.

At the planning stage, the teachers emphasized the collaborative nature of the team

relationship with the two co-teachers and paraeducators as necessary for creating opportunities to

record data. It was apparent that recording data was not possible during instruction, particularly

whole group instruction. All teachers talked about how they appreciated the time released to

them or their colleague when one teacher or paraeducator led instruction, providing the time

necessary to watch students and record information first hand. They all explained recording

information while teaching was hard because they would 'lose' the students and were less likely

to capitalize on critical teaching moments. In instances when data collection was planned to

occur during instruction (e.g., whole group instruction or small group activities), it was

strategically planned to follow interactions with students via a form to reduce the burden of

writing such as a checklist or chart with a list of students' names. For the most part, the teachers

planned for instances to record data while a colleague led instruction. One teacher explained it

was important to collect data on students first hand while students were engaged in learning to

enable a clearer understanding of the students' performances. This first hand information also

led to immediate interpretations about the students' needs, responses to differentiated learning

experiences, and new understandings for students' behaviors and learning. For three of the four

classrooms, the paraeducators were provided with data collection sheets and instructions on what

type of data to collect; for example, in two classrooms the paraeducators recorded individual

students' level of support required to perform a task (e.g., visual, physical, or verbal prompts)

and new interests or preferences (e.g., colors, toys, activities) while in one classroom the

paraeducators were provided with blank index cards and asked to write observations about

students during small group interactions.

Capitalizing on the collaborative team approach was particularly important for the special

education teachers. The three special education teachers often described using time when they

were not leading instruction to observe students with difficulties as they engaged in whole group

instruction. This also occurred when they conducted mini-assessments with individual students to test out improved systems of support. In an interview with one special education teacher, she captured this balance well. She described switching roles with her paraeducator so that her paraeducator led circle while she worked closely with a student with challenging behaviors to determine the underlying function of the behavior and appropriate ways to support the student. This flexibility in their roles provided her with the ability to problem solve in the moment with the student, ultimately to improve the student's engagement and learning during instruction.

> We work hard to control chaos at any given moment. Sometimes the teachers are leading the group, sometimes they are behind a child because the para is leading the group and the teacher might be because they want to specifically pinpoint like a child that had difficulty sitting. So sometimes we'll switch that and I'll have the para lead circle so I could, especially if it is an initial thing, like to get a child to look at the board maker picture of, "you need to sit, it's time to sit"… that's a really great opportunity to sit next to the child and say, 'you need to sit, it's time to sit.' Just take documentation… how many times did I have to verbally or gesturally or physically had to sit down, sit down. So I feel that I as a teacher, I'll go through that rather than just say, 'you take care of that.' And its not that I think the paras are incapable; it's just that I think it's kind of like you got to set the base and then, 'okay you saw what I did, now you do that.' And sometimes they come up with better ideas than I have and it's like, 'ya, lets try that way, let's do that, we'll try that if it's not working out.'

Using the team to adjust instruction to meet the needs of the individual students was particularly helpful by gathering ideas from various professionals' perspectives and planning how to integrate those ideas into practice.

Collecting classroom-wide formative assessment information using quantitative and qualitative tools. The teachers' decisions about what tools they planned to use to record the data was linked to the type of lesson planned but did not always support their expressed values of developmentally appropriate practices. More specifically, all of the teachers described the value in descriptive, qualitative information about student learning; however, open-format recording tools was not easily enacted in assessment practices. Four of the six teachers developed data collection forms that remained open to writing information about *how* students performed the task while also being structured enough to check developmental skills during the assessment. When the teachers were guided by learning standards and developmental progressions, the assessment activities in large group and small group activities gathered targeted information on deeper learning processes such as making comparisons between stories, communicating interests through choice-making, or representing knowledge in observational drawings. In contrast, two teachers typically developed activities that focused on probing for perceived correct answers instead of learning processes along a developmental continuum (this approach did not align with their values placed on developmentally appropriate practices). As a result, they recorded tallies or notes on isolated skills and expressed frustration in their ability to truly know students' learning potential.

Teachers reported often feeling constrained by the format of the data collection tool. All teachers described a continuous process of adjusting forms to match their goals for the assessment; for example, creating a chart to record both a check of skills and anecdotal information instead of recording information on a blank form. They also described the importance of the format in how efficiently and effectively they were able to review the data at a later time. Many teachers felt overwhelmed by the incredible amount of data they had collected

and intended to revise their approach to improve their analysis process. One teacher described

how she proactively changed the format of one chart so that the information collected was

displayed in a manner that allowed her to quickly draw conclusions about an individual student's

level of independence with an IEP goal. In sum, only one teacher described feeling confident in

her various data collection tools and her ability to adjust them to effectively display data in a way

that led to visual analysis of students' patterns of performance.

Engaging in student-based formative assessment processes through scaffolding. This

stage diverged from the classroom-wide formative assessment at the stage of data collection

during instruction as teachers described engaging in mini formative assessment cycles with

individual students before reviewing and using that information at the classroom level (see

Figure 1). All teachers described a natural or innate sort of ability to assess and respond to

individual students in-the-moment, based on what many researchers refer to as scaffolding or

differentiated instruction. All of the teachers described it as an unplanned approach to

supporting students individually through a "wait and see" model. Many described observing the

student to determine the "student's approach to learning and skill level" within a task. That is,

they simultaneously collected information and hypothesized about the student's skill level; this

was followed by varied levels of guidance beginning with a less intrusive prompt and gradually

increasing types of prompts until observing the student applying the skill or strategy. This

dynamic prompting process was used to determine each student's learning potential, similar to

that described by Vygotsky (1978) as working within the child's 'zone of proximal development'

or as mediated learning experiences within a dynamic assessment process (Lidz & Peña, 1996).

One teacher provided a good description, shared by all, of the complicated nature of responding

to students in-the-moment.

> I really think that there's a lot of times that I assess and I don't necessarily think I am
> assessing. I mean it's like I'm assessing, but it's more of an informal thing and I
> instantly will change what I am doing because I know that they can't do that, they're not
> focusing or whatever. So I take a step back and present something different to them.
> And so there's a lot of times that I may not capture that in written form but I know and
> it's in my head, you know when I am writing reports, its like I know.

In this scaffolding process, the teachers internally cycled through multiple iterations with a single student including: observation, hypothesis generation, prompting, and immediate feedback. Then, re-entered the planned formative assessment classroom-wide cycle on the outer track whereby the information gleaned was then reviewed and interpreted in conjunction with classroom-wide formative information and then used to communicate results and inform lesson planning.

The goal of scaffolding for these teachers as a divergent cycle from the formative assessment process was to determine each child's learning potential. They explained that assessments in and of themselves were not effective in revealing all that a student understood and was capable of doing. Therefore, by engaging the student in repeated prompting, modeling, and questioning, the teacher was able to gain a better sense of the student's true abilities and more confidently judge the student's level of performance in that standard. As one teacher stated,

> I have a little guy who wants to just rush about his business. He's got great ideas
> but he wants to rush on everything and so that hasn't changed throughout the
> whole year. But to try to get him to add detail or another color; and he would have
> stopped at this. And then he added one more and I said, 'well maybe you could

add a farm, can you think of something else?' So he did that or, 'you forgot your

hair.' You know so I really have to walk him through it because he's got great

ideas, he's got a great imagination. So getting him to just show ownership in that

so that's what I was working on with him. So I think when you do small groups

like this, it's good. I probably get the most out of that to know where they're at, to

know if it's okay to move on.

Additionally, the dynamic assessment process was individualized for each student. While

the task and learning goals assessed remained the same, the teachers adjusted their

approach based on the child's skill level, interests, and "learning style."

Essentially, the process of scaffolding students during instruction and formative

assessment tasks allowed the teachers to test out hypotheses for what they thought the student

was able to do or knew. The teachers reported conducting repeated "validity checks" on their

conclusions about students by mentally asking, "how do I know what the student knows." To

answer this question, the teachers reported presenting information in different ways to develop a

deeper level of certainty about a student's ability, similar to methods of triangulation in research.

To determine how to individualize the interaction with each child, the teachers described

adjusting the way they presented information to students based on the student's response. The

student's response was recorded in a data sheet while the teachers then provided a lower or

higher level of support similar to prompt hierarchies. One teacher provided me with a chart of a

hierarchy of least-to-most prompts that she used to guide her interactions with students and to

teach her paraeducators the approach. Most of the teachers described the approach as beginning

with observation such that they waited to see the student's initial response before proceeding

with more intense prompting and assistance. One teacher explained she did not want to assume

students were unable to do a task so she typically began the interaction with a student at a slightly challenging level, and then reduced the complexity and increased supports until the student responded. Critical to most of the teachers' approaches was ensuring an appropriate amount of wait time to match the students' processing speed. One teacher explained,

> What drives your instruction are your assessments… you sometimes have that innate capability of 'okay I gotta stop this, it's just not working' and you know you go down another road to see what else is out there… and then through the course of the year you already know then what the child can do. However, you still have to step back every now and then because you never know when they're gonna, when they have learned to go from full assistance to partial prompting.

When engaged in a stimulated-recall interview about her specific process for scaffolding during a portfolio page assessment task, this special education teacher described a sophisticated approach for differentiating the assessment. It was apparent that she matched her approach to each student's individual level of understanding and ability by using concrete objects versus pictures of objects and requiring some students to only draw lines versus asking other students follow-up questions to expand on the drawing.

In another classroom, a general education teacher provided a detailed description of her process for working with students during a culminating activity requiring students to create pages for a class book on their farm unit. She described an assessment process that used scaffolding to capture the students' learning potential. First, she planned strategically for when to pull kids to assess them (making sure she did not pull kids first who needed to play more before settling in to work) so that she could really gain a true sense of their ability. Second, during the assessment activity, she prompted students based on their difficulties. For example,

for one ELL student she asked her to write the word *cat* based on the animal she drew. The

student asked how to spell it and she prompted, "what do you think you hear?" then the student

successfully wrote the letters in the word. During the stimulated-recall interview, the teacher

explained, "so it must have just been in her." During this assessment process, the teacher

perceived the students had higher abilities than were immediately demonstrated on the task.

Therefore, engaging students was necessary to draw their knowledge out of them. She provided

them with targeted prompting to encourage them to demonstrate what they were capable of and

what they knew; this process was joyful for her when she was happily surprised by their

performance. In sum, she had high expectations for all students and aimed to see what they

could do with the right amount of adult support.

The process of observing followed by interacting was a common theme across teachers.

One teacher described how she valued the time she dedicated to observing and watching

students. Often she spent her time during free-choice playtime split between observation and

interaction. She valued the time spent observing as it provided her with the opportunity to get to

know what the students were like and how they typically behaved. She explained this

information about students provided her with the information necessary to then challenge them.

In subsequent interactions, she then engaged them in play to expand their play experiences and

interactions, for example she described inviting a few boys who were often engaged in gross

motor activities such as building with blocks to play in the house. Such specific information

about individual students allowed her to be more strategic and purposeful when scaffolding and

challenging them at their individual skill level, capitalizing on their interests and strengths.

I love watching them play, I think it is so important for a teacher to sit and observe, and

not always interfere … and not just one time cause is this little girl doing this all the time

or is it just today? Was she assertive today? Cause that's a big difference too or wow she was so strong, cause she usually isn't. Taking notes on that and then trying to get them to choose different things… they inspire me to think like, oh I got to figure that one out, or how do I not know why that happens.

Taking the time to observe students and challenge them individually was valued by this teacher for its multifaceted role: to get to know students, to gather information about how to challenge students, to conduct validity checks on her conclusions about student progress, and to learn more about how students typically think. This teacher was often seen quizzically observing her classroom and narrowing in on particular groups of students by sitting with them, asking questions, and engaging them during their play experiences.

Four of the six teachers described the benefits of scaffolding on their future instruction with students, particularly as it improved their understanding of individual students and how to adjust instruction for future lessons and interactions. One general education teacher described the impact of scaffolding on her ability to differentiate her instruction for individual students. After a year of teaching, she began to notice that students had different levels of ability and instead of noting a student could not do something, she began to change the expectations for responses and hence individualize her questioning and prompting for students within the same lesson so that all students had the opportunity to demonstrate what they knew or were able to do. She said this was developed after observing students, observing her special education co-teacher engaging in scaffolding, and moving away from accepting a checklist of yes or no for skills to knowing more about all of her students' potential.

It was my first time working with kids with special needs and I was confused by that because in theory it seems great until you're actually thrown into it and then it feels very

chaotic. Last year… I was starting to recognize much more intuitively what everybody needed. I also had my first ELL student last year… that was really when I started to figure out for myself like, oh I need to change things for him to learn, which then, which it seems like it should just be second nature for teachers, but I think it's probably the hardest part because you plan these great lessons and it's hard and difficult and stressful enough to plan lessons and then to think like "oh, I have to completely change the lesson for each individual child"…. like "oh, wait I need to do, I should only be asking you to count to 5 and I should be asking you to count to 20." It kind of all hit me last year. So it was from a lot of observing the kids and seeing when I would ask this 3 year old with a July birthday to count to 20 and he wouldn't give me anything, instead of looking at that and thinking like "oh, geez, he can't count to 20", I started having that realization of, "right, but how can I get him to count to 20", instead of just expecting him to because everybody else can.

This teacher described how reviewing her notes about students prepared her for the next day's lesson as she thought about the different ways she would have students respond in the activity. For example, for a transition activity from circle time to playtime, she planned to assess students' rhyming skills. As a result of her knowledge of students, she planned with particular students in mind to have ready various scaffolding prompts including asking for a rhyming word, giving a hint, giving a word to repeat and then clapping the rhyming word with a student, or offering two choices.

Finally, using scaffolding procedures provided greater insight into students when it was situated within an activity that was either child-directed (e.g., during play experiences) or was individualized according to the student and open to exploring a variety of skills. During child-

directed activities, the teachers described spending time observing and building on students'

language, social skills, and problem solving skills. Then, during adult-directed activities it was

apparent that teachers had a typical approach to engaging with the student based on individual

interests and responses, which guided the teacher toward a variety of learning directions. For

example, one teacher explained during whole group instruction she typically spent time during

the morning message playing with sounds, letters, and numbers but did not know what sounds

she would focus on until students provided an answer for her to build upon. Teachers that saw

the greatest benefits in scaffolding and reported appreciating the shifted understanding of

students' learning potential focused prompting efforts on seeking deeper learning rather than

probing for students to provide the perceived correct answers. When one classroom sought

correct answers for a culminating activity, they experienced frustration with the assessment

experience and reported struggling with predicting possible misconceptions and student

challenges with the task itself. In this example, the culminating performance task for a study of

the life cycle of a butterfly was for students in small groups, with the assistance of the teacher, to

use different pasta shapes to order and explain the four stages in the cycle from egg to butterfly.

General Education Teacher (GE): Getting them to use it, you know. Like that symbol, I

didn't anticipate having to really.

Special Education Teacher (SE): Some were, 'it's a noodle'

GE: Exactly. They're like, "mm I love pasta".

SE: And that's like with [student], he kept, he couldn't get that symbolic of it so then I

brought the ones that we used during circle over and the book. He would go around and

do it after repeatedly on the book, using the visuals there and then he would just lose it.

Then he could not call a caterpillar a caterpillar, he couldn't recall… I pulled out

everything. I mean, it was you know start here and went really quite low. Went to the visuals, to the pictures in the book, and then to build the other hands we just used, it wasn't much more that.

Researcher (R): And still he couldn't do it. What do you think is going on with that?

SE: Distractibility, attention.

R: Oh okay. Yeah and what about the kids like you have some stuff that you wrote down like what were you writing down?

GE: Well I went through it with you know [student] and you know like what do you think we could use this for and once we like went over the work again, butterfly egg and chrysalis and caterpillar, she put them in order. 'Butterflies lay an egg then become a chrysalis, and caterpillar comes out.' So she started with the butterfly, she didn't start with an egg but she still got it.

SE: I didn't care I just gave them to them and if they started with one, it's just as long as they got the order I didn't care.

GE: To explain them a little. [student] did 'egg, chrysalis' and I cued her to, then she had the caterpillar out there and I said, 'wait, wait wait, what comes out of the egg?". And she said, "a big caterpillar". And I said, "okay then let's move that one over there". So I put, you know I put them in order. I put the egg, she put the egg, then I said," let's put that one next". And so she did it and then she said, 'then a chrysalis but she didn't put the chrysalis next to the caterpillar and then I said, "let's move that next to there so that it goes in a circle'. And then she explained it, 'egg, big caterpillar, chrysalis, butterfly". But she needed help to just get them, like in an order.

R: And what kind of information, like what are you thinking about with that information

about the kids?

GE: Well it's either that you know that they weren't, that they aren't getting the process of

it. Some of them just didn't get the words of it, they were confusing caterpillar and

chrysalis… And for some of them it was using the, those materials I think just as a

symbol, they didn't really get it. And [student] kept calling it what the pasta was, "a

bean." You know, she's 3.

They described expecting all students to be able to do the task, making it difficult for them to

anticipate ways to differentiate the task for varying levels of ability and understanding. It also

seemed apparent that they were aware some students knew more than the task revealed. In

addition to the frustration with the task and probing for correct answers using prompting

procedures, the teachers revealed limited insight into student thinking and learning potential,

ultimately reporting on if students 'got it' or not. This task contrasted with their reported value

placed on deeper learning within interactions with peers. They appeared discontent with the

assessment task and results but also frustrated by the impact of the portfolio requirements to

provide individual products of student learning.

　　　Reviewing and interpreting classroom-wide and student-based formative assessment

information. Four teachers described engaging in this step in the formative assessment process

or at least referred to an interest in engaging in reflection if time was not a factor. One teacher

reported reviewing formative data at the end of each class session or day while the remaining

teachers typically reviewed information on a quarterly basis to inform summative measures or

prior to meetings (biweekly team meetings about students or IEP meetings). For five of the six

teachers, reflection occurred infrequently and often when filing notes or data in student's files,

continuing recorded notes on previous charts, or before meetings. Teachers expressed

understanding the value in reviewing notes but shared they did not have time to engage in this

step after spending an exorbitant amount of time planning and collecting data. One teacher was

able to find the time to review her recorded notes at the end of each instructional day by

transferring her notes about students' performances during circle time to their IEP goal sheets.

She found the process productive as her attention was drawn to novel behaviors she

subconsciously noted during instruction, allowing her to see students' progress and/or challenges

over time.

> At the very end of circle time I will jot down things because I find if I don't do that I may
>
> miss something really big or sometimes even during circle time, if I'm like "oh my god,
>
> this is great, this is the first time they've done this in a long time" then I'll just jot it down
>
> quick. That and then also, my regular data sheets, I will fill that out. I would say 95% of
>
> the time I do it right at the end of the day, at like at the end of the session, like right
>
> before… I eat lunch or something, because it's fresh on my mind. Otherwise it's just like
>
> oh ya, I know I did that… versus like I know that they really accomplished this with only
>
> a verbal cue or less than six cues or whatever the goal is.

The benefit of recording data immediately and then reviewing it at the end of the day was

important for this teacher in that it allows for more specific and targeted information.

Additionally, the process of reflecting for this one teacher was beneficial in providing her

with the opportunity to validate the positive impact of her teaching. She explained that in the

moment of teaching, she could feel like a lesson was not successful and then would be negatively

affected by this initial reaction; however, upon reflecting on the lesson using notes recorded

during and immediately after circle time, she realized students as a whole were at least learning

foundational preschool skills of patience and empathy as she attended to the challenges of one

student.

> I feel like we didn't have a good one. I feel like, ugh, like I was not as successful as a
>
> teacher... You carry that throughout your lessons… the beauty of it is you can get some
>
> goodness out of that as to thinking because I jotted some notes down afterwards, you
>
> know for the meeting today. I do think that the waiting, even though it's bugging the heck
>
> out of me that [two of the students] were waiting because our other little one was not
>
> having a good day, they still need to learn to wait. If that's what they can learn in
>
> preschool, especially in a [self-contained] program, that's something they that will take
>
> with them forever.

In essence, taking the time to reflect was a 'reality check' for this teacher leading to a more

positive view of herself and her students. Furthermore, it informed her understanding of the

students and the progress they made over the year.

One teacher shared that she ran out of time in the assessment process to transfer recorded

notes to her assessment system. She recorded targeted information about students on a sheet of

mailing labels with a schedule to observe a few students each day and then biweekly transferred

those labels to the child's section in her journal. While she recognized the process as an

opportunity to visually review students' progress over time, she explained that she often

completed the transferring mindlessly or asked a friend to do so for her. When having a friend

transfer the mailing labels, she realized the value of another person's perspective on the students'

noted behaviors and interactions. As her friend verbally commented about something

interesting, it drew her attention to new ways of seeing the students. She said that she realized

that by writing it down, she was subconsciously noting the student's behaviors or development

but that in discussing it aloud, it provided her with the time to process it again when maybe she

first wrote it down did not think much of it.

> I've had [my friend] do it for me sometimes and I'm just like, "find the kids name and
>
> put it in there" and then I can go back and look at it later if I need to, cause its an easy
>
> enough task, anybody could look at the name and just match it up. And [my friend's]
>
> funny, he'll read it and he'll say, 'did somebody really say that?' And I'm like, 'who said
>
> that?…you're right, he did say that' and that's always nice too sometimes when you have
>
> somebody else looking at things, because I can be so biased, not biased, biased is a bad
>
> word, but I mean I'm looking at it… and I didn't notice that the first time… but it took
>
> somebody else reading it out loud.

By having someone else see it, from their perspective and talk about it, it allowed this teacher to

reflect on the student and shift her perspective of the student. She described it as reinvigorating

for the teacher as it helped her appreciate the students rather than focus solely on recording data.

> *Using information from classroom-wide and student-based formative assessments to*
>
> *understand students, communicate and discuss student performance, differentiate instruction,*
>
> *and make instructional and assessment adjustments.* The teachers described using the

information gleaned from assessment data for a variety of purposes including shifting their

perspective on the student, communicating and discussing student performances with colleagues

and families, using peers as models, differentiating instruction, and adjusting subsequent lessons.

All of the teachers described using the information from the assessments to communicate results

to families and colleagues. Overall, the benefit of using the information collected on students

was to allow for improved discussions with colleagues and families on individual student's

progress, strengths, and needs. Additionally, when discussing individual students with

colleagues from varying disciplines, such as the occupational therapist or special education teacher, they often shifted their perspective on students and gained a more rounded understanding about why students behave in particular ways.

Three of the four classrooms described to varying degrees using the information from assessment data to inform how they differentiated instruction for students. They did so by using peers as models, preparing for various ways to differentiate learning and assessment tasks, and adjusting subsequent lessons based on the level of student understanding each day. This often occurred internally as they often considered these adjustments without purposely reviewing their assessment information. It seemed the teachers were impacted most by the mini formative assessments conducted via scaffolding with individual students as they reported considering these students when planning instruction and communicating progress verbally to others or through a summative measure.

In sum, the preschool teachers across special education settings cycle engaged in classroom-level formative assessment processes in the course of a day and throughout a unit of instruction. Within this cycle multiple mini-cycles occurred at the classroom-level and individual-level, to then lead to ways to adjust subsequent instruction and discuss student progress. One mini-cycle was at the classroom-level when within instructional moments such as reading a story aloud or singing songs with the whole class, teachers engaged in planned back and forth exchanges with students, allowing them to determine whole class levels of understanding and thinking. A second mini-cycle was at the student level when teachers chose to work individually with particular students to scaffold and mediate learning in service of determining learning potential. Both mini-cycles fed into classroom-level reflection and

hypothesizing about learning to then inform future lesson planning, differentiation approaches, and conversations with colleagues and families.

Question 2: What challenges and/or barriers do preschool teachers in special education settings face when enacting formative assessment processes? The second question was examined in tandem with research question one as the teachers often described their assessment processes while simultaneously divulging the challenges, barriers, and frustrations. Across teachers, there were common experiences that were noted in broad terms, however, uniquely experienced by individual teachers. The following section will present those broad themes and describe it through the perspective of the teachers as it manifested in their classroom. Three main themes were identified: (a) formative assessment processes were disrupted by teachers' poor assessment literacy, (b) teachers' instructional and assessment approaches were constrained by summative assessment mandates, causing incongruence between their values and practices, and (c) summative assessments restricted communication and collaboration with parents regarding child development.

Formative assessment processes were disrupted by teachers' poor assessment literacy. The overarching issue for five of the six teachers in this study toward enacting effective formative assessment processes was creating a seamless assessment system that was organized, efficient, and complete. Essentially, five of the six teachers struggled to conceptualize the assessment decision-making process broadly and then see how the individual pieces (e.g., steps within the data-based decision-making process) fit into that system. At the initial planning stage, five of the six teachers struggled to consider the purpose of individual formative assessment tools for informing different levels of interpretations and subsequent uses for the information. They continuously revised and adjusted their personal data collection tools without considering a

greater purpose for the tool. As a result, they created different ways to record data but it remained a static piece of evidence that was not dynamically used to influence personalized ways to support or challenge students. This difficulty manifested in different ways across teachers. Two teachers simplified their instructional and assessment learning tasks to meet the district and school requirements for reporting data. The other three teachers planned and collected so much data that they were left with no time to review the information or develop insights that could be helpful in changing how they supported students. The sixth teacher (a special education teacher), while also continuously revising her assessment system, was aware of the link between creating efficient and individualized ways to display recorded student data and demonstrated ease with reviewing and using the information; therefore, she was able to overcome the challenges she faced.

Three teachers described an ability to create effective checklists and ways to record student thinking and performance, however, struggled with the abundance of data at the stage of reviewing it. They wondered, "is it the right information?" The underlying difficulty was at the planning stage with regard to looking ahead to how the data would be used. Looking ahead to end goals could lead to greater efficiency in reviewing and interpreting the information. One teacher described having checklists with information recorded about students, but wondered where to go from there.

> When I go to do the assessments, then I'm, "I know it's here somewhere". And it is okay
> sometimes to check by the date, like "I know I did it at the beginning of May", but… "I
> am pretty sure it was St. Patrick's Day". Then I'm going back, but it's kind of tricky. I
> think if I had all literacy together then it might be easier for me to do those check points.

The teachers reported not having enough time to analyze and use the data. The teachers

expressed a desire to review the information more often, regardless of their difficulty with organizing and planning ahead how to record data efficiently. Five of the six teachers reported typically reviewing their data when presented with a student with challenging behaviors or learning needs, or prior to meetings and report cards.

The other two teachers were so overwhelmed by district mandates, as discussed in the next section, that they used assessments without considering the intended purpose and goal for using the collected information. On one occasion, the team proudly described using an open-ended assessment tool within a hands-on exploration of caterpillars, however, struggled to explain the purpose for using the assessment. In this instance and when recording information on literacy and math skills for student portfolios and the criterion-referenced measure, data was seen as isolated, lacking in usefulness for them as teachers.

Time was a repeated theme, often referenced in negative terms. The teachers described not enough time allocated to complete the assessment process, namely planning how to collect data during lesson planning, collecting the data during increasingly limited periods of free choice time, reflecting on the information, and finding ways to integrate the information into lesson plans. Five of the six teachers described a lack of available time to collect data, organize it and share it. Subsequently, data lost its meaning when time did not allow for reflection and strategic use of new insights. For example, the teachers believed the required student portfolios should be individualized so that they reveal student progress but with the requirements to include certain types of artifacts for each unit (e.g., math skill, literacy skill); the artifacts shifted to represent whole class learning because there was not enough time to capture individual student's skills.

Teachers' instructional and assessment approaches were constrained by summative assessment mandates, causing incongruence between their values and practices. Across

preschool settings, the teachers discussed the changing landscape of education as state and

federal education systems were increasingly concerned about improving student success by

focusing on systems of accountability including rigorous standards, high stakes testing, and

teacher evaluation systems. Mostly, the teachers felt constrained by requirements from various

stakeholders including the district, school, and families to collect quantifiable data. They argued

this data did not reflect the totality of students' abilities or reflect them as individuals learning

how to be social, learn, and be independent. As previously reported, the teachers all valued

developmentally appropriate practices including play-based learning and child-directed

activities. Nonetheless, multiple levels of assessment mandates challenged these values. The

teachers in this study had recently visited nearby kindergarten classrooms to proactively

brainstorm how to effectively prepare children in preschool for the transition to kindergarten.

They reported the kindergarten teachers' were concerned about the absence of play and the

academic rigor found so early in children's academic career. The kindergarten teachers

encouraged them to support preschool children in play-based learning and development of

foundational social and emotional skills that could set the stage for life-long learning including

self-regulation, cooperation, communication, problem solving, attending, exploration, and

excitement for learning. The teachers reported feeling torn as the kindergarten teachers

emphasized socializing preschoolers to the school atmosphere while many parents were anxious

about academic preparedness for competitive kindergarten enrollment and performance. They

also reported pressure from the district on their principal to provide evidence of the effectiveness

of their early childhood center in a time of reduced funding and school closures.

All of these external pressures from the district, the school, and the families led to the

teachers feeling a great deal of pressure and frustration. They reported struggling to meet the

assessment demands coming from all three stakeholders, which included (1) reporting to the district on student scores and data for criterion-referenced measures, multiple norm-referenced measures, and progress toward IEP goals; (2) creating individual student portfolios required by their principal that included artifacts of student learning in math, literacy, and a performance task for each unit of study; and (3) generating parent reports for families for report cards. Some teachers recognized the benefit of the criterion-referenced measure as an ongoing assessment system that forced them to keep track of students' progress along a continuum of skills. However, all teachers in the inclusion setting were overwhelmed by requirements to upload their data to the computer as well as check a high number of benchmarks for each child. In contrast, the teacher in the self-contained setting was required to report on student progress toward IEP goals but had the freedom to write narratives about each student's progress for report cards, appreciating the ability to generate assessment reports that were in line with how she viewed her students as individuals with unique interests, strengths, learning styles, and needs. She agreed, however, that she often received comments from families about their desire to see progress on academic-related skills.

The assessment mandates and focus on academic rigor seemed to lead to an increasingly competitive school environment. The teachers felt pressed for time and as a result spent more time alone inputting data into the computer, compiling data, and collecting data during class time. Repeated themes were 'pressure', 'time', 'prove it', and 'too much'. One teacher explained that with the increased focus on discussing data, they missed the opportunity to engage with colleagues in the planning stages prior to a unit of instruction. This shift in timing of the meetings with colleagues decreased the collaborative nature of the interactions as teachers tended to focus less on generating ideas and more on showcasing their work with students.

When I started… we would collaborate a lot. And as a newer teacher you would be

doing your stuff and kind of fumbling through and teachers who had been here longer

would say, 'you know I see what you're doing there but it would really be better if you

kind of did it like that." And just that little tweak and then all of a sudden it's child

centered, and it's REAL child work. And if you make the suggestion like as a school

now, especially I think since the portfolios, it's become a very competitive thing. We

used to put a lot more brainpower into the planning and good quality activities that you

just pulled all of this assessment out of like 'oh look how they did that', 'look what they

did with this', 'look all the language we got out of that activity'. And now it's more

discrete, it's more how many, you know 'did they count to 10', 'how many letters did

they know'… So I don't value you know quizzing them constantly on how many letters

they know, or quizzing them constantly on you know how high they can count… I don't

value it. I feel like our job is to give them quality experiences, that are meaningful and

that make them feel like they can do stuff. And so it's a very hard.

Furthermore, by discussing end results, the teachers felt frustrated by the focus drawn to

summative products rather than formative processes. This was a repeated concern as the

teachers valued the learning process and developing students' habits of thinking over the

production of work and evidence of learning.

All of the teachers, particularly those in the inclusion setting, spoke at length about

valuing qualitative information about student learning and the difficulty with "capturing" that

learning. Many teachers described the importance of cooperative learning for preschool students

as students showed what they had learned by doing, moving, engaging, and working with peers.

They perceived the challenge in assessing students was in showing how individual students

learned, as required by state and school summative measures, which was difficult in cooperative

learning activities. Furthermore, the teachers were frustrated by the burden placed on the teacher

to produce work for preschool children when they were too young to independently demonstrate

summative learning products. Ultimately, the assessment requirements for evidence of student

learning (and teacher effectiveness) were narrowing their instruction. The underlying dilemma

for the teachers was determining the optimal method for capturing student learning while still

meeting the district and school assessment requirements for summative quantifiable data.

Additionally, the teachers reported difficulty with securing a strong assessment process

with constant changes in requirements from the district and school, even within a given school

year. Most teachers were frustrated by the changes as they felt by the time they created a good

assessment approach, requirements shifted and they were forced to start over. Or some teachers

reported adding those requirements into their current system, which led to feeling overwhelmed

by the high volume of data serving a wide variety of purposes. Therefore, with requirements

always changing, the teachers felt they were constantly investing in revising their assessment

system instead of developing expertise in the assessment process. They emphasized the

individualized nature of assessment systems and their concern about not having the time or

consistency to really adjust it to work for them individually, leading to superficial assessment

systems that ultimately did not inform their practice.

Two teachers had the greatest difficulty planning meaningful moments to collect

information and develop effective data collection tools. Their frustration with district and school

assessment mandates overwhelmed them to the point of planning meaningless instructional and

assessment activities that allowed them to collect quantifiable data on skills reflected in the

criterion-referenced measure and portfolios. In an effort to meet requirements for reporting data,

their instruction was increasingly adult-directed with student participation focused on providing perceived correct answers. They reported time as an issue. Without enough time available, they did not review information collected about student learning and minimally used mental notes about students to adjust lessons to support learning. They did, however, report engaging in continuous informal discussions with their co-teacher about individual students.

While these two teachers valued child-centered learning experiences, they tended to engage students mostly in adult-directed learning activities. They were visibly frustrated by the challenge of collecting summative data they described as not valuable for preschoolers. Data collection tools they used included checklists listing students' names with some notes about performance on isolated tasks and students' progress toward IEP goals. One teacher was particularly proud of using observational drawings (Helm & Katz, 2011) to assess student learning during a science unit; however, struggled to verbalize the connection to the formative assessment process and summative reporting requirements. Both the teachers' classroom-wide formative assessment processes were affected as well as their individual student-based formative cycles. The teachers described struggling to foresee students' misunderstandings and the effectiveness of the planned assessment task. When working one-on-one with students during assessment tasks, they followed typical scaffolding procedures using a variety of visual, verbal, and physical prompts; however, their focus on pursing a perceived correct answer from the students led to frustration about their limited insight into students' developed understandings across the unit. To the disappointment of the teachers, the narrowed focus on skills targeted on the mandated assessments also narrowed their instruction and subsequent ability to scaffold student learning.

Summative assessments restricted communication and collaboration with families

regarding student learning. All of the teachers discussed some level of difficulty working with

families and involving them in the assessment process. Two of the six teachers described having

difficulty including the families. Three teachers described working with families in as much as

time allowed such as when families dropped off and picked up their children, during events,

during meetings, and during parent conferences. Finally, one teacher described similar

interactions but created a sense of community in the classroom. She was observed speaking with

families at length during drop-off, bringing in students' personal experiences, and valuing the

connectedness with families and students. For example, she was observed watching a video with

a happy father of his daughter practicing her science experiment at home in preparation for

sharing with the class. The father had tears in his eyes; she shared later that he was proud of his

daughter's progress and excitement for learning. It was particularly powerful given the father

did not speak English and his daughter did not speak in class until recently, within the last month

of school. This teacher's experience with the families, however, was the exception. It was more

common for the teachers to describe interacting with families infrequently, with a desire to

involve families more naturally in understanding the student as a whole. They also described

feeling disconnected with some of the families of their students due to contrasting values placed

on play and learning approaches in preschool.

Ultimately, the teachers were concerned with what message was being sent to families

via the report cards and portfolios about what was important in preschool. In other words, they

perceived that some families valued rote skills such as counting and letter identification but also,

many of the teachers expressed concern that by reporting on skill development in the criterion-

referenced measure and the portfolios, their school was actually reinforcing it. To varying

degrees, all of the teachers believed the wrong messages were being sent home to parents about

early childhood and what children can do developmentally. One teacher explained that the

summative results shared with families, particularly in the portfolios, reflected more how the

teacher was able to make the children seem higher than what they really were capable rather than

"highlighting the learning." She explained the underlying issue as a misunderstanding of child

development: "all they can really relate it to is kindergarten. So I think the wrong messages can

be sent home about what kids can really do." At the time, all of the teachers described reporting

on skills that were of interest to families and easily understood, typically described as the "ABCs

and 123s." This was a source of frustration for teachers as they did not necessarily agree with

reporting those skills but understood that families were interested in that information. Teachers

made the effort to adjust assessments and information shared about students to reflect parents'

concerns; for example, one teacher added cutting along a line as an artifact in the portfolios after

requested by a family.

Specifically, the teachers in the inclusion setting were concerned about the parent report

generated by the summative criterion-referenced measure. For example, the criterion-referenced

measure program generated a parent report that visually showed families where their child fell

along a continuum of color coded age-level bands for 38 benchmarks across 10 developmental

domains. For each benchmark, the parent was able to visually see if his or her child was

performing as expected such as "manages feelings" according to age expectations but was

unaware of what skills represented that stage in the benchmark and the next step in development.

The teachers were concerned about the emptiness of the report, especially as they spent a great

deal of time "clicking" each student's progress for each benchmark.

The [criterion-referenced measure] is 3 times a year, so it's beginning, middle and at the

end and this is the one that's very time consuming, it's really good, it's a beautiful

rainbow, its birth through whatever and you can really see child development… but the

process is just, click, click, click, like there's a gazillion clicks… I push 38 objectives and

I push all these things… and then you have to print it out for parents and parents just

don't understand it. Parents truly want to know, 'is my kid okay' and it prints out on a

color band, so if your child is three they should be on the 3 color band, so if they're one

little click below then its one of those manic moments and they're having another

meeting with me because, 'why aren't they making friends'… I almost feel like it's a

better thing for teachers to use, not sure if it is the best thing for parents to see.

They believed the parent report misrepresented student abilities and without explaining the

location of the child's ability along the continuum, it could only be used to as a check on

development, not as a tool to continue challenging the child to the next stage. For this reason,

the teachers believed an ideal parent report would include a narrative about the child, describing

him or her holistically rather than reducing the child to individual skills marked as average or

not. They also saw narrative as a better use of their time and an opportunity to reflect on

students' learning that was more difficult when reporting using the criterion-referenced measure

due to the overwhelming amount of time spent inputting data and clicking benchmarks

     When asked what story the teachers wanted to tell with their assessment data, they all

described an individualized approach to describing the student as a whole. They valued narrative

descriptions that offered an understanding of the child as a whole with regard to social

development, independence, learning approach, interests, and academic skills. Ultimately, the

teachers hoped for more openness about what was important in early childhood and believed it

necessary to re-educate parents, staff, and administration about what was important in preschool

through the work that was sent home and the communication that was established.

V. DISCUSSION

A personalized educational approach is important now more than ever. The population of students in the United States continues to become more diverse with regard to race, class, culture, linguistic competence, and ability (Snyder & Dillow, 2015). Students with disabilities are also included at greater rates with their same-age peers without disabilities as a result of the Individuals with Disabilities Education Act [IDEA, 2004]. In the last two decades, preschool attendance has risen considerably in part as a result of higher numbers of students with disabilities served in preschool settings (Barnett et al., 2013) and the increased awareness of the impact of early intervention on the positive trajectory on students with and without disabilities (Camilli et al., 2010; Odom et al., 2004; Rafferty, Piscitelli, & Boettcher, 2003)

Personalized education programs can be provided when teachers collect the type of formative assessment data that provides them with ongoing information about how individual students are learning, the barriers they face, and what works to support learning (Riley-Ayers, 2014; Wiliam, 2011a). This study builds on the findings from a review of literature that found limited research on early childhood teachers' ongoing assessment to support individualized learning environments (Akers et al., 2014). According to this review, previous research suggested teachers experienced a breakdown in the assessment decision-making process with uncertainty about where the breakdown occurred. The literature review also noted limited research on teachers' use of a wider variety of tools (Goertz et al., 2009) with most studies examining the impact of a single criterion-referenced tool on teaching (Meisels, Xue, & Shamblott, 2008). Across the literature, teachers recognized the importance of using data to

inform instruction and some valued the input of the families but faced many barriers to

successful implementation.

To review, the research questions addressed in this study were: (1) How are formative

assessment processes enacted by preschool teachers in special education settings? and (2) What

challenges and/or barriers do preschool teachers in special education settings face when enacting

formative assessment processes?   This study made progress toward addressing these gaps in

understanding preschool teachers' assessment processes; experiences across preschool teachers

in this study were consistent with previous findings. Indeed, preschool teachers are aware of the

importance of using assessment data to make instructional adjustments, experienced a

breakdown in the daily formative assessment process, struggled to integrate families in the

assessment process, and faced multiple challenges throughout. This study also added to the

formative assessment literature linking decision-making processes to scaffolding procedures by

clarifying the relationship between scaffolding, formative assessment processes, and

differentiation (Shepard, 2005), reflected in a revised Preschool Formative Assessment Processes

cycle.

The Impact of Instructional Approach on Assessment Practices

A discussion of assessment cannot be complete without considering the teacher's

instructional approach. Teachers' decisions are multiply influenced by their knowledge

(Shulman, 1987), beliefs about learning and play (Anderson, 2002; Logue & Harvey, 2009),

reasoning expertise (Carpenter et al., 1996; Parsons, 2012), and self-efficacy (Guo, Piasta,

Justice, & Kaderavek, 2010).   Decisions about assessment are guided by the ways teachers

believe students construct knowledge and how they subsequently instruct according to those

beliefs (Birenbaum et al., 2011; James & McCormick, 2009; McMullen et al., 2006). By

examining preschool teachers' samples of students' work and observing them in practice,

McMullen et al. (2006) discovered teachers that took a more "traditional" instructional approach,

typically engaged students in adult-directed and didactic instructional methods. Likewise, they

used quantifiable measures of learning similar to worksheets and checklists as the teacher sought

demonstration of taught skills. In contrast, teachers taking a more "Developmentally

Appropriate Practice" approach provided more opportunities for choice-making, problem

solving, and collaborative learning. "DAP" teachers tended to use descriptive measures of

student learning to capture learning processes, dispositions, and profiles including pictures and

anecdotal records. Additionally, research has found that open-ended tasks often allow teachers to

more readily adapt instruction to individual students' needs (Parsons, 2012).

All of the teachers in this study valued individualized learning approaches that reflected

'developmentally appropriate practices' (DAP) that were child-centered and play-based.

However, not all of the teachers' observed practices reflected these beliefs. Two of the six

teachers described strong values in DAP, often defining it and emphasizing the importance of

play-based learning; however, observations of their practices reflected more of a "Traditional"

teaching approach that was adult-directed and focused on academic skill attainment. This

incongruence between values and practices led to high levels of stress and frustration in these

teachers. McMullen (1999) explored this relationship between teachers' beliefs and practices,

discovering DAP beliefs were highly predictive of DAP practices and the teachers that were

resilient to the district and school pressures had a stronger internal locus of control. In that

study, the teachers with an external locus of control, that believed they did not have control over

their own decisions, used more didactic teaching practices.

James and McCormick (2009) also found teachers' beliefs about learning and their confidence in their ability to improve student autonomy as critical influences on the level of implementation of formative assessment processes. They found teachers with more effective formative assessments (i.e., used the information gathered to change instruction and move students toward greater independence), engaged in a decision-making process as opposed to implementing a set of techniques. This was true in this study as well, as the teachers with a mastery-orientation towards learning skills struggled to engage in formative assessment processes (and displayed the greatest frustration) while those with a performance-orientation towards learning enacted more complete formative assessment cycles (and displayed the greatest satisfaction). This misalignment between practices and beliefs was an underlying challenge for all but one of the teachers, causing varying levels of frustration.

The Importance of a Collaborative Team Approach in Ongoing Formative Assessment

All of the participating teachers in this study described the importance of colleagues in the process of collecting and discussing information about student learning and performance. The co-teaching model was described as invaluable from both the perspective of the general education teachers and special education teachers. Co-teaching has been defined by Friend, Cook, Hurley-Chamberlain, and Shamberger (2010) as

> the partnering of a general education teacher and a special education teacher or another specialist for the purpose of jointly delivering instruction to a diverse group of students, including those with disabilities or other special needs, in a general education setting and in a way that flexibly and deliberately meets their learning needs (p. 11).

In contrast to previous research on the roles of special education teachers in co-teaching teams (Friend et al., 2010; Scruggs, Mastropieri, & McDuffie, 2007), the special education teachers in

this early childhood center (two of the three in inclusion classrooms and the one in the self-contained classroom) played strong roles in both leading instruction and assessing, best described as a 'One teach, one observe' model (Friend et al., 2010). Only one of the three general education teachers participating in this study described her special education co-teacher as playing a supportive role in collecting data ('One teach, one observe') and in supporting individual students ('One teach, one assist' model); however, the special education teacher in this team did not participate in this study so a full understanding of her role was not possible. All these teachers appreciated the time that was made available to observe students when a co-teacher (or in the self-contained classroom, the paraeducator) led group activities. These teachers described the importance of recording information about students first-hand as it allowed them the opportunity to simultaneously record targeted information about students, hypothesize about those observations, and immediately consider adjustments to instruction to support individual students. Additionally, all teachers in this study described the value of their colleague (whether a general education teacher or special education teacher), in scaffolding students' learning as they led instruction (a 'One teach, one assist' model), noting that their colleague was able to judge how to appropriately differentiate for students in the moment of instruction that was difficult to do while leading the whole class.

This study's results were consistent with the findings from a metasynthesis of co-teaching models in inclusive settings (Scruggs et al., 2007) that teachers held positive views on co-teaching. However, the studies reviewed revealed an unequal balance between special and general education teachers as general education teachers focused on leading whole class instruction while special education teachers focused on individualizing instruction with students requiring additional support. Friend (2008) describes the value of the co-teaching model in that

"the exact contribution that each person makes may vary, but together the educators create a learning situation that cannot be produced by a solo teacher" (p. 9). All but one of the teachers (a general education teacher) in this study described the teachers as sharing roles equally. Scruggs et al. (2007) suggested collaborative relationships would be improved if the teachers were "on an equal footing" (p. 412); for these preschool teachers, this was largely the case and may have contributed to the productive relationship that allowed for equal roles in whole and small group instruction, scaffolding learning, and assessment. In the case of one team with the special education teacher playing a supporting role, the general education teacher valued the special education teacher for her expertise in assessment and intervention. Therefore, this collaboration seemed to work for this team as Friend (1999) explained, "the amount and nature of particular teachers' contributions may vary greatly, but teachers need to recognize that what they offer is integral to the collaborative effort" (p. 72).

The role of the paraeducators. To varying degrees, the teachers employed the support of the paraeducators as data collectors and as instructional leads. Two special education teachers taught paraeducators to record daily data on students' with disabilities' response rates during group activities and level of support provided (e.g., verbal, physical, or visual prompt). One special education teacher, from a self-contained classroom, described the flexibility she had in asking her paraeducator to lead a group activity while she worked one-on-one with a student to test out various approaches to support the student's engagement in the activity. She described the importance of having the opportunity to work intensely with a student as critical for laying the groundwork for the paraeducator to then work with the student. In a supportive role, one general education teacher described providing the paraeducators with blank index cards to write interesting observations about students during small group work and recognized the value of

discussing students verbally with the whole staff (teachers, paraeducators, special service

personnel, principal). Similarly, four of the six teachers valued the ability to informally engage

in discussions about students with all members of the staff as they jointly celebrated students'

accomplishments and hypothesized about barriers to students' success. In related research,

paraeducators are assuming more instructional responsibility in the education of students, as

students with disabilities are included at higher rates in the general education classroom

(Ashbaker, Young, & Morgan, 2001; Giangreco, Broer, & Edelman, 2002) and require intensive

one-on-one instruction (Watkins, 2015).

Two of the teachers in this study believed the paraeducators with whom they worked

were not supportive of their practices and the teachers recognized this as a hindrance to the

community established in the classroom and their ability to provide instruction and assessment

practices in line with their values. Specifically, the teachers believed the paraeducators required

more training on developmentally appropriate practices for preschool students and methods of

scaffolding and supporting learning during play-based learning activities. They recognized the

paraeducators' interest in being a part of the community of the classroom but that their attempts

to have equal ownership or sense of control led to more didactic instructional experiences. This

finding was consistent with the results of a study by Han and Neuharth-Pritchett (2010) that

found preschool lead teachers and preschool teaching assistants reported statistically significant

different beliefs about developmentally appropriate practices. Teaching assistants were more

likely to agree with statements representing developmentally inappropriate practices; for

example, using worksheets to teach basic skills or expecting children to sit and work quietly.

The implications are important to consider as teaching assistants are taking on more instructional

roles and have been found to have an equal impact on student learning when given adequate

training and explicit directions on how to intervene and guide learning (Han & Neuharth-

Pritchett, 2010).

Revised Formative Assessment Process in Early Childhood Special Education Settings

Central to this study was an effort to explore application of the *Assessment Cycle*

(Dichtelmiller, 2011) in actual practice. Additionally, by examining the assessment processes of

preschool teachers, the goal of this research was to bring to light the relationship between the

Assessment Cycle with related fields of research, namely decision-making processing and

questioning cycles. Deeply exploring teachers' step-by-step assessment processes in this study

provided the evidence needed to adjust the *Assessment Cycle* and shed light on how teachers

realistically engage in multiple and alternative cycles of inquiry about student learning at the

classroom-wide and individual student level. It could help teachers understand the connection

between their tacit ability to scaffold students as unplanned formative assessment mini cycles

and planned formative assessments for the whole-class. Additionally, it could help them see

assessment as a balanced approach that could lead to more time spent at the final stages of

interpretation and using information to personalize learning for all students. The revised

Formative Assessment Processes model developed from this research is a promising move

towards bridging research and practice.

Classroom-wide formative assessment process. This study adds to the research on the

difference between planned formative assessment and unplanned formative assessments (Bell &

Cowie, 2001). The revised formative assessment cycle developed in this study offered

clarification on the relationship between these processes as teachers engaged in assessment

processes at the classroom-level (planned assessments) and individual student-level (unplanned

assessment processes) to concurrently inform instruction and make adjustments whether or not

they were cognizant of these. Bell and Cowie (2001) described unplanned formative

assessments as responses to students' questions and answers during lessons as the teachers

constantly gain a sense of the whole class while gauging individual student's understanding.

Research on questioning cycles with students found similar interactions between the preschool

teachers and their students. These in-the-moment interactions with students during question and

response cycles (Bell & Cowie, 2001; Franke et al., 2007; Ruiz-Primo & Furtak, 2006, 2007)

were reflected in the inner circle of the class-based formative assessment cycle in the revised

model developed from this research. In this model, teachers attended to the whole class during a

lesson while focusing on some students as representatives of various levels of understanding and

performance.

This study agrees with the work of (Ruiz-Primo & Furtak, 2006, 2007) regarding

spontaneous interaction cycles between students and teachers. Ruiz-Primo and Furtak (2006)

examined the question and answer cycles teachers engaged in with middle school students during

science lessons and found that in classrooms based on socio-constructivist principals, students

were engaged in multiple cycles of question-response before the teacher used the information to

build upon those answers. These ESRU cycles (Elicit, Student Response, Recognize, and Use)

were used similarly by the preschool teachers in this study during whole class lessons: the

teacher asked a question to the whole group to elicit a response, multiple students responded

before the teacher then recognized mis/understandings and then used that information to engage

students again. Furthermore, similar to the middle school teachers in those studies, observations

and interviews revealed that the four preschool teachers in this study that asked more open-ended

questions (e.g., *tell me more, why*), gathered a greater diversity of responses from students and

responded by challenging students further with deeper questions and prompting whereas the

other two teachers who sought a specific right answer asked closed questions and responded to

students with less challenging questions before accepting a final answer. Data provided evidence

that this type of questioning also impacted the interactions with individual students during the

student-based formative assessment processes.

Student-based formative assessment processes. Shepard (2005) described formative

assessment as intertwined with instructional scaffolding procedures during a dynamic assessment

process as the teacher simultaneously teaches and guides student learning. This was evident in

the teachers' descriptions in this study of their tacit knowledge. It was difficult for them to

describe their processes for guiding student learning in the moments of instruction, often not

referring to these moments as assessment or data because they found it difficult nor meaningful

to record the details of those interactions with students (Lopez-Reyna & Collado, unpublished

manuscript). The relationship between scaffolding and formative assessment has not been

clearly elaborated in research studies. This study adds to the initial theoretical speculations

proposed by Shepard (2005) linking scaffolding and formative assessment.

As is common in early childhood classrooms, the preschool teachers planned for content

to be covered during whole-group instruction followed by more in-depth coverage during small

group activities planned to occur during free-choice time. During these opportunities to work

more closely with individual students either during small groups or within child-directed play

scenarios, the preschool teachers reported engaging in back-and-forth exchanges with students

that served many purposes but were not always documented via written notes, pictures, or work

samples. However, the teachers valued these interactions as opportunities to determine an

individual student's learning potential given some targeted prompting from the teacher and to

provide explicit feedback to students on their performance. Shepard (2005) described these

interactions as scaffolding or "supports that teachers provide to the learner during problem

solving – in the form of reminders, hints, and encouragement – to ensure successful completion

of a task" (p. 66). The preschool teachers in this study described prompting students during an

individualized assessment task (e.g., drawing a picture to demonstrating learning at the end of a

unit of study). Two teachers were observed adjusting for individual student their questions,

behaviors they modeled, and feedback provided via encouragement about what the student was

able to do. As is the goal in dynamic assessments (Grigorenko & Sternberg, 1998; Lidz & Pena,

1996) and scaffolding procedures (Shepard, 2005), the goal for the two teachers was to discover

each child's learning potential by challenging the child at his or her individual level of ability

and interest. In these moments, two teachers articulated the use of a response-prompting

approach similar to a *least-to-most strategy* whereby they began scaffolding by providing the

least amount of support and increased the level of prompting until the student completed or

engaged in the task (Boat, Dinnebeil, & Bae, 2010). These mini-formative assessment cycles are

like "a mini-experiment in intervention, with the child's performance serving to confirm or

dispute the assessor's hypotheses about what might work to improve the child's functioning"

(Lidz & Pena, 1996, p. 368). On the other hand, three teachers were observed engaged in

scaffolding one-on-one with students, however, the approach was focused on garnering a specific

correct response (e.g., identify numerals, sequencing). As a result, the teachers exhibited

frustration with the task as they explained believing the students were capable of more.

The teachers in this study also engaged in multiple mini-cycles of interactions during

lessons in whole group and small groups before using that information to inform classroom-wide

formative assessment interpretations and actions upon those interpretations. This study with

preschool teachers led to clarification on the relationship between these seemingly separate

bodies of literature.

Breakdown in the Assessment Process

Previous research cites the breakdown in the assessment decision-making process at the

stage between collecting data and interpreting it (Akers et al., 2015; Akers et al., 2014; Coburn &

Turner, 2011; Hosp, 2012). This study found similar difficulties but revealed the breakdown

mainly at a macro system level. Upon first glance, difficulties with data seemed to be at either

the planning stage or the interpretation stage (or both), as two teachers struggled to plan how to

collect data while three teachers struggled to sift through the large amounts of data collected. In

similar research, Coburn and Turner (2011) realized teachers were overloaded by the amount of

data to sort through, ultimately limiting their ability to see patterns and use data effectively. To

further explore this breakdown, I examined how one teacher successfully enacted complete

formative assessment decision-making cycles. This analysis revealed the challenges of the

remaining teachers were in developing a level of forethought at a systems level. This successful

teacher considered assessment as a process that allowed her to visually see student performances

in the data, allowing her to efficiently see patterns and immediately plan adjustments to lessons

and accommodations for individual students. All teachers reported using mental notes to make

adjustments at the whole-class level but only this one teacher effectively considered individual

students along the way by adjusting assessment data tools for the individual student so that the

data visually displayed the student's increased level of independence. Indeed, it is difficult for

teachers to develop assessment systems that balance the requirements imposed by the district and

school to serve purposes of accountability and program improvement and informal daily

formative measures of student learning to inform instruction (Barnett et al., 2013; Schultz et al.,

2007). In this study, most teachers were overwhelmed by required data reporting and were

limited by their ability to realize the benefits of data to improve instruction and learning. The

underlying impediment to developing a balanced and seamless assessment system was a limited

understanding or consideration of the purpose for assessing. Consistent with similar research,

the preschool teachers' assessment literacy in this study was not strong (Mertler, 2003, 2004;

Mertler & Campbell, 2005; Volante, 2010; Volante & Fazio, 2007). This study provided some

insight into the negative impact of apparent poor assessment literacy on teachers' assessment,

instruction, and self-efficacy. The two teachers with the greatest difficulty explaining the

purpose for using various assessments, expressed the greatest frustration with mandates,

dissonance between their values and practices, and disappointment in their practices.

The Impact of Assessment Policies on Preschool Teachers' Instructional and Assessment

Practices

As previously noted, this study supported previous findings that the majority of teachers

successfully collect a wide variety of data but struggle to effectively enact complete formative

assessment cycles, namely interpret and use the data collected about student learning during

instruction (Akers et al., 2015; Akers et al., 2014; Goertz et al., 2009). The teachers in the study

were frustrated with the lack of time available to effectively review and interpret the data, often

collecting an exorbitant amount of data that was difficult to sift through. As a result, data

collected was often used to meet district mandates and school requirements for data reporting

rather than used formatively to inform instruction. Similar explorations of early childhood

teachers' day-to-day experiences shed light on the impact of increased restrictions on teachers

for purposes of program evaluation and accountability. Specifically, Ohi (2007, 2008, 2014)

found that early childhood teachers felt disempowered by requirements to adopt additional

professional roles without extra support or time. These additional roles were related to implementing literacy policies, partnering with families, and collaborating with colleagues (Ohi, 2007, 2008, 2014). This study corroborated those findings, as lack of time was a repeated concern across all teachers, specifically impacted by time spent meeting district and school assessment mandates, planning and participating in school events, attending school meetings, and addressing family concerns.

Additionally, all five teachers in inclusive settings reported feeling pressure to provide tremendous amounts of evidence about their decisions and student learning. To varying degrees, the data pressure negatively impacted their ability to teach in line with their beliefs about how students learn and the skills that are important to develop in preschool. Roberts-Holmes (2015) described this "'datafication' of the early years" (p. 313) as a shift in preschools as they prepare students for the increasing accountability demands in the elementary years. He found that preschool teachers were increasingly expected to prepare students for reading and math skills, causing them to reduce instruction to focus on expected data outcomes. The impact of policies on teachers in this study was congruent with Roberts-Holmes (2015); that monitoring from the top-down disempowered teachers and school leaders, narrowed instruction to discrete skills, and did not provide teachers with meaningful information to individualize instruction.

Previous research on decision-making processes identified a series of decisions teachers engage in as they use information collected about student learning to move students toward learning goals (Jacobs et al., 2010; Wiliam, 2007). Wiliam (2011) clarified, formative assessment is not a set of techniques or tools but a process of planning, collecting, interpreting, and using informal data. This study confirmed teachers were aware of and appreciated the positive impact of this process, particularly the importance of adjusting instruction based on

insights gained from observing, developing relationships, and collecting data on students.

However, to varying degrees, all preschool teachers struggled to completely engage in the

process; this seemed to be largely due to a misalignment between the required assessment and

what teachers believed to be appropriate and necessary.

Involving Families in the Formative Assessment Process

The Division for Early Childhood of the Council for Exceptional Children (Division for

Early Childood (DEC), 2014) identified families as important contributors to the assessment

process for students with disabilities. However, when speaking about families in relation to

assessment, four of the six preschool teachers in this study struggled to see positive ways to

involve families beyond communicating during IEP meetings and parent-teacher conferences.

The teachers described a certain level of pressure from many families to teach literacy and math

skills in preparation for more rigorous kindergarten experiences. Similar pressure has been

identified from district and school policies (Riley-Ayers, 2014) but has not been clearly

articulated with regard to families. In one known study of teachers' assessment practices,

Volante (2010) suggested one barrier to teachers integrating formative assessment was the

reported parental and student resistance to assessments that did not report numbers or scores as

indicators of learning.

This societal resistance to educational change can be addressed constructively. (Wager et

al., 2015)Wager and colleagues (2015) recommend shifting how families are viewed as

participants in the assessment process to consider their *funds of knowledge* (Moll, Amanti, Neff,

& Gonzalez, 1992); families can provide insight on their child's knowledge and skills

demonstrated at home as a connection to improved learning at school. Then if this information

gathered in collaboration with families is used to improve students' learning, they suggest it

could be considered a form of formative assessment. One strategy suggested for engaging

families is *learning stories* as a narrative dialogue between families, teachers, and students about

learning strengths and individual progress (Bourke et al., 2011; Carr, 2001; Wager et al., 2015).

In contrast to narrative descriptions of meeting performance criteria (as suggested by the

teachers), *learning stories* are a process of telling a collaborative story about the child at the

child's individual level of ability and interest. This approach should be explored as a viable

option in line with the preschool teachers' DAP values and scaffolding procedures. The

following definition clarifies *learning stories* as an individualized and collaborative assessment

approach.

> Narrative assessment moves away from a developmental perspective to a sociocultural
>
> perspective where the environment, peers, teachers and parents are integral to the
>
> assessment process, and where the assessment is premised on the belief that context
>
> makes a difference to student learning and assessment results, and that there is not a
>
> linear progression to child development. For learners with high and very high needs, this
>
> approach is critical, given that developmental stages are unpredictable, and often
>
> irrelevant to their learning needs. (Bourke et al., 2011, p. 408)

The preschool teachers in this study struggled to see beyond meeting the needs of the school,

district, and families, to consider a shift in how families could be viewed as collaborators and

experts providing valuable input in the education of their child. Instead, they described their

roles as teachers as mostly communicating assessment results. Utilizing a collaborative

assessment approach could help see families and children on equal ground.

Limitations

The limitations of this study are common for small case studies employed to explore a single phenomenon in depth. This study included six participants in one early childhood center across special education settings. Initially, teams of co-teachers were recruited to gain an understanding of how both teachers in the classroom engaged in the formative assessment process as previous studies recognized the potential power of co-teaching teams to reflect on student learning and quickly apply new perspectives on students into lesson planning (Choppin, 2011). However, during the recruitment process it was difficult to find a team with both members interested; therefore, single teachers were accepted into the study. As a result, two classrooms in the study included both co-teachers while two remaining classrooms included a single teacher from the classroom (one general education teacher from an inclusion classroom and one special education teacher from a self-contained classroom). The insight from a single teacher provided an interesting point of view; however, the comparisons made across classrooms is limited in scope given the co-teacher's perspective is missing from two classrooms in the study. To minimize this limitation, this study used in-depth qualitative methods and analyses in the process of developing a complete understanding of the phenomenon.

The length of time required to gain Institutional Review Board approval from both the university and school district for protection of research participants also impacted the study. Following approval to conduct research with human subjects in the district, the recruitment process took nearly a month to secure those who participated. As a result, data collection began at the end of the school year, with two months left in the year. At the beginning of the study, teachers were still engaged in meaningful instruction and assessment; however later observations and interviews may have been limited in its ability to capture typical practices as teachers

wrapped up for the end of the school year. Future research should be conducted during more typical periods of instruction such as in the mid-fall or early spring months. Additionally, this study would have benefitted from following teachers over the course of a single unit. By following teachers during a unit of instruction, teachers could provide more detailed descriptions of their thought processes as it is grounded in tangible lessons and students' interactions with that material and the researcher can see a clearer progression of instructional adaptations (Choppin, 2011).

During the iterative analysis process, it became apparent that the teachers consistently described a tacit knowledge about how to support individual students in the moment of instruction and assessment. However, it was not until after data collection was complete that this scaffolding process was linked to the formative assessment process and a revised version of the *Assessment Cycle* was derived. Additionally, while moments were observed in which the teachers engaged with students during student-directed play opportunities, these moments were limited. Therefore, further research should explore the application of the revised model, particularly the student-based formative assessment mini cycles, to teachers scaffolding students' skills within play scenarios.

Conclusions and Future Research

Exploring preschool teachers' thinking in relation to formative assessment processes revealed a close relationship for these teachers between scaffolding and formative assessment, providing initial insight into the links at classroom-level and individual student-level processes. While the insight provided by the teachers allowed for refinement of the *Assessment Cycle* (Dichtelmiller, 2011), further research will need to continue exploring the revised cycle with more preschool teachers across special education settings. Engaging in continued exploration of

the cycle can provide the evidence necessary to support or revise the results of this study and

continue to support teachers in the process. In the process of engaging teachers in member check

interviews, the teachers felt validated in their practices and appreciated the opportunity to engage

in interviews as they reported valuing the time to reflect and reconsider their practices. One

teacher reported her assessment system improved as a result of participation in this study.

This study sought to use a descriptive case study approach to bring to light the thinking

processes, values, and experiences of preschool teachers. The research design did not allow for

examination of causal relationships between teacher assessment practices and child outcomes.

Future research should explore the impact of ongoing assessment on student learning in the short

and long-term, especially within teachers' implementation of a system of a variety of

assessments serving different purposes (reflecting a teachers' assessment literacy), as opposed to

the impact of a single assessment tool on student outcomes (Akers et al., 2015).   Linking

assessment literacy with teachers' formative assessment processes could provide insight into

how to support teachers in systematically improving their practices while increasing

understanding of the purposes for assessing students.

In an effort to respond to the increasing diversity of students, especially in urban settings,

some researchers are beginning to reveal the link between formative assessment processes and

culturally responsive practices (Aceves & Orosco, 2014; Kea & Utley, 1998). By utilizing daily

assessment tools to inform the development of more personalized learning experiences for all

students, teachers can cultivate a whole understanding of each student's unique learning needs,

thus be culturally responsive (Helm, Beneke, & Steinheimer, 1997; McFarland, 2008). To be

culturally responsive, teachers constantly seek to understand from their students' perspective

what they understand and misunderstand so that they can see their strengths and then challenge

them through high expectations and effective feedback (Ladson-Billings, 1995). Further

research should explore this connection between formative assessment processes and culturally

responsive practices as it could provide insight for teachers on how to effectively teach an

increasingly diverse student population.

Finally, families were a repeated point of contention with teachers. They saw their role

as developmental expert communicating student progress to families. Future research should

explore how preschool teachers can shift their perspective on families and students as equal

collaborators in the assessment process, namely through the use of *learning stories* (Carr, 2001)

that are more in line with their beliefs about learning as a sociocultural experience and through

reciprocal exchanges that educate one another (Kummerer & Lopez-Reyna, 2009). This line of

research could reveal ways to empower families, students, and teachers and increase the

alignment between beliefs about developmentally appropriate learning and appropriate ways to

capture learning in early childhood settings.

Appendices

APPENDICES

Appendix A. Preschool Teacher Information Questionnaire
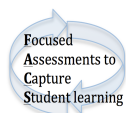
Focused Assessments to Capture Student learning **Preschool Teacher Information**	Case number: _____ Teacher code: _____ Pseudonym: _____ Date: _____

Before we begin our first meeting, please complete the following information.

Background				
Personal Information				
1. Gender identity:	2. Age:	3. Race:	4. Ethnicity:	5. Language(s) Spoken:

Classroom Information		
6. How many years have you been teaching?	7. How many years have you been teaching in your current position?	8. In what instructional model do you currently teach? ☐ Blended ☐ Cluster
9. What curriculum are you provided?	10. What is your curricular approach (in addition to the provided curriculum)?	
11. What standardized assessments are you required to administer to your students throughout the school year?		
12. If applicable, what other standardized assessments do you use?		

Professional Experience	
13. If applicable, what was your previous profession?	14. What is your highest degree attained?
15. Are you currently enrolled in college-level coursework or pursuing a degree? If yes, please explain.	16. What certification(s) do you have?

Appendix B. Field Site Visit #1 PROTOCOL (Classroom Interview)

Field Site Visit #1-*revised* Protocol (Observation and Classroom Interview)
*Schedule for the entire class session and 45 minutes following the session
**Prior to meeting, provide teachers with the Demographic Survey and ask to bring it completed to this meeting.

Opening statement: *Thank you for agreeing to be a part of this research study. This informal meeting will allow me to get to know you and your classroom. Please DO NOT say the last names of the students you work with or the name of your school or district. If you say this information, it will not be included in the transcript. If you feel uncomfortable answering any questions just let me know and we can move on to the next question.*

Let's start talking about your school.
1. Describe to me the message you receive from your principal about your school's goals and expectations for teaching students.
   a. **PD:** What kinds of professional development, supports, or meetings are offered to staff?
      i. **USEFUL:** Do you think this is useful for you?
      ii. **NEED:** what do you think you need?
2. Describe goals and expectations for assessing students.
   a. **PD:** What kinds of professional development, supports, or meetings are offered to staff?
      i. **USEFUL:** Do you think this is useful for you?
      ii. **NEED:** what do you think you need?
3. When you interact with your colleagues on the topic of assessment, describe the nature of those conversations.
   a. **TOPICS:** What do you discuss?

Let's focus on your classroom and start talking about your curriculum and instruction.
1. Based on your responses on the demographic survey, it seems like you use the _____ (curriculums/approaches from survey). Can you tell me more about your approach to deciding the content you teach and how you approach teaching that content?
   ☐ **TEAM APPROACH:** Describe to me how you balance your approach between you two.
   ☐ **TEAM EXPERTISE:** Do you draw on certain expertise from each of you?

2. Describe to me your classroom approach to teaching your students.
   ☐ Does this approach look different when you're considering and working with students with students with disabilities?
      i. Tell me about that….
      ii. **EXAMPLE:** Can you give me an example?
      iii. **HOW IT DEVELOPED:** How did you develop this approach?
   ☐ Does this approach look different when you're considering and working with students who are diverse such as from different ethnicities, cultures, or language experiences?

       i. Tell me about that….

      ii. **EXAMPLE:** Can you give me an example?

     iii. **HOW IT DEVELOPED:** How did you develop this approach?

Now let's focus on your classroom assessment practices.

3. It looks like you are required to use _____ (standardized assessments listed on survey). Describe to me what your assessment approach looks like at different moments like across the school year and on a daily basis.

    ☐ **FORMATIVE ASSESSMENT:** Describe your approach to observing your students and collecting information on their learning.

    ☐ **HOW IT DEVELOPED:** How did you develop this approach?

    ☐ **TEAM APPROACH:** How do you balance this approach as a co-teaching team?

    ☐ **TOOLS:** What specific data tools do you typically use?

Final Statement: *Thank you for sharing with me. Next time we meet, we will continue to explore your assessment practices, I will be meeting with [each of you individually… you].*

Appendix C. Field Site Visit #2/#3 PROTOCOL (Teacher Interview)

Field Site Visit #2/#3 PROTOCOL (Teacher Interview)
Schedule for 90-minutes before or after school.

Opening statement: *I'm going to ask you about your process for assessing so use the documents that you brought with you to this interview including your lesson plans and/or assessment documents. By referring to these documents, we can discuss more deeply. As a reminder, if you feel uncomfortable answering any questions just let me know and we can move on to the next question. And do not mention student last names or your school or district.*

I would like to start with getting to know you better.
1. Tell me about you and what led you to the teaching profession. Go back as far as you like.
   a. **PATH TO THIS SCHOOL:** Describe how you came to this school and what it has been like.

Now let's talk more about your classroom.
1. If someone were to walk into your room to observe, what would they see?
   a. **STUDENTS**: Describe what the students would be doing.
   b. **TEACHERS**: Describe what the teachers would be doing.
   c. **MISUNDERSTOOD**: Is there anything you might be doing or saying that someone that just came in might wonder why you were doing it or wonder about it?
   d. **BELIEFS ABOUT WHAT IS TAUGHT**: What do you believe students should be learning?
   e. **BELIEFS ABOUT HOW TO TEACH**: How do you think students should be learning?

So, you know this project is about assessment and how you use assessment data to inform your teaching. At this point, I have a sense of what your school requires for assessing and what you explained previously that you do in your classroom. I just want to know more from your perspective all the various ways you collect information about your students and their learning.
1. Can you walk me through what a day might look like for you, focusing on teaching and assessing.
   ☐ **END OF DAY:** what might it look like for you at the end of the day?
   ☐ **WEEK**: what might it look like for you across the week?
   ☐ **QUARTER**: what might it look like for you across the quarter?
       i. **REPORT CARDS**: as you prepare for quarterly report cards?
   ☐ **PLANNING**: Tell me about what happens while you are planning your lesson and preparing ways to record student learning.

□ **RECORDING**: Tell me about how you go about observing and/or recording student learning during a lesson, what kinds of information you write down or note mentally, and how you do so.

□ **INTERPRETING**: Tell me about what happens after you've observed a student and maybe or maybe not recorded notes about that.

    i. When you're doing this, tell me what you are thinking when you read them.

□ **RESPONDING**: describe any decisions you make based on those thoughts or notes such as changes to your instruction or accommodations that you make.

2. Describe how you might consider different types of students throughout this process such as different levels of ability, cultural background, or language.

3. Describe to me what part the families play in this assessment process.

Tell me about how you developed your assessment process.

4. Describe your training in assessment beginning with your teacher preparation program through now such as courses in your teacher preparation program, additional coursework after the program, professional development, books you've read, or other ways you have learned about how to assess students.

□ **PERCEIVED EXPERTISE**: Tell me more about your expertise with gathering informal information about your students.

□ **IDEAL**: In an ideal classroom, how would you approach assessing your students.

4. Have you had any professional development on teaching and assessing students who may be from different cultures or languages? Please describe.

□ **CRT UNDERSTANDING**: Describe your understanding of the idea of culturally responsive teaching.

    i. **PERSONAL APPROACH**: Is there anything you find yourself doing a little bit different?

        1. **CAN YOU GIVE AN EXAMPLE**

    ii. **HOW**: How did you come to this understanding? (probe personal experience, upbringing, education

Final Statement: Thank you for sharing your perspective on assessment and experiences. Next time, I will be scheduling an interview with [both you and your co-teacher… you again to explore this further]. Again, thank you for your time.

Appendix D. Field Site Visit #5 PROTOCOL (Pre-Observation & Stimulated-Recall Interview)

Field Site Visit #5 PROTOCOL (Observation & Stimulated-Recall Interview)
Schedule for class session with no preps and both whole group and small group instruction

Opening statement: *The goal of this observation is to gain a sense of what it's like as a preschool teacher to simultaneously teach and assess so I will be writing down as much as I can to gain a complete understanding of this process. For this observation interview, there will be 3 parts during one class session: first, I will meet with you before the class session begins for about 5-10 minutes to gain a sense of your plan for teaching and assessing student learning during that day's lesson; second, I will sit back during the class session to observe and write down what I'm noticing with a particular emphasis on how you collect information about your students; third, I will meet with both of you after class to debrief about the session by having you share with me your data collection tools, notes and what you were thinking when you were teaching and recording information about your students. As a reminder, if you feel uncomfortable answering any questions just let me know and we can move on to the next question.*

Pre-observation interview.
1. **For today, describe your lesson, what you hope students will learn and how you plan to collect information about that learning.**
   - ☐ **WHOLE GROUP***: What are your goals for circle time?*
     - ▪ **ASSESSMENT:** *Describe what you are planning to record about student learning and how. It can be anything such as student work, pictures, observation notes, checklists, etc.*

   - ☐ **SMALL GROUP:** *What are your goals for small groups?*
     - ▪ **ASSESSMENT:** *Describe what you are planning to record about student learning and how.*

   - ☐ **CENTERS:** *What are your goals for centers time, if any?*
     - ▪ **ASSESSMENT:** *Describe what you are planning to record about student learning and how. It can be anything such as student work, pictures, observation notes, checklists, etc.*

2. *Is there anything you're anticipating with certain students that you're planning for in case your lesson goes in a different direction?*
   - ☐ **STUDENT MISUNDERSTANDING**S: *How will you know a student isn't getting it or you need to do something differently?*

During class session: observation field notes.

Post-observation interview with think-aloud and artifact collection.
Take a moment to gather your documents from today's class such as your lesson plan, data that you recorded, and other relevant documents. While you look at these, think for a moment to yourself about today's class and what you recorded about student learning.

1. **Thinking back to the lesson that you taught during <u>whole group</u> instruction, walk me through what you were thinking.**
   - ☐ **SURPRISES:** What surprised you, if anything?
   - ☐ **ASSESSMENT:** What did you write down? Describe what you were thinking.

2. **Thinking back to <u>small groups</u>, walk me through what you were thinking.**
   - ☐ **SURPRISES:** What surprised you, if anything?
   - ☐ **ASSESSMENT:** What did you write down? Describe what you were thinking.

3. **Thinking back to <u>centers time</u>, walk me through what you were thinking.**
   - ☐ **SURPRISES:** What surprised you, if anything?
   - ☐ **ASSESSMENT:** What did you write down? Describe what you were thinking.

4. **Now focus on _____ (children that represent the three types:** *doing well, disability, CLD).* **Tell me about him/her during one of these lessons.**
   - ☐ **SURPRISES:** What surprised you, if anything?
   - ☐ **ASSESSMENT:** describe what you wrote down to inform you about this child**.**

5. **Describe any specific or general adjustments to your instruction or lesson plan that you plan on making after today**.
   - ☐ **INFO:** Describe what informed these decisions or ideas.

Scan artifacts from the class session.

Final statement: *Thank you for meeting with me for this observation interview. I appreciate your time and value your responses. Then, if you're interested and have time we can schedule a final meeting to review initial findings. In that meeting, I will be asking you to check the accuracy of the story that I develop about your formative assessment experiences. Again, thank you for your time.*

Appendix E. Field Site Visit #6/#7 PROTOCOL (Member Check Interview)

Field Site Visit #6/#7 (Member Check Interview)
*Schedule with individual teachers once analysis is complete to check findings

I have now completed all of the transcriptions of all of the interviews with you and 5 other teachers and have read and reread everything to see what topics and themes come out and may be shared by all, <u>or most,</u> of you. While I've been doing this, I hope you have had time to reflect a little on some of what we talked about during our interviews.

I would like to share the main ideas of what I have found and then ask you if there is more you would like to add. I may also ask you a few new questions so that I can get a better understanding of some of the topics that seemed to be there but were not fully articulated. Then, I will share with you your case and ask you to elaborate on or clarify it.

I am going to ask you about 3 general areas.

ONE, you all emphasized the importance of play and developmentally appropriate practices for preschool children, which often is best measured through descriptive data. However, this contrasted with your district and school's requirements for a variety of quantifiable sources of data such as TSG, portfolios, and Special Education IEP progress monitoring. This mismatch between district and school mandates with your values seems to be important as you all shared some level of uncertainty with HOW best to capture student learning. So, can you just talk to me a bit more about this topic?

TWO, you all discussed some level of difficulty working with families and involving them in the assessment process. What I noticed is that you all were concerned with what message was being sent to families about what's important in preschool. In other words, some families seemed to value rote skills such as counting and letter identification but also, many of you expressed concerned that by reporting on skill development in TSG and portfolios your school was actually reinforcing it. Would you agree with this?
1. What I'm curious about is that if you don't want to be reinforcing rote skills, then what is the story you want to tell with your assessment data?
2. And how would the families be involved?

THREE, you all described a natural or innate sort of ability to assess and respond to students in the moment, based on what many researchers refer to as scaffolding or differentiated instruction. So, I'm trying to gain a deeper sense of what that looks like for you and how it connects to the assessment process. So how does that ability to make adjustments in the moment and address the students' needs connect with all that assessment data that you record and are required to report?

1. Think of a child that you may have worked with recently and walk me through how you guided the child's learning
2. Now, think about the assessment process, which is typically teachers create a plan to collect information about students, then they collect that information in a variety of ways, then often think about that information, and finally plan ways to use that new understanding about each child to adjust lessons and give feedback. So what I'd like to know from your perspective is where do you think supporting students during instruction fits into the assessment process?

So, would you agree that these are the 3 main ideas about assessments and data?

CASES
Finally, I want to share with you your case. All of you had many strengths, particularly a strong foundational understanding of the assessment process. However, what set you all apart were your unique expertise and where the breakdown occurs for you in the process. So I will describe to you what I grasped you were experiencing and want to ensure it's from your perspective. So please elaborate, adjust, and clarify your case for me to be sure I got it right.

AT END:
I'm done with what I had planned for this interview.
Is there anything more you would like to add to?
Any final thoughts or comments?

Thank you. .. …

Appendix F. Focused Assessment to Capture Student Learning (FACS)- Self-Assessment Questionnaire

Preschool Teacher's Self-assessment of
Focused Assessments to Capture Student Learning (FACS)

Directions: Each row describes a formative assessment practice utilized by some preschool teachers.
For each row, CIRCLE the one description on the continuum from Beginner (left) to Advanced (right) that BEST describes your current assessment practice. If you are undecided between two levels, choose the best representation of your current practices.

	Beginner	Developing	Advanced
	I have some understanding of formative assessments but I'm more focused on meeting district demands for data collection.	*I understand the formative assessment process and am learning to incorporate it into daily lessons and be objective.*	*I have a good grasp of the formative assessment process and use this process on a daily basis in an objective manner to improve student learning.*
Asking questions about student learning to guide instruction and assessment	I focus on recording student performances that inform the district mandated quarterly assessment.	The daily notes and data that I record on student learning serves to inform quarterly assessments but I also use it informally inform my decisions about what to teach.	For each lesson I plan for small and whole group instruction, I have a goal in mind for student learning and a way to measure it using a tool; this question about student learning is included in my lesson plan.
	In my lesson plans, I typically repeat learning standards or objectives that are common to typical lessons.	In my lesson plans, the learning standards or objectives that are addressed may vary for each lesson (whole vs. small group).	In my lesson plans, learning standards or objectives may vary for each lesson and consider varied developmental continuums (such as lower or higher skills/levels).
Observing, Listening & Recording Assessment information	My lesson plans do not include plans for collecting assessment data for each lesson.	My lesson plans may include a plan to collect assessment data but they do not clarify whom, when, and how it will be completed.	My lesson plans include thoughtful plans for data collection during different instructional periods with information about who will collect information and when.
	I collect data each day using whatever paper is available when I notice something about student learning that may be important for the quarterly assessment.	My data collection tools gather information about student learning (e.g., anecdotals or student work) but these remain general without focusing on answering specific questions about learning.	I utilize observation tools that appropriately match the goal for the lesson (a descriptive form such as journaling, a structured form such as a checklist, a continuum form such as a rating scale, or student work).
	At the beginning of a lesson (small or whole group), I rarely share the learning goals with my students, often diving right into the lesson immediately.	At the beginning of a lesson (small or whole group), I usually share the learning goals with my students but not always OR I often do but they don't always understand.	At the beginning of each lesson (small or whole group), I share learning goals with my students in language that they understand.
	My assessment notes describe general impressions of what is happening (i.e., "I think…"), student levels of engagement, or note students that don't get it or aren't able to perform a certain skill as I'm looking for right or wrong answers based on the content that I teach.	My assessment notes focus on the larger group but with attention to individual students who are struggling. I notice particular students' thinking, and provide general descriptions of content mastery as it's difficult to consider different ways of understanding.	When writing my observations, I note detailed information about individual performances based on what I see, not what I think. I note a variety of information from the assessment by taking the perspective of the student such as specific errors, approach to learning, strategies, thinking and skills.
	Once I record notes on a student's skill or development, I use this to inform my decisions about developmental levels of performance and understanding.	I sometimes consider different ways to record information about students' skills or developmental levels in different situations since just one observation isn't enough.	I usually plan for different ways to observe students' understanding or performance with regard to a learning standard (i.e., different observers, situations, or tools) so that I can be sure my quarterly judgments on the criterion-referenced measure.

	Beginner	Developing	Advanced
	I have some understanding of formative assessments but I'm more focused on meeting district demands for data collection.	*I understand the formative assessment process and am learning to incorporate it into daily lessons and be objective.*	*I have a good grasp of the formative assessment process and use this process on a daily basis in an objective manner to improve student learning.*
Compiling assessment data and reflecting	I collect assessment information about students but notes are often disorganized and I feel rushed when adding it to a district mandated assessment system.	I have a way to keep my assessment notes together that is not necessarily organized or efficient and I may feel rushed to input the information on a district-mandated assessment system.	I have an organized way to record and store my assessment notes that makes sense to me, which are then efficiently cataloged and/or added to a district mandated assessment system.
	I don't revisit my assessment notes, except to input them into a criterion-referenced measure or district database.	I sometimes revisit data about individual students or groups of students but I don't necessarily have a plan that I stick to.	I have a realistic plan for <u>when</u> to review daily assessment notes (i.e., a couple times, once a week) that helps me to consistently review the data.
	I mentally gain a sense of students' mastery of the lesson based on participation and accuracy so that I can decide if I can move on to the next lesson.	I sometimes compare across assessment notes or against developmental levels on a criterion-referenced measure but this can be superficial regarding if students met expectations or not.	I usually make connections across a variety of data as patterns in student thinking, skills, and difficulties. This helps me in considering principles of Universal Design for Learning (UDL) to determine diverse accommodations.
	I tend to rely on my professional judgment when thinking about reasons why students perform or behave the way they do.	I have begun to refer to specific events and interactions as evidence but don't do so consistently as I typically consider the most logical hypothesis for a student's performance, which is not always connected to data.	I connect what I notice about the student's thinking with the Big Ideas of the lesson/unit. Also, I refer to specific events and interactions as evidence for why a student understands or performs a certain way.
	I rarely think about reasons why a student may perform or think in certain ways or discuss this with families or colleagues.	I sometimes think of different reasons why a student(s) perform or understand in a certain way, sometimes discussing with colleagues or families about these hypotheses.	I develop multiple hypotheses and discuss these with families and colleagues to gain a deeper understanding of the student(s).
Using assessment data and reflections to respond to students and communicate with others	I don't have assessment review notes and often continue with my lessons as I planned in my week plan.	I think about re-teaching, providing similar tasks for practice or changes to the classroom environment based on what I mentally note about student learning.	On the basis of notes I write when reviewing my assessment notes, I propose alternative interventions, mini-lessons, or accommodations for individuals or groups of students.
	I typically consider the class as a whole when thinking about what students are learning. When students don't understand, I respond by simplifying the ideas or asking closed-ended questions that lead them to the right answer.	Notes indicate a general awareness of the class but not about individual students. I ask open-ended questions to shape their responses toward specific right answers that I have in mind.	Notes about small group or centers indicate information about individual students that provides basis for scaffolding further learning. When students don't understand, I engage them in deeper discussions using higher-order questions.
	I don't typically purposefully plan how to engage students with each other during class activities but do informally engage peers with each other during activities.	I sometimes write notes about or mentally consider peer groupings, ways to prompt peers or rearranging the environment but these plans lacks details.	I write notes when I review assessment information, considering how to use peers to help one another learn, such as change the environment, prompt peers, or peer-mediated learning.
	I don't record notes when I review my assessment information but new questions arise as I observe students.	I write notes when I review assessment information and these include simple notations such as question marks or other similar notations.	I write notes when I review assessment information, writing new questions or wonderings about students individually or as a group that I want to explore.
	I don't typically communicate progress to families either about what's happening in the classroom or how their child is	My communication with families is at the classroom-wide level about learning activities and projects without communicating progress of individual	I communicate student progress to families informally (e.g., emails conversations, blog,) or formally (e.g., shared documentation of progress in portfolio, curriculum-based

progressing individually.	students to their families.	measure).

Appendix G. Recruitment Flyer

Are you a
PRESCHOOL TEACHER
in a blended or cluster program?

I'm a doctoral student from the University of Illinois at Chicago's Special Education Department and I am **conducting a study** about preschool teachers who work in blended and cluster programs at -------------- School. **I am seeking participants like you**.

The **study seeks to understand how preschool co-teaching teams informally assess their students' learning on a daily basis**. I am looking to spend some time with you and your co-teacher, observing you both in your normal daily routines and interviewing you about those assessment routines. **This would involve**:

- two 45-60 minute interviews;
- two observation-interviews in which I would observe your classroom assessment routines and then you would walk me through the data taken during that session;
- saving your assessment documents used during the week such as lesson plan, checklists, work samples, anecdotal notes, etc. over three separate weeks;
- a one-hour observation, during which I will use the CLASS-Pre-K®, recording only descriptive information and not a score; and
- a short 5-minute questionnaire about your daily assessment practices.

Your **confidentiality** in this study will be strictly maintained. Your principal will <u>not</u> be able to use information collected by me to inform performance evaluations or make judgments about your work.

Please **consider participating in this study** to share your daily experiences and challenges with assessment. For your participation, you will receive an <u>Amazon gift card</u>.

If you have questions and/or would like to participate, please <u>contact me</u> at:

Cindy Collado
email
phone number

This research is being conducted under the direction of Dr. Norma Lopez-Reyna, Special Education Department (312) 413-8761 and has been approved by the University of Illinois at Chicago Institutional Review Board.

Appendix H. University of Illinois at Chicago Institutional Review Board (IRB) Approval

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Exemption Granted

January 13, 2015

Cindy Collado, M.Ed., BA
Special Education

**RE: Research Protocol # 2014-1211
          "A Case Study of Formative Assessment Processes in Preschool Special Education
Settings"**

Sponsors: None

Dear Ms. Collado:

Your Claim of Exemption was reviewed on January 12, 2015 and it was determined that your research meets the criteria for exemption. You may now begin your research.

Exemption Period:	**January 12, 2015 – January 12, 2018**
Performance Site:	UIC
Subject Population:	Adult (18+ years) subjects only
Number of Subjects:	3 cases of preschool team teachers (co-teaching dyads; 6 teachers total) and the students in the classrooms of the participating teachers

The specific exemption category under 45 CFR 46.101(b) is:
(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
12/12/2014	Initial Review	Exempt	12/19/2014	Modifications Required
01/08/2015	Response to Modifications	Exempt	01/12/2015	Approved

Phone: 312-996-1711   http://www.uic.edu/depts/ovcr/oprs/   Fax: 312-413-2929

You are reminded that investigators whose research involving human subjects is determined to be exempt from the federal regulations for the protection of human subjects still have responsibilities for the ethical conduct of the research under state law and UIC policy. Please be aware of the following UIC policies and responsibilities for investigators:

1. Amendments You are responsible for reporting any amendments to your research protocol that may affect the determination of the exemption and may result in your research no longer being eligible for the exemption that has been granted.

2. Record Keeping You are responsible for maintaining a copy all research related records in a secure location in the event future verification is necessary, at a minimum these documents include: the research protocol, the claim of exemption application, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to subjects, or any other pertinent documents.

3. Final Report When you have completed work on your research protocol, you should submit a final report to the Office for Protection of Research Subjects (OPRS).

4. Information for Human Subjects UIC Policy requires investigators to provide information about the research protocol to subjects and to obtain their permission prior to their participating in the research. The information about the research protocol should be presented to subjects in writing or orally from a written script. When appropriate, the following information must be provided to all research subjects participating in exempt studies:
   a. The researchers affiliation; UIC, JBVMAC or other institutions,
   b. The purpose of the research,
   c. The extent of the subject's involvement and an explanation of the procedures to be followed,
   d. Whether the information being collected will be used for any purposes other than the proposed research,
   e. A description of the procedures to protect the privacy of subjects and the confidentiality of the research information and data,
   f. Description of any reasonable foreseeable risks,
   g. Description of anticipated benefit,
   h. A statement that participation is voluntary and subjects can refuse to participate or can stop at any time,
   i. A statement that the researcher is available to answer any questions that the subject may have and which includes the name and phone number of the investigator(s).
   j. A statement that the UIC IRB/OPRS or JBVMAC Patient Advocate Office is available if there are questions about subject's rights, which includes the appropriate phone numbers.

Please be sure to:

→ Use your research protocol number (2014-1211) on any documents or correspondence with the IRB concerning your research protocol.

2014-1211   Page 3 of 3   January 13, 2015

We wish you the best as you conduct your research. If you have any questions or need further help, please contact the OPRS office at (312) 996-1711 or me at (312) 355-2908. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Charles W. Hoehne, B.S., C.I.P.
Assistant Director
Office for the Protection of Research Subjects

cc: Elizabeth Talbott, Special Education, M/C 147
       Norma Lopez-Reyna, Special Education, M/C 147

Appendix I. Teacher Informed Consent Form

<div style="border:1px solid black; display:inline-block; padding:8px;">UIC Research Protocol #2014-1211</div>

University of Illinois at Chicago
Research Information and Consent for Participation in Social Behavioral Research

Understanding preschool teachers' current formative assessment
practices in special education settings

Teacher Consent Form

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Cindy Collado, doctoral student
Faculty Sponsor Name and Title: Norma Lopez-Reyna, Ph.D., Associate Professor, Special Education
Department and Institution: Special Education Department, University of Illinois at Chicago
Address and Contact Information: 1040 West Harrison Street, Chicago, IL 60607
Phone: -----   **Email**: ----

<u>**Why am I being asked?**</u>
You are being asked to be a subject in a research study about how teachers use daily informal assessments in preschool programs serving students with disabilities. You have been asked to participate in the research because you are a preschool teacher at -------- working with a co-teacher in a classroom setting that includes students with disabilities. Please read this form carefully and ask any questions you may have before agreeing to take part in the study.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the University of Illinois at Chicago. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 3-6 preschool teachers may be involved in this research.

What is the purpose of this research?
The researcher hopes to learn more about how preschool teachers in classrooms serving students with disabilities collect and analyze daily information about their students' learning, the challenges they face, and how this relates to their beliefs about learning. This may help policy-makers, administrators, and educators understand how preschool teachers informally assess students and the challenges they face. Additionally, it could inform the appropriate and targeted construction of professional development.

What procedures are involved?
This research will be completed at -----.
If you agree to participate in this research study, you will continue with your normal daily routines throughout this 1-2 month study as the researcher visits your classroom on six occasions to interview you, observe your regular assessment routines, or collect your assessment documents. The time you may spend outside of normal instruction time will be during the three interviews that will last between 45-60 minutes and the two 45-minute interviews that follow the observations.

The following describes more specifically what you will be asked to do:
- *Interviews*: you will be interviewed twice. Depending on your interest & time, a final interview may ask you to review the accuracy of your experiences.
- *Observations*: twice, the researcher will observe you during a class session, which will require you to complete a 10-minute pre-observation interview and a 45-minute post-observation interview.
- *Collection of Lesson Plans, Assessment Tools and Notes, and Parent Communication documents*: on three occasions, you will be asked to collect your assessment documents utilized over the course of a week.
- *The Classroom Assessment Scoring System (CLASS-Pre-K®)*: this observation based standardized measure will be completed by the researcher during one class session. Only descriptive information will be used; no scores will be reported.
- *Self-Assessment questionnaire:* this questionnaire will take you about 5-10 minutes to complete as you rate your current formative assessment practices.

What are the potential risks and discomforts?
There may be risks from the study that are not known at this time. To the best of my knowledge, the things you will be doing have no more risk of harm than you would experience in your day-to-day activities. Regardless, there is the risk that you may experience the following:
- You may find some of the questions about your assessment practices to be sensitive.
- During the interviews, you may feel uncomfortable being audio-recorded.
- During the observations, you may feel uncomfortable with the researcher observing you.
- You may feel uncomfortable with the length of the interviews. The interviews are anticipated to last between 45 to 90 minutes.
- There is the risk that a breach of privacy (others will know the subject is participating in research) and confidentiality (accidental disclosure of identifiable data) may occur.

Even if you sign this consent form, you may withdraw from the study at any time, without consequence.

Are there benefits to taking part in the research?
You may not directly benefit from participating in this study. The study results may be used to help other people in the future such as for planning effective and targeted professional development or informing policy decisions. You may, however, become more aware of your assessment practices as you engage in dialogue with the researcher and your co-teacher. As a result of administration in some of the measures, you may also learn about some formative assessment practices that you would like to use to improve your own practice.

What other options are there?
You have the option to not participate in this study. **You do not have to sign this form**. Taking part in this study is entirely voluntary. If you do agree to participate, you may skip any questions that you do not feel comfortable answering. You are also free to withdraw at any time. If you decide not to take part or to skip some of the questions, it will not affect your current position at ------ school or your relationship with the researcher.

What about privacy and confidentiality?
Information about you will only be disclosed to others with your written permission, or if necessary to protect your rights or welfare (for example, when the UIC Office for the Protection of Research Subjects monitors the research or consent process) or if required by law. Study information, which identifies you and the consent form signed by you, will be looked at and/or copied for checking up on the research by UIC OPRS and State of Illinois Auditors.

Your answers will be confidential and all records of this study will remain private. At the start of the study, you will be assigned a pseudonym and a case number in place of your name and classroom number. A list will be created of the participants with their assigned pseudonyms and case numbers; this list will be stored separate from the data in a locked file cabinet in the locked office at the University. All research documents will be kept in a locked file cabinet in a locked room at the University, accessible only by Cindy Collado. Any digital files will be assigned a code and saved on a password protected USB drive and stored in a locked file cabinet in a locked room at the University. Data collected about you and your teaching practices will remain confidential and will not be linked back to you; therefore, this information will not be used in any way by your principal to evaluate your work or influence your employment. When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity.

What are the costs for participating in this research?
There are no costs to you for participating in this research.

Will I be paid for my participation in this research?
Following your full participation in this study, you will be compensated with a $50 Amazon gift card to thank you for your time and commitment.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent and discontinue participation at any time. There are no consequences for withdrawing. You have the right to leave this study at any time without penalty.

Who should I contact if I have questions?
You may contact the Cindy Collado if you have any questions about this study or your part in it. Cindy Collado can be reached by phone at ---- or by email at ----. You may also contact the faculty sponsor, Dr. Norma Lopez-Reyna by phone at ---- or by email at ----.

What are my rights as a research subject?
If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or e-mail OPRS at uicirb@uic.edu.

Remember:
Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

You will be given a copy of this form for your information and to keep for your records.

Signature of Subject or Legally Authorized Representative
I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

Signature	Date

Printed Name

Signature of Person Obtaining Consent	Date (must be same as subject's)

Printed Name of Person Obtaining Consent

Appendix J. Parent Permission Form

University of Illinois at Chicago
Research Information and Consent for Participation in Social Behavioral Research

Parent Permission Form for Child's Research Participation
Understanding preschool teacher teams' current formative assessment practices

My name is Cindy Collado and I am a doctoral candidate from the Special Education
Department at the University of Illinois at Chicago. Your child is invited to be in a research
study about how preschool teachers collect daily information about their students to inform their
work with children. I am asking that your child take part because your child is a student of a
team of teachers that have agreed to participate in this study. As the focus is on the teachers, your
child will be indirectly involved in the study. I ask that you read this form and ask any questions
you may have before agreeing to allow your child to take part in this study.

The study: The purpose of this study is to find out how teachers collect daily information about
their students in order to adjust how they interact with the students and make instructional
adjustments to support all students academically, socially, and physically. If you agree to allow
your child to take part, your child will continue with his/her normal daily routines and will not be
approached directly by the researcher or removed from class. Your child may be involved in the
study in two ways. First, I will observe the teachers as they go about their normal daily
instructional routines; therefore, it is possible that I may observe your child as s/he interacts with
the teacher. Any notes during the observations will not include your child's name or any other
identifiable information, as I am more interested in the teacher. Second, I will be asking the
teachers to gather any assessment information collected about their students' learning over the
course of a week such as student work, checklists about students' skills, observation notes or
communication with the parents about student learning. The teachers will be asked to write only
student initials on these documents and if any names or identifiable information remains, I will
hide these prior to scanning them.

Risks and benefits: The risks in this study are that your child may feel uncomfortable with an
observer in the classroom. Your child may not directly benefit from participating in this study.
The study results may be used to help other people in the future such as for planning effective
and targeted professional development for teachers or informing policy decisions.

Compensation: Your child will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept confidential, to the extent permitted by
law. Information about your child will always be anonymous and will never include identifiable
information such as his or her name so that it cannot be directly or indirectly linked back to your

child. Observation notes and teachers' assessment documents will be kept securely for three (3) years after this study ends in a locked cabinet and locked office at the University.

Voluntary Participation: Your child's participation in this study is completely voluntary. Your decision whether or not to allow your child to take part will not affect your current or future relationship with the University of Illinois at Chicago or with your child's school. If you decide to allow your child to take part, you are free to withdraw your child at any time without affecting your relationship with the University or your child's school.

The researcher for this study is Cindy Collado. You may reach her at ----, or ----. Please feel free to ask any questions you have now, or at any point in the future. You may also contact the faculty sponsor, Dr. Norma Lopez-Reyna by phone at ---- or by email at -----. If you have any questions or concerns about your child's rights as a research subject, you may contact the UIC Office for the Protection of Research Subjects (OPRS) at 312-996-1711 or 1-866-789-6215 (toll-free) or e-mail OPRS at uicirb@uic.edu. You will be given a copy of this consent form for your records.

Please initial to indicate your decision about consent for your child to participate in this research study, then enter your child's name and sign below.

Initial one of the following to indicate your choice:
_____ (initial) I agree to allow my child to participate in this research study.

_____ (initial) I do not give consent for my child to participate in this research study.

Your child's name: _____

Your signature _____ Date _____

Your name and relationship to the student _____

Signature of person obtaining consent _____ Date _____

Printed name of person obtaining consent _____

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    childhood classroom. *The Elementary School Journal, 89*(2), 172-183. doi:

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    head start teachers for children with and without disabilities. *The Journal of Special*

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    transforming classroom practice. *Action in Teacher Education, 31*(4), 66-75. doi:

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    for teacher education reform and professional development. *Canadian Journal of*

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    assessment. In B. Perry, A. MacDonald, & A. Gervasoni (Eds.), *Mathematics and*

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    Springer.

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VITA

CINDY L COLLADO

EDUCATION

University of Illinois at Chicago (UIC), Chicago, IL   December 2015
Doctorate of Philosophy in Special Education
Dissertation Title: A Case Study of Formative Assessment Processes in Preschool Special Education Settings
Advisor: Dr. Norma Lopez-Reyna

Denmark International Study Program, Copenhagen, Denmark   June 2006
Study Abroad, Child Development and Diversity Semester Program

University of Illinois at Chicago (UIC), Chicago, IL   December 2005
Masters of Education in Special Education

Northwestern University, Evanston, IL   June 2003

CERTIFICATIONS

Educational Research Methodology Certificate (University of Illinois at Chicago), 2014

Learning Behavior Specialist 1 Type 03 & 09 (Illinois State Board of Education), 2005 – Present

Early Childhood Special Education Teacher Approval (Illinois State Board of Education), 2005 – Present

Certified Pre-K CLASS[TM] Observer (Teachstone Classroom Assessment Scoring System (CLASS) Pre-K), January 2015 – January 2016

UNIVERSITY LEVEL COURSES TAUGHT (UIC)

Methods of Instruction and Assessment of Young Children with Disabilities (methods)
Internship in Assessment (community partnership clinical)
Assessment of Individuals with Disabilities (lecture-based)
Teaching Math and Science with Adaptations (lecture-based)

PROFESSIONAL EXPERIENCE IN HIGHER EDUCATION

National Louis University, Chicago, IL   September 2015 – Present
   Field Supervisor
   - Provide weekly support to Alternative Teacher Licensure special education teachers in elementary through middle school inclusion and self-contained classrooms.
   - Weekly support provided follows a practice-based coaching model: an hour observation of the teachers in practice, collaborative debriefing session, and development of a joint action plan for improving on current practices.

University of Illinois at Chicago, Chicago, IL
   Illinois LEND Fellow   August 2015 – May, 2016
   - Intern in the Leadership in Neurodevelopmental and Related Disabilities (LEND) Interdisciplinary Training Program in preparation for serving children with disabilities and their families through clinical and community-based experiences.
   Educational Assessment Clinic Graduate Assistant   2003-2005 & 2014 – Present
   - Support departmental goals and objectives through staff development and training of new instructors on course materials, lectures, application activities, analysis of evaluation results, creation of student learning profiles, and writing case study reports.
   - Complete various clinic duties to support the clinic director and instructor such as recording intakes, speaking with parents, preparing course materials, ordering materials.
   Educational Assessment Clinic Coordinator (Visiting Clinical Lecturer)
                                               August 2010 – August 2014
   - Collaborated with the Clinic Director on ongoing research for publication.
   - Coordinated the clinic by scheduling evaluations, advising parents and families, providing resources to families and clinicians, and updating clinic materials and tests.
   - Taught early childhood educators in a methods course to utilize tiered instructional approaches to support children's development. Coached educators in addressing challenging behaviors through application of a functional behavioral assessment and interventions at their practicum sites.
   - Presented collaborative posters at the Division for Early Childhood (DEC) of the Council for Exceptional Children Annual Conference with a group of students on Microteach cases addressing the challenging behaviors from functional behavioral assessment to function-based and evidence-based interventions using progress monitoring.
   - Taught a clinical internship for special education masters degree students. Guided students in working with families, conducting a full educational evaluation, writing a full case study report, and communicating results to the family and the student.
   - Created a flipped model for one course to increase individualized support during class time using online tutorials on the administration of various standardized measures.
   - Taught an assessment course in a special education masters program that trained educators in summative and formative measures, the Understanding by Design approach to planning units and assessments, and assessment data-based decision making.
   Adjunct Lecturer   August 2006 – August 2010
   - Taught graduate-level courses in the special education masters & certification program.
   - Utilized teaching experience to showcase contextually relevant application of skills and concepts in the early childhood field.

PRESCHOOL TEACHING EXPERIENCE

Chicago Public Schools, Chicago, IL

Early Childhood Special Education Teacher August 2006 – June 2010
- Co-taught in a public inclusion preschool program with a general education teacher.
- Worked with students with mild to moderate disabilities and their families in planning and implementing effective instructional programs and interventions.
- Participated in a district-wide Assessment Cohort with administrators, principals, case managers, and teachers for planning summative and formative preschool assessments.
- Empowered families and students through the use of evidence-based interventions that supported students' social, cognitive, and language development.
- Developed expertise in Project Approach, in line with my constructivist teaching philosophy, to provide student-centered instruction and increase family involvement.
- Applied for small grants to effectively support the learning of students with disabilities.

Student Teacher, Pulaski Fine Arts Academy August – December 2005
- Completed a practicum semester of teaching in a $1^{st} – 4^{th}$ grade instructional cross-categorical classroom with students with a range of disabilities including ADHD, learning disabilities, and behavior disorders.
- Researched academic content, then planned and taught corresponding lessons with modifications and appropriate related learning strategies to differentiate content.
- Created and implemented a social/emotional curriculum to holistically support students.

ADDITIONAL PROFESSIONAL EXPERIENCE

Independent Special Education Consultant 2008 – Present

Chicago, IL
- Conduct individualized evaluations and/or observations of children's learning strengths and needs to support students struggling academically, emotionally, and/or behaviorally.
- Consult with families and school personnel on ways to support child's learning needs.

Child Tutor Intern August – December 2001

Children's Memorial Hospital Psychiatric Unit, Chicago, IL
- Tutored children in academic and social/emotional goals in the in- and out-patient units.

Camp Staff and Camp Leader Seasonal, 2000 – 2001

Conejo Recreation and Park District, Thousand Oaks, CA

COMMUNITY OUTREACH

Past President, *Speducators Network* June 2014 – Present

A student organization at the University of Illinois at Chicago, Chicago, IL

20 – 30 student members, 205 Facebook group members (students, teachers, alumni, faculty)
- Founded a student organization for special education graduate students as: 1) the student voice for graduate students, 2) a mentoring program, and 3) a space to network, collaborate and learn.
- Developed the website (www.SpeducatorsNetwork.org) in line with the mission.
- Organized activities, led meetings, supervised officers, and established online presence.
- Created a Facebook group and increased membership to 200 members in one week; in the group, members post daily on job openings, news, articles, and questions.

- Organized and led monthly meetings with officers and student members.
- Re-envisioned the organization's mission and objectives as Past President and provided incoming leadership with mentorship in setting realistic and powerful goals for the year.

Project Manager, Speducators Network Community-based Workshop Series   March 2015
- Led the application process and managed a Community Engagement Grant to host a Workshop Series in three high-need inner city communities.
- Maintained the grant budget to strategically balance paying workshop presenters and creating a welcoming community atmosphere to attendees (food, flowers & materials).
- Facilitated discussions and developed relationships with presenters and attendees to establish dynamic interactions that built trust and empowered families and teachers.

RESEARCH EXPERIENCE

University of Illinois at Chicago, Chicago, IL
Dissertation Research: A Case Study of Preschool Formative Assessment Processes & Cultural Responsiveness in Special Education Settings   December 2014 - Present
- Conducted a qualitative study using observations, semi-structured interviews, stimulated-recall interviews, artifact analysis, CLASS descriptive information, and a self-assessment inventory.
- Employed constant comparative analysis (Miles, Huberman, & Saldana, 2014) to code interviews and field notes in the development of themes and processes.
- Using literature on the Observation Cycle (Dichtelmiller, 2011) and formative assessment, developed two tools: self-assessment inventory and artifact analysis tool.
- Developing a presentation, in collaboration with the teachers, to the principal of the early childhood center to share findings, implications, and recommendations.

Research Project: A Special Education Teacher's Thinking   August 2013 – May 2014
- Iterative analysis using grounded theory of teacher stimulated-recall interview data in the development of theoretical model to represent teacher thinking about classroom assessment in relationship to decision-making and identity construction.
- Developed a coding manual for inter-rater agreement.

GRANTS

"Speducators Network Community-based Workshop Series: Engaging Families and Educators of Children with Disabilities through Collaborative Partnerships". Funded by the University of Illinois at Chicago College of Education Community Engagement Grant, Fall 2014, $5,000.

Co-Investigator (with Principal Investigator, Dr. Lopez-Reyna). *"Teachers' use of short-cycle formative assessment data to inform their instructional decision-making"*. Spencer Foundation Proposal: Evidence for the Classroom. Fall 2013, $300,000 (unfunded).

"Making it Real for Preschoolers with Special Needs!" Funded the purchase of a laminator, laminating sheets, and photo display boards to create visual supports for students with special needs. Funded by Donor's Choose, September 2008, $355.

"Let's Dance!" Created music education for preschoolers with special needs. Funded by Donor's Choose, November 2009, $198.

"Let's Read Mom… Preschoolers Reading at Home." Created book bags for classroom lending library to increase family reading engagement using home-made puppets with popular children stories. Funded by Donor's Choose, December 2009, $310.

"'Honey, I'm home', Preschoolers Playing with Dolls". A new dollhouse and furniture were purchased for the classroom to support students' communication and social skills during dramatic playtime. Funded by Donor's Choose, March 2010, $373.

PROFESSIONAL TRAINING

Institute for Research on Race and Public Policy: WriteOut! Dissertation Writing Retreat, five-day retreat with a writing coach   May 2015
University of Illinois at Chicago, Chicago, IL

Certified CLASS Observer, three day training with online certification   December 2014
Classroom Assessment Scoring System (CLASS PreK) training, San Diego, CA

Understanding by Design®: Advanced Institute in Curriculum Design, two-day pre-conference institute   March 2013
Association for Supervision and Curriculum Development (ASCD), Chicago, IL

Early Childhood Connections grant, one school year training on the Project Approach
Kohl Children's Museum of Greater Chicago, Skokie, IL   August 2008-June 2009

Chicagoland Project Approach Summer Institute, two-day institute   July 2009
Kohl Children's Museum of Greater Chicago, Skokie, IL

Early Mathematics Education Project, one school year training on teaching Early Math using literacy   August 2009 – June 2010
Erikson Institute, Chicago, IL

SERVICE & AWARDS

- **Dissertation Grant Award,** College of Education, UIC, 2015.
- **Reviewer**, Teacher Education Division (TED) of the Council for Exceptional Children, TED Conference 2015.
- **Advisory Board member**, Teaching Each homeschool program, Chicago, IL, 2015
- **Student Presenter Award**, Graduate College, UIC, 2015.
- **Student Representative**, Doctoral Program Steering Committee, UIC, 2014-2015.
- **Student Representative**, Graduate Student Council, UIC, 2014-2015.
- **Travel Award**, Graduate Student Council (GSC), UIC, 2014.
- **Nomination,** Midwestern Association of Graduate Schools (MAGS) Excellence in Teaching Award, 2013.
- **Albin & Young Award** in recognition as a UIC Special Education doctoral student who shows promise of making significant contributions in the field, 2012.

PRESENTATIONS

Collado, C. & Lopez-Reyna, L. (2015, October). *Preschool special educators' use of formative assessment processes toward culturally responsive teaching.* National Association for Multicultural Education (NAME) 25th Annual International NAME Conference: New Orleans, LA.

Collado, C., Smyre, B., Raba, A. & Polvi, S. (2014, October). *Preservice Teachers Take Research to Practice: You Too Can Do this!* The Division for Early Childhood (DEC) 30th Annual International Conference on Young Children with Special Needs and Their Families, Poster Presentation: St. Louis, MO.

Smyre, B., Raba, A. Polvi, S., & **Collado, C**. (2014, October). *Picture This! Preservice Teachers' Application of Visual Interventions and Progress Monitoring.* The Division for Early Childhood (DEC) 30th Annual International Conference on Young Children with Special Needs and Their Families, Poster Presentation: St. Louis, MO.

Barreda, E. M., Sasu, A., Andon, M., & **Collado, C**. (2014, October). *Making Connections: Preservice Teachers Apply Research into Practice: Evidence-based Interventions to Make Circle Time Successful for Each Student.* The Division for Early Childhood (DEC) 30th Annual International Conference on Young Children with Special Needs and Their Families, Poster Presentation: St. Louis, MO.

Collado, C. (2014, October). *Preservice Teachers Take Research to Practice: You Too Can Do this!* University of Illinois at Chicago College of Education 6th Annual Research Day, Poster Presentation: Chicago, IL.

Collado, C., Trzaska, A., & McGrath, A. (2014, September). *Special education doctoral program tips for new doctoral students.* Presented as a guest lecturer at the University of Illinois at Chicago, Proseminar in Special Education course. Chicago, IL.

Collado, C. (2014, October). *Identifying students with high-incidence disabilities: process, issues, and concerns.* Presented as a guest lecturer at the University of Illinois at Chicago, Assessment of Individuals with Disabilities course. Chicago, IL.

Collado, C. (2014, February). *Identifying students with high-incidence disabilities: process, issues, and concerns.* University of Illinois at Chicago, Characteristics of Exceptional Learners course guest speaker: Chicago, IL.

Collado, C. (2011, August). *Assessment and teaching students with disabilities.* University of Illinois at Chicago Council on Teacher Education Retreat, workshop session presentation: Chicago, IL.

Collado, C., Patel, J., Gonzalez, C., & Maldonado, N. (2009, January). *Pen pals: A project approach to literacy in a blended preschool.* Chicago Metro Association for the Education of Young Children (CAEYC) Opening Minds Conference, workshop session presentation: Chicago, IL.

Collado, C., Patel, J., Gonzalez, C., & Maldonado, N. (2008, October). *The ice cream project: Using the project approach in a preschool blended classroom.* Chicago Public Schools Professional Development Meeting, presentation: Chicago, IL.

MANUSCRIPTS

Lopez-Reyna, N., **Collado, C.**, Bay, M., Hsieh, W-Y. (in preparation). Preparing teachers of young bilingual children with disabilities. In A. Artiles & D. C. Castro (Eds.), *Language, Learning and Disability: Issues & Opportunities in the Education of Young Bilingual Children.*

Collado, C. (in preparation). Early childhood interventions. In *Disability in American Life: An Encyclopedia of Concepts, Policies, and Controversies.* Chicago, IL.

Lopez-Reyna, N. & **Collado, C**. (in preparation). Exploring a special education teacher's thinking: Bridging thinking and professional identify development.

PROFESSIONAL AFFILIATIONS
- Council for Exceptional Children (CEC)
- Council for Exceptional Children (CEC)- Teacher Education Division (TED)
- Council for Exceptional Children (CEC)- Division for Early Childhood (DEC)
- Council for Exceptional Children (CEC)- Council for Educational Diagnostic Services (CEDS)
- National Association for Multicultural Education (NAME)
- Association for Supervision and Curriculum Development (ASCD)
- American Educational Research Association (AERA)
- *Speducators Network*, Student Organization at UIC
- Northwestern N Club, Alumni association for former Northwestern Athletes